

The Royal Marsden Manual of Clinical Nursing Procedures

Edited by **Sara Lister, Justine Hofland and Hayley Grafton**
With **Catherine Wilson**

Tenth Edition

*Supporting nurses
for over 30 years*



The Royal Marsden Manual of
Clinical Nursing
Procedures



The Royal Marsden Manual of Clinical Nursing Procedures Online Edition Tenth Edition

Benefits of the online edition:

- Includes more than 250 illustrated step-by-step evidence-based, clinical skills procedure guidelines
- Quick, easy to use, and portable! Access clinical guidelines wherever suits you best – at hospital, in university, at home, or on the move
- Nationally recognised as the definitive guide to clinical nursing skills – provides a benchmark in promoting good, clinical practice. Expert, evidence-based, gold standard guidance
- Fully customisable to meet local protocols; annotate and upload your own policies and procedures
- The perfect resource for studying; writing assignments and essays; writing guidelines and audits; revalidation; building evidence for CPD; and quick reference

New for this edition!

- The Royal Marsden Manual Online 10 now includes access to both the Professional Edition and the new *Royal Marsden Manual of Cancer Nursing Procedures*
- Brand new videos clearly showing step-by-step procedures
- Presentation maker – allowing images to be downloaded into PowerPoint presentations
- Citation management software – easy-to-export bibliographic citations

The Royal Marsden Manual of Clinical Nursing Procedures *Tenth Edition*

Edited by

Sara Lister

RN, BSc (Hons), PGDAE, MSc, Dip, MA, MBACP
Head of Pastoral Care and Psychological Support
The Royal Marsden NHS Foundation Trust

Justine Hofland

RN, BSc (Hons), ANP, MSc, PG Dip, ILM Level 5
Formerly Divisional Clinical Nurse Director
Cancer Services
The Royal Marsden NHS Foundation Trust

Hayley Grafton

RN, BSc (Hons), CPPD ITU
Chief Nursing Information Officer
The Royal Marsden NHS Foundation Trust

with

Catherine Wilson

PhD, MSc, BSc (Hons), PG Dip (Ed), RN, ONC, RNT
Formerly Head of School, The Royal Marsden School
The Royal Marsden Hospital NHS Foundation Trust

The **ROYAL MARSDEN**
NHS Foundation Trust

WILEY Blackwell

This edition first published 2021
© 2021 The Royal Marsden NHS Foundation Trust

Edition History

© The Royal Marsden NHS Foundation Trust: previous editions published 1992, 1996, 2000, 2004, 2008, 2011, 2015

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, except as permitted by law. Advice on how to obtain permission to reuse material from this title is available at <http://www.wiley.com/go/permissions>.

The right of Sara Lister, Justine Hofland and Hayley Grafton with Catherine Wilson to be identified as the authors of the editorial material in this work has been asserted in accordance with law.

Registered Office(s)

John Wiley & Sons, Inc., 111 River Street, Hoboken, NJ 07030, USA
John Wiley & Sons Ltd, The Atrium, Southern Gate, Chichester, West Sussex, PO19 8SQ, UK

Editorial Office

9600 Garsington Road, Oxford, OX4 2DQ, UK

For details of our global editorial offices, customer services, and more information about Wiley products visit us at www.wiley.com.

Wiley also publishes its books in a variety of electronic formats and by print-on-demand. Some content that appears in standard print versions of this book may not be available in other formats.

Limit of Liability/Disclaimer of Warranty

The contents of this work are intended to further general scientific research, understanding, and discussion only and are not intended and should not be relied upon as recommending or promoting scientific method, diagnosis, or treatment by physicians for any particular patient. In view of ongoing research, equipment modifications, changes in governmental regulations, and the constant flow of information relating to the use of medicines, equipment, and devices, the reader is urged to review and evaluate the information provided in the package insert or instructions for each medicine, equipment, or device for, among other things, any changes in the instructions or indication of usage and for added warnings and precautions. While the publisher and authors have used their best efforts in preparing this work, they make no representations or warranties with respect to the accuracy or completeness of the contents of this work and specifically disclaim all warranties, including without limitation any implied warranties of merchantability or fitness for a particular purpose. No warranty may be created or extended by sales representatives, written sales materials or promotional statements for this work. The fact that an organization, website, or product is referred to in this work as a citation and/or potential source of further information does not mean that the publisher and authors endorse the information or services the organization, website, or product may provide or recommendations it may make. This work is sold with the understanding that the publisher is not engaged in rendering professional services. The advice and strategies contained herein may not be suitable for your situation. You should consult with a specialist where appropriate. Further, readers should be aware that websites listed in this work may have changed or disappeared between when this work was written and when it is read. Neither the publisher nor authors shall be liable for any loss of profit or any other commercial damages, including but not limited to special, incidental, consequential, or other damages.

Library of Congress Cataloging-in-Publication Data

Names: Lister, Sara E., editor. | Hofland, Justine, editor. | Grafton, Hayley, editor. | Wilson, Catherine, editor.

Title: The Royal Marsden manual of clinical nursing procedures / edited by Sara Lister, RN, BSc (Hons), PGDAE, MSc, Dip, MA, MBACP, Head of Pastoral Care and Psychological Support, The Royal Marsden NHS Foundation Trust, Justine Hofland, RN, BSc (Hons), ANP, MSc, PG Dip, ILM Level 5, Divisional Clinical Nurse Director, Cancer Services, The Royal Marsden NHS Foundation Trust, Hayley Grafton, RN, BSc (Hons), CPPD ITU, Chief Nursing Information Officer, The Royal Marsden NHS Foundation Trust, with Catherine Wilson, PhD, MSc, BSc (Hons), PG Dip (Ed), RN, ONC, RNT, Head of School, The Royal Marsden School, The Royal Marsden Hospital NHS Foundation Trust.

Other titles: Manual of clinical nursing procedures

Description: Tenth celebratory edition. | Hoboken, NJ : Wiley-Blackwell, 2021. | Includes bibliographical references and index.

Identifiers: LCCN 2020050693 (print) | LCCN 2020050694 (ebook) | ISBN 9781119532965 (paperback) | ISBN 9781119532989 (adobe pdf) | ISBN 9781119532972 (epub)

Subjects: LCSH: Nursing care. | Nursing--Technique--Handbooks, manuals, etc. | Nursing.

Classification: LCC RT41 .R77 2021 (print) | LCC RT41 (ebook) | DDC 610.73--dc23

LC record available at <https://lcn.loc.gov/2020050693>

LC ebook record available at <https://lcn.loc.gov/2020050694>

Cover Design: Wiley

Cover Images: Labor Omnia Vincit Crest is a registered Trademark of The Royal Marsden NHS Foundation Trust.

All images courtesy of The Royal Marsden NHS Foundation Trust.

Set in 9/10pt Lexia by SPi Global, Pondicherry, India

Brief table of contents

<i>Foreword</i>	<i>xvii</i>
<i>Acknowledgements</i>	<i>xviii</i>
<i>List of contributors</i>	<i>xix</i>
<i>Quick reference to the procedure guidelines</i>	<i>xxiii</i>
<i>How to use your manual</i>	<i>xxv</i>
<i>About the companion website</i>	<i>xxviii</i>
1 The context of nursing	1
Part One Managing the patient journey	13
2 Admissions and assessment	15
3 Discharge care and planning	47
4 Infection prevention and control	69
Part Two Supporting patients with human functioning	131
5 Communication, psychological wellbeing and safeguarding	133
6 Elimination	205
7 Moving and positioning	283
8 Nutrition and fluid balance	339
9 Patient comfort and supporting personal hygiene	403
10 Pain assessment and management	457
11 Symptom control and care towards the end of life	497
12 Respiratory care, CPR and blood transfusion	539
Part Three Supporting patients through the diagnostic process	657
13 Diagnostic tests	659
14 Observations	719
Part Four Supporting patients through treatment	801
15 Medicines optimization: ensuring quality and safety	803
16 Perioperative care	937
17 Wound management	1029

Part Five Looking after ourselves so we can support patients	1061
18 Self-care and wellbeing	1063
<i>Appendix: Standards of Proficiency for Registered Nurses</i>	1085
<i>List of abbreviations</i>	1089
<i>Index</i>	1093

Detailed table of contents

Foreword
Acknowledgements
List of contributors
Quick reference to the procedure guidelines
How to use your manual
About the companion website

1 The context of nursing

Overview

Background

Context of nursing

Political context

Unwarranted variation

NHS Long Term Plan

Professional context

Patient safety and quality of care

New roles

Evidence-based practice

What is evidence-based practice?

Evidence-based practice and The Royal Marsden Manual of Clinical Nursing Procedures

Structure of the manual

Structure of the chapters

Finally

References

Part One

Managing the patient journey

2 Admissions and assessment

- Overview
- Inpatient assessment and the process of care**
 - Definition
 - Related theory
 - Evidence-based approaches
 - Post-procedural considerations
- Observation**
 - Definition
- Physical assessment**
 - Definition
 - Anatomy and physiology
 - Related theory
 - Evidence-based approaches
 - Clinical governance
 - Pre-procedural considerations
 - Respiratory examination*
 - Anatomy
 - Physiology
 - Related theory

xvii	Evidence-based approaches	32
xviii	<i>Cardiovascular examination</i>	34
xix	Anatomy and physiology	34
xxiii	Related theory	34
xxv	Evidence-based approaches	36
xxviii	<i>Abdominal examination</i>	38
	Anatomy and physiology	38
	Related theory	38
1	Evidence-based approaches	41
2	Post-procedural considerations	43
2	<i>References</i>	44

2 3 Discharge care and planning 47

3	<i>Overview</i>	48
3	Discharge care and planning	48
3	Definition	48
3	Related theory	48
5	Clinical governance	48
7	Discharging patients from hospital: internal procedures	49
7	Evidence-based approaches	49
	Pre-procedural considerations	51
8	Post-procedural considerations	52
9	Complications	52
9	Interface between primary and secondary care: external processes	56
9	Related theory	56
10	Evidence-based approaches	56
	Complications	56
	<i>Complex discharges</i>	56
	Definition	56
	Related theory	58
	Evidence-based approaches	59
13	<i>Discharge to a nursing home</i>	59
	Related theory	59
	Complications	59
15	<i>Discharge planning at the end of life</i>	59
16	Evidence-based approaches	59
	Pre-procedural considerations	59
16	Informal carers	62
16	Definition	62
16	Related theory	62
18	Evidence-based approaches	65
23	The role of voluntary services	65
24	Related theory	65
25	<i>References</i>	66

25 **4** Infection prevention and control 69

26	Overview	70
26	Infection prevention and control	70
28	Definitions	70
28	Anatomy and physiology	70
28	Related theory	76
28	Evidence-based approaches	77
28	Clinical governance	77

Hand hygiene

Definition	80
Related theory	80
Evidence-based approaches	81
Pre-procedural considerations	82
<i>Hand washing</i>	83
Evidence-based approaches	83
<i>Use of alcohol-based handrub</i>	85
Evidence-based approaches	85
<i>Surgical hand antisepsis</i>	86
Evidence-based approaches	86

Personal protective equipment (PPE)

Definition	92
Related theory	92
<i>Donning theatre attire</i>	100
Evidence-based approaches	100

Specific patient-related procedures

<i>Standard precautions</i>	107
Related theory	107
<i>Aseptic technique</i>	107
Definition	107
Related theory	107
Pre-procedural considerations	107
<i>Nursing care of patients with suspected or known infection: managing safe care</i>	109
Related theory	109
Evidence-based approaches	110

Isolation procedures

Definition	111
<i>Source isolation</i>	111
Definition	111
Related theory	111
Evidence-based approaches	111
Post-procedural considerations	111
<i>Protective isolation</i>	115
Definition	115
Related theory	115
Evidence-based approaches	116
Post-procedural considerations	117

Environmental hygiene and the management of waste in the healthcare environment

Definition	118
Related theory	118
<i>Waste disposal</i>	120
Related theory	120
Clinical governance	120
<i>Management of soiled linen in the healthcare environment</i>	120
Related theory	120

Prevention and management of inoculation injury

Related theory	125
Complications	126

References

Part Two**Supporting patients with human functioning****5 Communication, psychological wellbeing and safeguarding**

Overview

Communication

Definition

80	Anatomy and physiology	134
80	Related theory	134
80	Evidence-based approaches	135
81	Clinical governance	141
82	Pre-procedural considerations	143
83	Principles of communication	144
83		
85	Providing information and making shared decisions	147
85	Definition	147
85	Related theory	147
86	Evidence-based approaches	147
86	Pre-procedural considerations	148
92	Principles of providing information to a patient	148
92		
92	Communicating with specific populations	151
100	<i>Communicating with people with acquired communication disorders</i>	151
100	Definitions	151
107	Related theory	151
107	Evidence-based approaches	151
107	Pre-procedural considerations	152
107	Principles of communicating with people with aphasia	152
107	Principles of communicating with people with impaired speech (dysarthria)	153
107	Principles of communicating with people with impaired voice (dysphonia)	153
109	Principles of communicating with people who are blind or partially sighted	154
109	Principles of communicating with people who are deaf or hard of hearing	154
110	<i>Communicating with people who are worried or distressed</i>	155
111	Related theory	155
111	Evidence-based approaches	155
111	Pre-procedural considerations	155
115	Psychological wellbeing	157
115	Definition	157
115	Related theory	157
115	<i>Adjustment</i>	161
116	Definition	161
117	Related theory	161
	<i>Denial and collusion</i>	162
118	Definitions	162
118	Related theory	162
118	Evidence-based approaches	162
120	Complications	163
120	<i>Anxiety and panic</i>	163
120	Definition	163
120	Anatomy and physiology	163
120	Related theory	163
120	Evidence-based approaches	164
125	Pre-procedural considerations	165
125	<i>Depression</i>	168
126	Definition	168
126	Related theory	168
126	Evidence-based approaches	168
126	Pre-procedural considerations	169
	<i>Anger, aggression and violence</i>	171
	Definition	171
	Related theory	171
	Evidence-based approaches	172
	Clinical governance	172
131	Pre-procedural considerations	172
	Post-procedural considerations	174
	<i>Delirium</i>	175
	Definition	175
133	Related theory	175
	Evidence-based approaches	175
	Clinical governance	176
134	Pre-procedural considerations	176
134	Post-procedural considerations	177

<i>Dementia</i>	177	<i>Intermittent catheterization</i>	225
Definition	177	Evidence-based approaches	225
Related theory	177	Related theory	225
Evidence-based approaches	177	Pre-procedural considerations	225
Clinical governance	177	<i>Catheter-associated complications</i>	230
Pre-procedural considerations	177	<i>Bladder irrigation</i>	230
<i>Referring on to psychological support services</i>	179	Definition	230
Evidence-based approaches	179	Evidence-based approaches	230
Safeguarding, mental capacity and the Mental Health Act	180	Pre-procedural considerations	232
<i>Safeguarding</i>	180	Post-procedural considerations	235
Definition	180	<i>Nephrostomy tubes and ureteric stents</i>	236
Related theory	180	Related theory	236
Evidence-based approaches	180	Evidence-based approaches	236
Clinical governance	188	Clinical governance	236
Principles of safeguarding	188	Pre-procedural considerations	237
<i>Mental Capacity Act (2005)</i>	189	Post-procedural considerations and complications	237
Definition	189	<i>Surgical urinary diversions</i>	240
Related theory	189	Definition	240
Clinical governance	192	Evidence-based approaches	240
Pre-procedural considerations	192	Altered faecal elimination	243
Principles of mental capacity assessment	192	<i>Diarrhoea</i>	243
Post-procedural considerations	193	Definition	243
<i>Deprivation of Liberty Safeguards (2009)</i>	193	Related theory	243
Definition	193	Pre-procedural considerations	244
Related theory	193	<i>Faecal incontinence</i>	245
Clinical governance	195	Definition	245
Pre-procedural considerations	195	Related theory	245
Principles relating to deprivation of liberty	195	<i>Constipation</i>	248
Post-procedural considerations	195	Definition	248
<i>Mental Health Act (2007)</i>	195	Anatomy and physiology	248
Related theory	195	Related theory	248
Evidence-based approaches	197	Evidence-based approaches	248
Pre-procedural considerations	197	Pre-procedural considerations	250
Principles of using the Mental Health Act	197	<i>Insertion of a nasogastric drainage tube</i>	252
Post-procedural considerations	197	Evidence-based approaches	252
<i>Interface between the Mental Health Act (2007) and the Mental Capacity Act (2005)</i>	198	Clinical governance	252
Related theory	198	Pre-procedural considerations	252
<i>References</i>	199	<i>Enema administration</i>	256
		Definition	256
		Evidence-based approaches	256
		Clinical governance	256
		Pre-procedural considerations	256
		<i>Suppositories</i>	258
		Definition	258
		Related theory	258
		Evidence-based approaches	258
		Pre-procedural considerations	259
		<i>Digital rectal examination</i>	260
		Definition	260
		Evidence-based approaches	260
		Clinical governance	261
		Pre-procedural considerations	261
		<i>Digital removal of faeces</i>	262
		Definition	262
		Related theory	262
		Evidence-based approaches	262
		Clinical governance	263
		Pre-procedural considerations	263
		Stoma care	264
		Definition	264
		Related theory	264
		Evidence-based approaches	267
		Clinical governance	267
		Pre-procedural considerations	267
		Pre-procedural assessment and care	270
		Post-procedural considerations	272
		Complications	277
		<i>References</i>	277

6 Elimination

Overview

Normal elimination

Urinary elimination

Definition

Anatomy and physiology

Faecal elimination

Definition

Anatomy and physiology

Assisting patients with elimination

Evidence-based approaches

Clinical governance

Pre-procedural considerations

Altered urinary elimination

Urinary incontinence

Related theory

Penile sheaths

Evidence-based approaches

Pre-procedural considerations

Urinary catheterization

Evidence-based approaches

Clinical governance

Pre-procedural considerations

Suprapubic catheterization

Evidence-based approaches

Related theory

Post-procedural considerations

7 Moving and positioning*Overview***Moving and positioning: general principles**

Definition

Anatomy and physiology

Evidence-based approaches

Clinical governance

Pre-procedural considerations

Prevention of falls

Definition

Related theory

Evidence-based approaches

Risk factors

Positioning a patient: in bed

Evidence-based approaches

Positioning a patient: sitting up in bed

Evidence-based approaches

Positioning a patient: side-lying

Evidence-based approaches

Moving a patient from sitting to standing

Evidence-based approaches

Positioning a patient: in a chair or wheelchair

Evidence-based approaches

Walking

Definition

Related theory

Evidence-based approaches

Moving and positioning an unconscious patient

Definition

Anatomy and physiology

Evidence-based approaches

Moving and positioning a patient with an artificial airway

Definition

Evidence-based approaches

Clinical governance

Pre-procedural considerations

Post-procedural considerations

Moving and positioning a patient with respiratory compromise

Definition

Anatomy and physiology

Evidence-based approaches

Positioning a patient to maximize ventilation/perfusion matching

Anatomy and physiology

Evidence-based approaches

Positioning a patient to minimize the work of breathing

Anatomy and physiology

Evidence-based approaches

Pre-procedural considerations

Positioning a patient to maximize the drainage of secretions

Anatomy and physiology

Pre-procedural considerations

Moving and positioning a patient with neurological impairment

Definition

Anatomy and physiology

Related theory

Evidence-based approaches

Positioning a neurological patient with tonal problems in bed

Pre-procedural considerations

Positioning a neurological patient with tonal problems in a chair

Pre-procedural considerations

283

284

284

284

284

284

286

286

287

288

288

288

288

289

289

290

290

291

291

293

293

295

295

296

296

296

296

297

297

298

298

299

299

299

299

299

299

303

303

303

303

303

303

303

303

304

304

304

305

305

305

306

306

306

307

307

307

310

311

312

312

316

316

316

316

Post-procedural considerations

318

Moving and positioning a patient with actual or suspected spinal cord compression or spinal cord injury

320

Definition

Anatomy and physiology

Related theory

Evidence-based approaches

Pre-procedural considerations

Post-procedural considerations

Moving and positioning a patient with raised intracranial pressure

330

Definition

Anatomy and physiology

Related theory

Evidence-based approaches

Pre-procedural considerations

Moving and positioning a patient with an amputation

331

Definition

Related theory

Evidence-based approaches

Pre-procedural considerations

Post-procedural considerations

Complications

References

336

8 Nutrition and fluid balance

339

Overview

340

Fluid balance

340

Definition

Anatomy and physiology

Evidence-based approaches

Clinical governance

Pre-procedural considerations

Post-procedural considerations

Complications

Nutritional status

357

Definition

Anatomy and physiology

Related theory

Evidence-based approaches

Clinical governance

Pre-procedural considerations

Post-procedural considerations

Provision of nutritional support: Oral

365

Evidence-based approaches

Clinical governance

Pre-procedural considerations

Post-procedural considerations

Nutritional management of patients with dysphagia

371

Definition

Evidence-based approaches

Enteral tube feeding

372

Definition

Related theory

Evidence-based approaches

Pre-procedural considerations

Nasogastric tube insertion

Evidence-based approaches

Clinical governance

Pre-procedural considerations

Post-procedural considerations

375

375

375

379

Complications	381	10 Pain assessment and management	457
<i>Enteral tube removal</i>	381	<i>Overview</i>	458
Pre-procedural considerations	381	Pain	458
Post-procedural considerations	382	Definition	458
<i>Enteral tube care</i>	382	Anatomy and physiology	458
Evidence-based approaches	382	Related theory	459
<i>Percutaneous endoscopically placed gastrostomy (PEG) placement and care</i>	382	Evidence-based approaches	461
Pre-procedural considerations	387	Pre-procedural considerations	465
Post-procedural considerations	388	Pain management	467
Complications	388	Evidence-based approaches	467
<i>Silicone gastrostomy stoma plugs</i>	388	Pre-procedural considerations	469
Definition	389	Post-procedural considerations	473
<i>Administration of enteral tube feed</i>	389	Complications	473
Pre-procedural considerations	391	Regional analgesia: local anaesthetic nerve blocks and infusions	473
Post-procedural considerations	391	Definition	473
Complications	391	Anatomy, physiology and related theory	474
<i>Enteral feeding tubes: administration of medication</i>	391	Evidence-based approaches	474
Evidence-based approaches	391	Clinical governance	475
Post-procedural considerations	393	Epidural analgesia	475
Parenteral nutrition	395	Definition	475
Definition	395	Anatomy and physiology	475
Related theory	395	Evidence-based approaches	475
Evidence-based approaches	395	Pre-procedural considerations	478
Post-procedural considerations	396	Post-procedural considerations	480
Complications	396	Complications	481
<i>References</i>	398	<i>Removal of an epidural catheter</i>	481
9 Patient comfort and supporting personal hygiene	403	Post-procedural considerations	483
<i>Overview</i>	404	Entonox administration	485
Personal hygiene	404	Definition	485
Definition	404	Related theory	485
Anatomy and physiology	404	Evidence-based approaches	485
Evidence-based approaches	404	Clinical governance	486
Pre-procedural considerations	408	Pre-procedural considerations	486
Sleep promotion in a hospitalized patient	416	Complications	489
Definition	416	Non-pharmacological methods of managing pain	489
Anatomy and physiology	416	<i>Psychological interventions</i>	489
Related theory	417	<i>Physical interventions</i>	490
Evidence-based practice	417	<i>References</i>	492
Patient environment	418	11 Symptom control and care towards the end of life	497
Related theory	418	<i>Overview</i>	498
Pre-procedural considerations	419	End-of-life care	498
Eye care	423	Definition	498
Definition	423	Anatomy and physiology	498
Anatomy and physiology	423	Related theory	499
Related theory	425	Evidence-based approaches	499
Evidence-based approaches	425	Clinical governance	503
Pre-procedural considerations	426	Pre-procedural considerations	505
Ear care	433	Symptom control	516
Definition	433	<i>Dyspnoea (shortness of breath)</i>	516
Anatomy and physiology	433	Definition	516
Related theory	434	Evidence-based approaches	516
Evidence-based approaches	434	Pre-procedural considerations	517
Mouth care	437	<i>Nausea and vomiting</i>	518
Definition	437	Definition	518
Anatomy and physiology	437	Anatomy and physiology	519
Related theory	438	Related theory	519
Evidence-based approaches	439	Evidence-based approaches	519
Clinical governance	444	<i>Insertion of a nasogastric drainage tube</i>	522
Pre-procedural considerations	444		
Post-procedural considerations	449		
<i>References</i>	450		

XII DETAILED TABLE OF CONTENTS

<i>Ascites</i>	522	<i>Chest drain: changing the bottle</i>	576
Definition	522	Evidence-based approaches	576
Anatomy and physiology	522	Post-procedural considerations	578
Related theory	522	Complications	579
Evidence-based approaches	523	<i>Chest drain removal</i>	579
Clinical governance	524	Evidence-based approaches	579
Pre-procedural considerations	524		
Post-procedural considerations	527	Tracheostomy and laryngectomy care	581
Complications	527	Definition	581
Terminal sedation	527	Anatomy and physiology	581
Definition	527	Related theory	581
Evidence-based approaches	527	Evidence-based approaches	582
Pre-procedural considerations	527	Clinical governance	583
		Pre-procedural considerations	583
Care after death (last offices)	528	<i>Tracheostomy: dressing and tube tape or tie change</i>	590
Definition	528	Evidence-based approaches	590
Related theory	528	<i>Tracheostomy: suctioning</i>	592
Evidence-based approaches	529	Evidence-based approaches	592
Clinical governance	529	Clinical governance	593
Pre-procedural considerations	529	Pre-procedural considerations	593
Post-procedural considerations	534	Complications	595
<i>References</i>	535	<i>Tracheostomy: changing an inner cannula</i>	596
		Evidence-based approaches	596
		Complications	597
		<i>Tracheostomy: changing a tube</i>	597
		Evidence-based approaches	597
		Pre-procedural considerations	598
		Complications	600
		<i>Tracheostomy: applying a speaking valve</i>	600
		Evidence-based approaches	600
		Pre-procedural considerations	601
		Complications	602
		<i>Tracheostomy: decannulation</i>	602
		Evidence-based approaches	602
		Pre-procedural considerations	603
		Complications	605
		<i>Tracheostomy: emergency care and recannulation</i>	605
		Evidence-based approaches	605
		Pre-procedural considerations	605
		<i>Laryngectomy</i>	608
		Related theory	608
		<i>Laryngectomy: humidification</i>	608
		Evidence-based approaches	608
		<i>Laryngectomy: communication</i>	608
		Evidence-based approaches	608
		<i>Laryngectomy: care and emergency management</i>	609
		Evidence-based approaches	609
		Basic life support	612
		Definition	612
		Anatomy and physiology	612
		Related theory	613
		Evidence-based approaches	615
		Clinical governance	615
		Pre-procedural considerations	616
		<i>Defibrillation</i>	619
		Evidence-based approaches	619
		Clinical governance	620
		Pre-procedural considerations	620
		Post-procedural considerations	625
		Complications	625
		Transfusion of blood and blood components	626
		Definition	626
		Anatomy and physiology	626
		Related theory	626
		Evidence-based approaches	627
		Clinical governance	632
		Pre-procedural considerations	637
		Post-procedural considerations	644
		Complications: general	645

12 Respiratory care, CPR and blood transfusion

Overview

Respiratory therapy

Definition	540
Anatomy and physiology	540
Evidence-based approaches	542

Oxygen therapy

Definition	543
Evidence-based approaches	543
Clinical governance	544
Pre-procedural considerations	544
Post-procedural considerations	550
Complications	552

High-flow oxygen via a nasal cannula

Definition	552
Evidence-based approaches	552

Humidification

Definition	555
Anatomy and physiology	555
Related theory	555
Evidence-based approaches	555
Pre-procedural considerations	555

Non-invasive ventilation

Definition	556
Related theory	556
Evidence-based approaches	557
Clinical governance	558
Pre-procedural considerations	558
Post-procedural considerations	564
Complications	564

Chest drain management

Definition	564
Anatomy and physiology	565
Related theory	565
<i>Chest drain: insertion</i>	566
Evidence-based approaches	566
Clinical governance	567
Pre-procedural considerations	567
Post-procedural considerations	572
<i>Chest drain: suction</i>	574
Evidence-based approaches	574

Complications: pulmonary
 Complications: minor transfusion reactions
 Complications: major transfusion reactions
 Complications: delayed transfusion reactions

References

Part Three

Supporting patients through the diagnostic process

13 Diagnostic tests

Overview

Diagnostic tests

Definition
 Related theory
 Evidence-based approaches
 Clinical governance
 Pre-procedural considerations
 Post-procedural considerations

Blood sampling

Definition
 Evidence-based approaches
 Pre-procedural considerations

Venepuncture: obtaining blood samples from a peripheral vein

Definition
 Anatomy and physiology
 Evidence-based approaches
 Clinical governance
 Pre-procedural considerations
 Post-procedural considerations
 Complications

Blood cultures

Definition
 Related theory
 Evidence-based approaches
 Clinical governance
 Pre-procedural considerations
 Post-procedural considerations

Cerebrospinal fluid obtained by lumbar puncture

Definition
 Anatomy and physiology
 Related theory
 Evidence-based approaches
 Post-procedural considerations
 Complications

Specimen collection: swab sampling

Definition
 Related theory
 Evidence-based approaches
 Clinical governance
 Pre-procedural considerations
 Post-procedural considerations

Specimen collection: urine sampling

Definition
 Related theory
 Evidence-based approaches
 Pre-procedural considerations
 Post-procedural considerations

Specimen collection: faecal sampling

Definition

647	Related theory	698
648	Evidence-based approaches	698
648	Pre-procedural considerations	698
648	Post-procedural considerations	698
650	Specimen collection: respiratory tract secretion sampling	700
	Definition	700
	Related theory	700
	Evidence-based approaches	700
	Clinical governance	701
	Post-procedural considerations	702
657	Specimen collection: pleural fluid	702
	Definition	702
	Anatomy and physiology	702
	Related theory	702
	Evidence-based approaches	702
659	Endoscopic investigations	702
660	Definition	702
660	<i>Gastroscopy</i>	702
660	Definition	702
661	Anatomy and physiology	703
662	Evidence-based approaches	703
663	Clinical governance	703
	Pre-procedural considerations	704
664	Post-procedural considerations	704
664	Complications	704
664	<i>Colonoscopy</i>	705
665	Definition	705
	Anatomy and physiology	705
667	Evidence-based approaches	705
667	Clinical governance	705
667	Pre-procedural considerations	705
668	Post-procedural considerations	706
669	Complications	706
669	<i>Cystoscopy</i>	706
676	Definition	706
676	Anatomy and physiology	706
	Evidence-based approaches	707
	Pre-procedural considerations	707
	Post-procedural considerations	707
	Complications	708
677	Liver biopsy	708
678	Definition	708
679	Anatomy and physiology	708
	Evidence-based approaches	708
679	Pre-procedural considerations	709
680	Post-procedural considerations	709
680	Complications	709
681	Radiological investigations: X-ray	710
682	Definition	710
682	Evidence-based approaches	710
	Clinical governance	710
	Pre-procedural considerations	710
683	Magnetic resonance imaging (MRI)	710
683	Definition	710
683	Evidence-based approaches	710
683	Pre-procedural considerations	711
692	Procedure	712
	Post-procedural considerations	712
692	Computed tomography (CT)	712
693	Definition	712
693	Evidence-based approaches	712
693	Pre-procedural considerations	713
698	Procedure	713
	Post-procedural considerations	713
698	<i>References</i>	714

14 Observations*Overview***Observations**

Definition

Evidence-based approaches

Clinical governance

Pre-procedural considerations

Pulse (heart rate)

Definition

Anatomy and physiology

Evidence-based approaches

Pre-procedural considerations

Post-procedural considerations

Electrocardiogram (ECG)

Definition

Anatomy and physiology

Evidence-based approaches

Clinical governance

Pre-procedural considerations

Post-procedural considerations

Blood pressure

Definition

Related theory

Evidence-based approaches

Pre-procedural considerations

Post-procedural considerations

Respiration and pulse oximetry

Definitions

Anatomy and physiology

Related theory

Evidence-based approaches

Pre-procedural considerations

Post-procedural considerations

Complications

Peak flow

Definition

Anatomy and physiology

Related theory

Evidence-based approaches

Clinical governance

Pre-procedural considerations

Post-procedural considerations

Temperature

Definition

Anatomy and physiology

Related theory

Evidence-based approaches

Pre-procedural considerations

Post-procedural considerations

Urinalysis

Definition

Anatomy and physiology

Evidence-based approaches

Pre-procedural considerations

Post-procedural considerations

Blood glucose

Definition

Anatomy and physiology

Evidence-based approaches

Clinical governance

Pre-procedural considerations

Post-procedural considerations

Neurological observations

Definition

Anatomy and physiology

719

720

720

720

720

722

723

723

723

723

727

728

730

730

730

730

731

733

733

737

738

738

738

740

742

745

745

745

746

748

750

754

757

757

757

757

757

758

758

758

758

761

762

762

762

763

764

765

767

768

768

768

770

772

773

773

773

774

776

777

778

781

781

781

781

Related theory

Evidence-based approaches

Pre-procedural considerations

Post-procedural considerations

References

782

788

788

796

796

Part Four**Supporting patients through treatment**

801

15 Medicines optimization: ensuring quality and safety**803***Overview*

804

Medicines management**804**

Definitions

804

Legislation relating to medicines

806

Supply of medicines

809

Key principles for administration of medicines

811

Medication errors: definition and causes

815

Clinical governance

815

Self-administration of medicines**817**

Definition

817

Related theory

817

Controlled drugs**817**

Definition

817

Clinical governance

817

Post-procedural considerations

825

Routes of administration**827***Enteral (oral) administration*

827

Definition

827

Related theory

828

Evidence-based approaches

829

Pre-procedural considerations

830

Topical administration

834

Definition

834

Related theory

834

Evidence-based approaches

834

Pre-procedural considerations

834

Post-procedural considerations

836

Complications

836

Transdermal (percutaneous) administration

836

Definition

836

Related theory

836

Evidence-based approaches

836

Pre-procedural considerations

836

Post-procedural considerations

838

Complications

838

Rectal administration

838

Definition

838

Related theory

838

Evidence-based approaches

838

Vaginal administration

838

Definition

838

Related theory

839

Evidence-based approaches

839

Pre-procedural considerations

839

Post-procedural considerations

840

Pulmonary administration

840

Definition

840

Related theory

840

Pre-procedural considerations

841

Post-procedural considerations

846

Complications	846	Infiltration and extravasation	915
<i>Ophthalmic administration</i>	846	Definitions	915
Definition	846	Related theory	915
Related theory	846	Evidence-based approaches	916
Evidence-based approaches	846	Clinical governance	918
Pre-procedural considerations	847	Pre-procedural considerations	919
Post-procedural considerations	850	Post-procedural considerations	924
<i>Nasal administration</i>	850	Complications	925
Definition	850	<i>References</i>	927
Related theory	850		
Evidence-based approaches	850	16 Perioperative care	937
Pre-procedural considerations	850	<i>Overview</i>	938
Post-procedural considerations	852	Pre-operative care	938
<i>Otic administration</i>	852	Definition	938
Definition	852	Related theory	938
Related theory	852	Evidence-based approaches	938
Evidence-based approaches	852	Clinical governance	951
Pre-procedural considerations	852	<i>Patient information and education</i>	952
Post-procedural considerations	854	Related theory	952
Parenteral administration (injections and infusions)	854	Evidence-based approaches	952
Definitions	854	<i>Consent</i>	952
Anatomy and physiology	854	Definition	952
Evidence-based approaches	854	Evidence-based approaches	952
Pre-procedural considerations	854	Clinical governance	953
Pre-procedural considerations	857	<i>Physical pre-operative preparation</i>	953
<i>Intra-arterial injections and infusions</i>	863	Definition	953
Definition	863	Related theory	953
<i>Intra-articular injections and infusions</i>	863	<i>Mechanical and pharmacological thromboembolism</i>	
Definition	863	<i>prophylaxis</i>	954
<i>Intrathecal administration of medication</i>	863	Definition	954
Definition	863	Related theory	954
<i>Intradermal injection</i>	863	<i>Pre-operative fasting</i>	961
Definition	863	Definition	961
Evidence-based approaches	863	Related theory	961
Pre-procedural considerations	863	<i>Skin preparation</i>	961
<i>Subcutaneous injection</i>	865	Definition	961
Definition	865	Related theory	962
Related theory	865	<i>Marking skin for surgery</i>	962
Evidence-based approaches	865	Definition	962
Pre-procedural considerations	866	Related theory	962
Post-procedural considerations	867	<i>Pre-operative pregnancy testing</i>	963
Complications	867	Related theory	963
<i>Subcutaneous infusion</i>	867	Clinical governance	964
Definition	867	<i>Prevention of toxic shock syndrome from tampon use</i>	964
Evidence-based approaches	867	Definition	964
Pre-procedural considerations	868	Related theory	964
Post-procedural considerations	873	<i>Latex sensitivity and allergy</i>	964
Complications	874	Related theory	964
<i>Intramuscular injections</i>	874	Clinical governance	965
Definition	874	<i>Pre-operative theatre checklist</i>	965
Evidence-based approaches	874	Related theory	965
Pre-procedural considerations	875		
<i>Intravenous injections and infusions</i>	877	Intraoperative care	973
Definition	877	Definition	973
Anatomy and physiology	877	<i>Anaesthesia</i>	973
Related theory	878	Definition	973
Evidence-based approaches	879	Evidence-based approaches	973
Clinical governance	880	Clinical governance	975
Pre-procedural considerations	882	Pre-procedural considerations	975
Post-procedural considerations	898	<i>Airway management</i>	976
Complications	898	Definition	976
Peripheral cannulas	898	Related theory	976
Definition	898	<i>Theatre</i>	977
Anatomy and physiology	898	Related theory	977
Evidence-based approaches	899	<i>Laparoscopic surgery</i>	978
Clinical governance	901	Definition	978
Pre-procedural considerations	902	Related theory	978
Post-procedural considerations	911	Pre-procedural considerations	978
Complications	914	Complications	979

Robotic surgery	979	Anatomy and physiology	1030
Related theory	979	Related theory	1032
Clinical governance	979	Evidence-based approaches	1042
<i>Endoscopy</i>	980	Pre-procedural considerations	1042
Definition	980	Post-procedural considerations	1043
Related theory	980	Pressure ulcers	1043
<i>Positioning the patient on the table</i>	982	Definition	1043
Evidence-based approaches	982	Anatomy and physiology	1044
<i>Infection prevention</i>	983	Evidence-based approaches	1044
Evidence-based approaches	983	Surgical wounds	1053
Clinical governance	983	Definition	1053
Pre-procedural considerations	983	Evidence-based approaches	1053
<i>Post-anaesthetic care unit (PACU)</i>	992	<i>Removal of sutures or clips</i>	1053
Definition	992	Evidence-based approaches	1053
Evidence-based approaches	992	Pre-procedural considerations	1053
Pre-procedural considerations	992	Post-procedural considerations	1055
Post-procedural considerations	998	Negative pressure wound therapy	1055
Complications	998	Definition	1055
Post-operative care	999	Evidence-based approaches	1055
Definition	999	Pre-procedural considerations	1056
Evidence-based approaches	999	Post-procedural considerations	1057
<i>Post-operative observations</i>	1000	<i>References</i>	1058
Evidence-based approaches	1000		
Clinical governance	1000		
<i>Haemodynamic instability</i>	1000		
Related theory	1000		
Evidence-based approaches	1000		
<i>Ineffective breathing pattern</i>	1001		
Related theory	1001		
Evidence-based approaches	1001		
<i>Fluid balance</i>	1001		
Definition	1001		
Evidence-based approaches	1001		
<i>Surgical drains</i>	1001		
Definition	1001		
Related theory	1002		
Evidence-based approaches	1002		
<i>Surgical wounds</i>	1017		
Definition	1017		
Related theory	1017		
Complications	1018		
<i>Urinary output and catheters</i>	1020		
Related theory	1020		
Evidence-based approaches	1020		
<i>Bowel function</i>	1020		
Related theory	1020		
Evidence-based approaches	1020		
<i>Nutrition</i>	1020		
Related theory	1020		
Evidence-based approaches	1021		
<i>Post-operative pain</i>	1021		
Evidence-based approaches	1021		
<i>Immobility</i>	1021		
Related theory	1021		
<i>Ongoing care on discharge</i>	1021		
Related theory	1021		
<i>References</i>	1022		
Part Five			
Looking after ourselves so we can support patients			1061
18 Self-care and wellbeing			1063
<i>Overview</i>			1064
Self-care and wellbeing			1064
Definitions			1064
Related theory			1064
Evidence-based approaches			1069
Mindfulness			1072
Definition			1072
Related theory			1072
Evidence-based approaches			1072
Pre-procedural considerations			1073
Problem solving			1073
Eating and drinking			1073
Related theory			1073
Evidence-based approaches			1074
Physical wellbeing and musculoskeletal health			1077
Related theory			1077
Evidence-based approaches			1077
Post-procedural considerations			1081
<i>References</i>			1081
Appendix: Standards of Proficiency for Registered Nurses			1085
<i>List of abbreviations</i>			1089
<i>Index</i>			1093
17 Wound management	1029		
<i>Overview</i>	1030		
Wounds	1030		
Definition	1030		

Foreword

It is my great pleasure as the Acting Chief Nurse of The Royal Marsden NHS Foundation Trust to introduce the tenth Student Edition of *The Royal Marsden Manual of Clinical Nursing Procedures*. As a Royal Marsden cancer trained nurse, a contributor and a clinical user of the manual for many years, I am honoured to have been asked to introduce this edition. The manual is internationally renowned and used by nurses across the world to ensure their practice is evidence based and effective.

It is essential that we are able to critically analyse our judgements in the light of current knowledge. For all of us working with patients and their families or significant others, there is an imperative to question and renew our practice using the many sources of knowledge available to us. In the busy world of clinical practice in a ward or unit, or in the community, it can be challenging to find time to search for the evidence and this is where the Student Edition of *The Royal Marsden Manual of Clinical Nursing Procedures* is a real practical help.

As in the ninth edition, reviewing the evidence or sources of knowledge has been made explicit, with each level of evidence graded. This grading provides the reader with an understanding of whether the reference comes from a randomized controlled trial, national or international guidance, or expert opinion. Nursing care in any setting is a combination of sensitive therapeutic relationships coupled with effective clinical care based on the best evidence that exists. Some areas of practice have attracted international research, such as cardiopulmonary resuscitation and infection prevention and control; other areas of practice have not attracted such robust research and therefore it is more of a challenge to ensure evidence-based care. Each time a new edition of the manual is prepared, we reflect on the gaps in research and knowledge; this provides the impetus to develop new concept analyses and further research studies. As student nurses, you will continue to build upon your skills and knowledge and become contributors to new evidence-based care and practice.

This new Student Edition incorporates a breadth of tools to support your learning, including objectives at the beginning of each chapter and a variety of learning activities that will either test your knowledge or prompt you to consider how you may

apply what you are learning in practice. In addition, the procedures were tried out by the student nurses at King's College London while on placement at the hospital to ensure they worked in practice.

As you look at the list of contributors to the manual, you will see that this edition has continued to be written by nurses who are experts and active in clinical practice. This has the double advantage of ensuring that this manual reflects the reality of practice and ensuring that nurses at The Royal Marsden NHS Foundation Trust are frequently reviewing the evidence and reflecting upon the care they provide.

A textbook devoted to improving and enhancing clinical practice needs to be alive to the clinical practitioner. You will see that this edition has continued the improvements made to the format in recent editions, including many more figures and photographs to make the manual more effective in clinical care.

As I commend this tenth Student Edition of *The Royal Marsden Manual of Clinical Nursing Procedures* to you, I am aware that it will be used in many different countries and settings. Having had the privilege of visiting and meeting nurses across the world, I know that there are more commonalities than differences between us. The common theme is, of course, the need to ensure that we as nurses provide personalized care that is sensitively planned and that it is based on the best available evidence. The Student Edition of *The Royal Marsden Manual of Clinical Nursing Procedures* is a wonderful resource for such evidence and I hope it will be widely used in all clinical settings across the world.

Finally, I would like to congratulate the editors, Sara Lister, Justine Hofland, Hayley Grafton and particularly Catherine Wilson, for their excellent work preparing this edition. I would also like to thank all the nurses and allied health professionals at The Royal Marsden Hospital who have worked so hard on this tenth edition.

Mr Andrew Dimech
Acting Chief Nurse
The Royal Marsden NHS Foundation Trust

Acknowledgements

Writing a textbook of such breadth and complexity as this is never the task of only a few. Over a hundred healthcare professionals who either work for or are associated with The Royal Marsden NHS Foundation Trust have contributed to updating the content of the tenth edition of *The Royal Marsden Manual of Clinical Nursing Procedures*. Our thanks go to them for their contribution, particularly for making the time to research and write outside their clinical roles.

Dr Catherine Wilson has taken the Professional Edition of *The Royal Marsden Manual of Clinical Nursing Procedures* and transformed it into an essential interactive learning resource for student nurses at any point in their training. The other three editors are grateful for the educational and nursing expertise that she has generously given to the production of this edition – it has been invaluable.

Our sincere thanks also go to Julia Hubbard, Professor of Clinical Health Education, and Dr Jane Blowers, Senior Lecturer and Professional Lead for Pre-registration Nursing, both at the School of Health Sciences, University of East Anglia, who advised and gave guidance on the content of the revised student nurse curriculum to reflect the Nursing and

Midwifery Council's *Future Nurse: Standards of Proficiency for Registered Nurses* (2018).

We acknowledge The Royal Marsden NHS Foundation Trust as an organization. The trust's ongoing commitment to excellence in every aspect of patient care is evident in its continued support of this project, which has now been going for over 30 years.

Our continued thanks go to our publisher, John Wiley & Sons, and specifically to Magenta Styles, who has continually championed the manual and guided us to produce a textbook that meets the needs of today's student nurses. Thanks also to Alison Nick, our project editor, and to Hazel Bird, copy editor, who both have been supportive, and whose intelligent and thoughtful attention to detail has been nothing short of phenomenal.

Finally, we acknowledge the role of our clinical colleagues, our student nurses, and our former patients and their families and friends, who have shaped our thinking and from whom we have learned so much.

Sara Lister, Justine Hofland and Hayley Grafton
with Catherine Wilson
Editors

List of contributors

Chapter 1 The context of nursing

Sara Lister RN, BSc (Hons), PGDAE, MSc, Dip, MA, MBACP
Head of Pastoral Care and Psychological Support

Chapter 2 Admissions and assessment

Lorraine Guinan RN, INP, ANP, BSc (Hons), MSc
Formerly Advanced Nurse Practitioner, Head and Neck

Victoria Ward RN, INP, ANP, BN (Hons), MSc
Transformation Project Manager

Elizabeth Hendry RN, BN (Hons), PG Dip
Formerly Ward Sister

Emma Masters RN, BSc, MSc
Formerly Advanced Nurse Practitioner, Teenage and Young Adults

Andrew Rayner RN, BSc (Hons), INP, PG Dip
Divisional Clinical Nurse Director, Clinical Services

Emma Thistlethwayte RN, BSc (Hons)
Transplant Clinical Nurse Specialist, Teenage and Young Adult

Manuela Trofor RN, MSc
Matron, Medical Day Unit

Charlotte Weston RN, BSc (Hons), MSc
Formerly Lead Nurse, Teenage and Young Adults

Claire White RN, BSc (Hons)
Acting Matron, Cancer Services

Chapter 3 Discharge care and planning

Caroline Watts RN, BSc (Hons), PG Dip, MSc, INP, ANP
Nurse Lead for Transformation

Emma Collard PG Cert, BSc (Hons), Dip HE
Matron, Palliative Care

Connie Lewis CQSW
Discharge Lead

Chapter 4 Infection prevention and control

Pat Cattini RN, MSc
Lead Nurse and Deputy Director, Infection Prevention and Control

Martin Kiernan RN, ENB 329, MPH
Visiting Clinical Fellow, Richard Wells Research Centre, University of West London, and Director of Clinical Research and Education, GAMA Healthcare

Chapter 5 Communication, psychological wellbeing and safeguarding

Justin Grayer BSc, PG Dip, DCLinPsych
Consultant Clinical Psychologist and Lead for Adult Psychological Support Team

Jennie Baxter BSc (Hons), MSc, CPsychol
Counselling Psychologist

Lauren Blackburn BSc
Occupational Therapist

Jill Cooper MBE, MSc, Dip COT
Formerly Head Occupational Therapist

Edwina Curtis BA, BSW
Head of Adult Safeguarding

Lisa Dvorjetz BSc (Hons), DPsych
Counselling Psychologist

Linda Finn RSCN, RHV
Named Nurse Children and Adult Safeguarding

Danielle Gaynor DCLinPsych
Family Specialty Clinical Psychologist

Beverley Henderson RN, BSc (Hons), PG Dip
Clinical Nurse Specialist, Psychological Support

Charmaine Jagger BSc (Hons)
Highly Specialist Speech and Language Therapist

Lucy Keating RMN BMedsci
Psychiatric Liaison Team Manager, Central and North West London NHS Foundation Trust

Lauren Leigh-Doyle BSc (Hons)
Highly Specialist Speech and Language Therapist

Sara Lister RN, BSc (Hons), PGDAE, MSc, Dip, MA, MBACP
Head of Pastoral Care and Psychological Support

Raj Mathiah RN, BSc
Clinical Nurse Specialist Liaison, Psychiatry and Adult Psychological Support

Asim Mohammed MBBS, Psych Med, Dip HE
Locum Consultant Psychiatrist, Adult Psychological Support Service

Chapter 6 Elimination

Rebecca Martin MSc, BSc (Hons), RN, INP
Urology Lead Nurse and Advanced Nurse Practitioner

Gemma Allen BSc (Hons), PG Cert, PG Dip
Practice Educator in Critical Care

Katy Hardy BSc (Hons), RN, NIP
Colorectal Clinical Nurse Specialist

Claire McNally RN, BSC (Hons)
Uro-oncology Clinical Nurse Specialist

XX LIST OF CONTRIBUTORS

Jacqueline McPhail RN, PG Cert, Dip M, ENB 338
Stoma Care Clinical Nurse Specialist

Bradley Russell MSc, BSc (Hons), RN, SCP
Urology Surgical Care Practitioner

Laura Theodossy PG Dip, RN
Lecturer Practitioner

Chapter 7 Moving and positioning

Carolyn Moore MCSP
Formerly Superintendent Physiotherapist

Jill Cooper MBE, MSc, Dip COT
Formerly Head Occupational Therapist

Siobhan Cowan-Dickie MCSP, BSc (Hons), MSc
Clinical Specialist Physiotherapist Living with and Beyond Cancer

Lucy Dean BSc (Hons), MCSP
Physiotherapist, Sarcoma Lead

Joanne Jethwa BSc (Hons), MCSP
Specialist Physiotherapist in Neuro-oncology and Complex Rehabilitation

Jessica Whibley BSc (Hons), MCSP
Physiotherapist Respiratory Lead

Leanne Williams BSc (Hons), MSc, MCSP
Clinical Specialist Physiotherapist, Neuro-oncology and Complex Rehabilitation

Chapter 8 Nutrition and fluid balance

Clare Shaw BSc (Hons), PG Dip, PhD
Consultant Dietitian

Laura Askins BSc, PG Dip
Formerly Senior Specialist Dietitian

Grainne Brady BSc (Hons), MRes
Clinical Lead Speech and Language Therapist

Lucy Eldridge BSc (Hons), MSc
Head of Nutrition and Dietetics

Olivia Kate Smith BSc (Hons)
Formerly Senior Specialist Dietitian

Laura Theodossy PG Dip, RN
Lecturer Practitioner

Heather Thexton RN, BSc (Hons)
Senior Staff Nurse, Critical Care Unit

Chapter 9 Patient comfort and supporting personal hygiene

Suzanna Argenio-Haines RN, BA (Hons), Dip
Practice Educator, Clinical Education Team

Helena Aparecida de Rezende RN, PG Cert, MSc
Formerly Practice Educator, Clinical Education Team

Rhiannon Llewelyn, RN, BN (Hons)
Staff Nurse, Critical Care Unit

Chapter 10 Pain assessment and management

Suzanne Chapman RN, BSc (Hons), MSc
Clinical Nurse Specialist, Pain Management

Farzana Carvalho RN, BSc (Hons), MSc
Clinical Nurse Specialist, Pain Management

Caroline Dinen RN, BSc (Hons)
Clinical Nurse Specialist, Pain Management

Chapter 11 Symptom control and care towards the end of life

Anna-Marie Stevens RN, DClinP, MSc, BSc (Hons), Certificate
in Oncology
Nurse Consultant, Palliative Care

Anne Doerr BA
Chaplain

Alistair McCulloch MA
Lead Chaplain

Pedro Mendes BSc, RN
Lead Nurse, Interventional Radiology

Jodie Rawlings RN, BN
Formerly Senior Staff Nurse, Critical Care Unit

Laura Theodossy PG Dip, RN
Lecturer Practitioner

Chapter 12 Respiratory care, CPR and blood transfusion

Louise Davison Dip HE, BN, RN
Matron, Acute Oncology Service, Clinical Assessment Unit
and Royal Marsden Macmillan Hotline

Wendy McSporran RN, BSc (Hons), PG Dip
Advanced Transfusion Practitioner

Grainne Brady BSc (Hons), MRes
Clinical Lead Speech and Language Therapist

Catherine Forsythe Dip HE, BSc (Hons), RN
Practice Educator, Critical Care Unit

Olivia Ratcliffe RN, BSc, MSc
Formerly Lead Nurse, Sepsis and Acute Kidney Injury

Chapter 13 Diagnostic tests

Andrew Dimech RN, BN, MSc, Dip
Deputy Chief Nurse

Andreia Fernandes RN, BSc, MSc
Clinical Nurse Specialist Gynaecology Oncology

Firza Gronthoud MD, MRCPATH
Formerly Consultant Microbiologist

Lilian Li BSc (Hons), MSc, IPresc
Lead Antimicrobial Pharmacist

Barbara Witt RN
Nurse Phlebotomist

Chapter 14 Observations

Filipe Carvalho RN, BSc (Hons), PG Dip, MSc, INP
Advanced Nurse Practitioner in Colorectal Surgery

Emma-Claire Breen RN, BSc (Hons)
Senior Staff Nurse and Clinical Practice Facilitator, Critical
Care Unit

Zoë Bullock RN, BSc (Hons), PG Dip, PG Cert
Formerly Senior Staff Nurse and Practice Education Facilitator,
Critical Care Unit

Sonya Hussein RN, BSc (Hons)
Senior Staff Nurse and Clinical Practice Facilitator, Critical
Care Unit

Elodie Malard RN
Sister, Critical Care Unit

Yara Osman De Oliveira RN, BSc (Hons)
Sister, Critical Care Unit

Marie Parsons RN, BSc (Hons), PG Dip
Senior Staff Nurse and Clinical Practice Facilitator, Critical
Care Unit

Heather Thexton RN, BSc (Hons)
Senior Staff Nurse, Critical Care Unit

Chapter 15 Medicines optimization: ensuring quality and safety

Lisa Barrott RN, BSc (Hons), MSc
Formerly Chemotherapy Nurse Consultant

Emma Foreman MRPharmS, MSc, IPresc, BSc (Hons)
Consultant Pharmacist

Jatinder Harchowal MRPharmS, MSc, BPharm (Hons)
Chief Pharmacist and Clinical Director

Kulpna Daya Reg Pharm Tech, MSc, Dip
Pharmacy Operation Manager and Education & Development
Technician

Lisa Dougherty OBE, RN, MSc, DClinP
Formerly editor of *The Royal Marsden Manual of Clinical Nursing
Procedures* and Nurse Consultant

Lorraine Hyde RN, ONC, BSc (Hons)
Matron/Lead Nurse, Medical Day Unit

Gema Munoz-Mozas RN, ONC, BSc (Hons), MSc
Lead Vascular Access Nurse

Hannah Overland RN, BSc (Hons), MSc
Matron/Lead Nurse, Medical Day Unit

Suraya Quadir MRPharmS, MBA, MSc, BPharm (Hons)
Lead Pharmacist, Governance and Education & Training/
Medication Safety Officer

Chapter 16 Perioperative care

Justine Hofland RN, BSc (Hons), ANP, MSc,
PG Dip, ILM Level 5
Formerly Divisional Clinical Nurse Director, Cancer Services

Hayley Grafton RN, BSc (Hons), CPPD ITU
Chief Nursing Information Officer

Pascale Gruber MBBS, MSc, FRCA, MRCP, FFICM, EDIC
Consultant in Anaesthesia and Intensive Care Medicine, and
Clinical Director, Surgery and Inpatients

Tina Kitcher RN, Dip
Practice Educator and Theatre Sister

Lian Lee RN, BSc, MSc, AdvDip OT Nurg
Matron, Theatres and Endoscopy

Chapter 17 Wound management

Jenni MacDonald BSc (Hons), RN, BSc TVN, MSc, PGCert
Formerly Lead Nurse, Tissue Viability and Harm Free Care

Kumal Rajpaul MSc, BSc (Hons), Dip HE, RN
Assistant Director of Nursing and Patient Experience, Hounslow
and Richmond Community NHS Trust

Chapter 18 Self-care and wellbeing

Sara Lister RN, BSc (Hons), PGDAE, MSc, Dip, MA, MBACP
Head of Pastoral Care and Psychological Support

Lorraine Bishop MSc, Dip, Dip MBCT
Formerly Staff Counsellor and Psychotherapist

Lucy Eldridge BSc (Hons), MSc
Dietetic Team Leader

Jayne Ellis RN, BSc (Hons)
Managing Director, EF Training

Tracey Shepherd MSc, MCSP, SRP
Moving and Handling Practitioner, Health Ergonomics
Consultancy Ltd

Sara Wright DCR(r), BSc (Hons)
Freelance Moving and Handling Practitioner

Additional contributors

The authors and John Wiley & Sons are hugely grateful to the following staff and students for their help in the development of this edition.

The Nursing and Midwifery Clinical Practice Council at Oxford University Trust were very generous with their time and feedback on the content of the ninth edition of *The Royal Marsden Manual of Clinical Nursing Procedures*. This informed the changes and additions we made for the tenth edition as well as confirming for us what should remain. We would like to extend a large thank-you to them.

We would like to thank the following student nurses and nursing staff who helped to 'test' the revised procedures:

Student nurses (King's College London)

Ade Ajayi
Ciara Doogan
Rebecca Ellis
Jodie Fowler
Terrie Gemal
Rianna Norman
Filipa Santos
Amber Simon

Practice educators (Royal Marsden NHS Foundation Trust)

Sue Argenio-Haines
Catherine Forsythe
Rathai Kanagendram

For the first time, the online version will include videos of some of the procedures. Hayley Grafton led the production of these videos with assistance from the following staff at The Royal Marsden NHS Foundation Trust:

Jackson Young from the Marketing and Communications Team

And the following clinical staff:

Sue Argenio-Haines
Zoë Bullock
Lala Dizon
Catherine Forsythe
Ali Hill
Sara Lister
Jenni Macdonald

XXII LIST OF CONTRIBUTORS

Rebecca Martin
Lorraine McHugh, who was a fabulous volunteer patient
Clare McNally
Pedro Mendes
Amber Simon (student nurse)

Short Form Film were a great company to work with and we would like to thank them for their flexibility and patience.

Finally, special mention and sincere thanks to Julia Hubbard, Professor of Clinical Health Education, and Dr Jane Blowers, Senior Lecturer and Professional Lead for Pre-registration Nursing, both at the School of Health Sciences, University of East Anglia, who advised and gave guidance on the content of the revised student nurse curriculum to reflect the Nursing and Midwifery Council's *Future Nurse: Standards of Proficiency for Registered Nurses* (2018).

Quick reference to the procedure guidelines

For more information on personal protective equipment (specified as the first item in the procedure guideline equipment lists where relevant), see page 92 in Chapter 4: Infection prevention and control.

Abdominal examination	41	Entonox administration	487
Abdominal paracentesis	525	Epidural exit site dressing change	480
Application of a two-piece cervical collar	323	Epidural sensory blockade: assessment	478
Applying and removing a disposable apron	96	Extravasation management: peripheral cannula	922
Artificial eye care: insertion	429	Eye irrigation	428
Artificial eye care: removal	430	Eye swabbing	427
Aseptic technique example: changing a wound dressing	108	Faecal sampling	699
Assisting a patient to walk	296	Feeding an adult patient	369
Basic life support	622	Fluid input: measurement	350
Bedbathing a patient	409	Fluid output: monitoring/measuring output from	
Blood component administration	641	bowels	353
Blood components: collection and delivery to the clinical area	639	Fluid output: monitoring/measuring output from drains	352
Blood cultures: peripheral (winged device collection method)	678	Fluid output: monitoring/measuring output from gastric outlets, nasogastric tubes or gastrostomy	353
Blood glucose monitoring	778	Fluid output: monitoring/measuring output from stoma sites	354
Blood pressure measurement (manual)	743	Fluid output: monitoring/measuring output if the patient is catheterized	350
Blood product request	639	Fluid output: monitoring/measuring output if the patient is not catheterized	351
Cardiovascular examination	37	Hand decontamination using an alcohol-based handrub	85
Care after death	530	Hand washing	84
Care of a patient who is vomiting	521	Handover in the post-anaesthetic care unit (PACU):	
Caring for the patient in the anaesthetic room	976	scrub nurse or operating department practitioner to recovery practitioner	994
Carrying out clinical procedures in a seated posture (e.g. cannulation)	1080	High-flow oxygen therapy	553
Changing the balloon water and checking the volume of a balloon gastrostomy	386	Insertion of a faecal management system	246
Chest drain: assisting insertion	570	Insertion of a nasogastric drainage tube	254
Chest drain: changing the bottle	576	Insertion of an oropharyngeal airway	621
Chest drain: removal	579	Insertion of a silicone gastrostomy stoma plug	388
Chest drainage: suction	575	Irrigation of the external auditory canal using an electronic irrigator	435
Cleaning a hard surface without recontamination	119	Jejunostomy feeding tube care including dressing change	387
Clip removal	1054	Laryngectomy care	610
Closed drainage systems: changing a vacuum bottle	1005	Log rolling a patient with suspected or confirmed cervical spinal instability (above T6)	325
Commencing bladder irrigation	233	Log rolling a patient with suspected or confirmed thoracolumbar spinal instability (T7 and below)	326
Commode use: assisting a patient	211	Lumbar puncture: care of the patient post-procedure	681
Contact lens removal: hard lenses	430	Making an occupied bed	421
Contact lens removal: soft lenses	431	Making an unoccupied bed	419
Continent urinary diversion stoma: self-catheterization	242	Management of dyspnoea (breathlessness)	517
Continuous positive airway pressure (CPAP)	561	Measuring and applying antiembolic stockings	959
Digital rectal examination	261	Measuring the weight and height of a patient	362
Digital removal of faeces	263	Medication: administration by inhalation using a metered dose or dry powder inhaler	843
Donning a sterile gown and gloves: closed technique	103	Medication: administration by inhalation using a nebulizer	844
Donning sterile gloves: open technique	100	Medication: continuous infusion of intravenous drugs	889
Drainage systems: changing the dressing around the drain site for both open and closed drains	1004	Medication: controlled drug administration	825
Dressing a wound	1042	Medication: ear drop administration	852
Early mobilization of a patient with spinal considerations	328	Medication: eye administration	849
Electrocardiogram (ECG)	735	Medication: injection (bolus or push) of intravenous drugs	894
Enema administration	257	Medication: injection administration	862
Enteral feeding tubes: administration of feed using an enteral feeding pump	389		
Enteral feeding tubes: administration of medication	392		
Enteral feeding tubes: unblocking	394		

XXIV QUICK REFERENCE TO THE PROCEDURE GUIDELINES

Medication: intermittent infusion of intravenous drugs	891	Removal of a nasogastric feeding tube	381
Medication: intradermal injection	863	Removal of T-fasteners	385
Medication: intramuscular injection	876	Respiratory assessment and pulse oximetry	755
Medication: multidose vial: powder preparation using a venting needle	859	Respiratory examination	32
Medication: multidose vial: powder preparation using the equilibrium method	861	Safe disposal of foul, infected or infested linen	124
Medication: nasal drop administration	851	Safe management of patients in the post-operative care unit (PACU)	994
Medication: oral drug administration	832	Shaving the face: dry electric shaver	415
Medication: single-dose ampoule: powder preparation	858	Shaving the face: wet shave	414
Medication: single-dose ampoule: solution preparation	857	Slipper bedpan use: assisting a patient	209
Medication: subcutaneous administration using a CME		Source isolation: entering an isolation room	113
Medical T34 syringe pump (previously McKinley)	870	Source isolation: leaving an isolation room	114
Medication: subcutaneous infusion of fluids	869	Source isolation: preparing an isolation room	112
Medication: subcutaneous injection	866	Source isolation: transporting infected patients outside a source isolation area	115
Medication: topical applications	835	Sputum sampling	701
Medication: transdermal applications	837	Stoma bag change	270
Medication: vaginal administration	839	Suppository administration	259
Mouth care	446	Surgical scrub technique using an alcohol-based handrub	89
Mouth care for a patient with dentures	448	Surgical scrub technique using soap and water	87
Moving a patient from sitting to standing: assisting the patient	293	Suture removal	1053
Nasogastric intubation with tubes using an internal guidewire or stylet	376	Swab sampling: ear	684
Negative pressure wound therapy	1056	Swab sampling: eye	685
Nephrostomy tube: weekly dressing and bag change and sample collection	237	Swab sampling: nose	685
Neurological observations and assessment	793	Swab sampling: penis	687
Obtaining a clean-catch urine sample from an ileal conduit	271	Swab sampling: rectum	687
Operating theatre procedure: maintaining the safety of a patient during surgery	989	Swab sampling: skin	688
Oxygen therapy	547	Swab sampling: throat	689
Pain assessment	466	Swab sampling: vagina	690
Peak flow reading using a manual peak flow meter	760	Swab sampling: wound	691
Penile sheath application	213	Terminal sedation	527
Percutaneous endoscopically placed gastrostomy (PEG) tube ongoing care	382	Tracheostomy: changing a tube	598
Peripheral cannula insertion	905	Tracheostomy: changing an inner cannula	596
Positioning a neurological patient with tonal problems in a chair	317	Tracheostomy: decannulation	603
Positioning a neurological patient with tonal problems in bed	314	Tracheostomy: dressing and tube tape/tie change	591
Positioning a patient: in a chair or wheelchair	295	Tracheostomy: emergency management	605
Positioning a patient: lying down to sitting up	292	Tracheostomy: insertion and removal of a speaking valve	601
Positioning a patient: side-lying	291	Tracheostomy: suctioning a patient (single-use suction catheter)	594
Positioning a patient: sitting up in bed	290	Tympanic temperature measurement	766
Positioning a patient: supine	289	Urinalysis: reagent strip	772
Positioning a patient with an amputation	333	Urinary catheter bag: emptying	228
Positioning an unconscious patient or a patient with an artificial airway in side-lying	301	Urinary catheter removal	229
Positioning an unconscious patient or a patient with an artificial airway in supine	300	Urinary catheterization: female	221
Pre-operative care: checking that the patient is fully prepared for surgery	971	Urinary catheterization: intermittent self-catheterization	
Protective isolation: entering an isolation room	117	patient guidance: male	226
Protective isolation: preparing an isolation room	116	Urinary catheterization: intermittent self-catheterization	
Pulse measurement	728	patient guidance: female	227
Putting on and removing a disposable mask or respirator	98	Urinary catheterization: male	219
Putting on and removing non-sterile gloves	93	Urine sampling: 24-hour urine collection	697
Putting on or removing goggles or a face-shield	99	Urine sampling: catheter specimen of urine	695
Radiologically inserted gastrostomy (RIG) tube care	384	Urine sampling: midstream specimen of urine: female	694
Removal of a nasogastric drainage tube	255	Urine sampling: midstream specimen of urine: male	693
		Urine sampling: sampling from an ileal conduit	696
		Venepuncture	671
		Washing a patient's hair in bed	412
		Working at low or floor level	1079
		Working in a seated position: office work	1080
		Working with a patient lying in a bed or on another raised supportive surface	1079
		Wound drain removal: closed drainage system	1007
		Wound drain shortening for closed drainage systems	1011
		Wound drain shortening for open drainage systems	1009

How to use your manual

Features contained within your manual

The **overview pages** give summaries of the topics covered in each part.

Part Two

Supporting patients with human functioning

5 Communication, psychological wellbeing and safeguarding 133	9 Patient comfort and supporting personal hygiene 405
6 Elimination 205	10 Pain assessment and management 459
7 Moving and positioning 285	11 Symptom control and care towards the end of life 499
8 Nutrition and fluid balance 341	12 Respiratory care, CPR and blood transfusion 541



Elimination

Rebecca Martin with Gemma Allen, Katy Hardy, Claire McNally, Jacqueline McPhail, Bradley Russell and Laura Theodossy

6

CATHETER
NEPHROSTOMY
SUPPOSITORY
ELIMINATION
NASOGASTRIC
DIARRHOEA
URINARY
ENEMA
BEDPAN
COMMODE
BLADDER
STOMA
FAECAL

After reading this chapter and undertaking the learning activities within it, you should:

- 1 Assess the elimination needs of patients
- 2 Understand how to maintain patients' safety and dignity when supporting and assisting them with their elimination needs
- 3 Identify appropriate strategies to help patients manage altered urinary and gastrointestinal elimination
- 4 Know some supportive interventions and strategies to promote patient comfort following an episode of disordered elimination

Key terms are highlighted in the text in pink. Glossary definitions of these terms can be found on the companion site of this student edition: www.royalmarstonmanual.com/student10e.

Procedure guidelines

6.1 Slipper bedpan use: assisting a patient	6.8 Urinary catheter bag: emptying
6.2 Commode use: assisting a patient	6.9 Urinary catheter removal
6.3 Penile sheath application	6.10 Commencing bladder irrigation
6.4 Urinary catheterization: male	6.11 Nephrostomy tube: weekly dressing and bag change and sample collection
6.5 Urinary catheterization: female	6.12 Continent urinary diversion stoma: self-catheterization
6.6 Urinary catheterization: intermittent self-catheterization patient guidance: male	6.13 Insertion of a faecal management system
6.7 Urinary catheterization: intermittent self-catheterization patient guidance: female	6.14 Insertion of a nasogastric drainage tube
	6.15 Removal of a nasogastric drainage tube

The Royal Marsden Manual of Clinical Nursing Procedures: Student Edition, Tenth Edition, Edited by Sara Lister, Justine Hofland and Hayley Grafton with Catherine Wilson.
© 2021 The Royal Marsden NHS Foundation Trust. Published 2021 by John Wiley & Sons Ltd.
Student companion website: www.royalmarstonmanual.com/student10e
Instructor companion website: www.royalmarstonmanual.com/instructor10e

The *Standards of Proficiency for Registered Nurses* (NMC 2019) list the knowledge, skills and behaviours that every nurse must have. Each chapter relates to different proficiencies, so the relevant ones are listed in the **being an accountable professional** sections.

THE ROYAL MARSDEN MANUAL OF CLINICAL NURSING PROCEDURES

Being an accountable professional

At the point of registration, the nurse will:

2. Use evidence-based, best practice approaches to undertake the following procedures:
 - 2.1 take, record and interpret vital signs manually and via technological devices
 - 2.3 set up and manage routine electrocardiogram (ECG) investigations and interpret normal and commonly encountered abnormal traces
 - 2.5 manage and interpret cardiac monitors, infusion pumps, blood glucose monitors and other monitoring devices

- 2.7 undertake a whole body systems assessment including respiratory, circulatory, neurological, musculoskeletal, cardiovascular and skin status
- 2.10 measure and interpret blood glucose levels
- 2.12 undertake, respond to and interpret neurological observations and assessments
- 2.13 identify and respond to signs of deterioration and sepsis

Future Nurse: Standards of Proficiency for Registered Nurses (NMC 2019)

Overview

This chapter discusses the following observations: pulse, electrocardiogram (ECG), blood pressure, respiration, pulse oximetry, peak flow, temperature, urinalysis, blood glucose and neurological observations. For each observation discussed, the chapter provides a definition, a rationale, a summary of governance and professional issues, a procedure guideline and a guide to problem solving.

Observations

DEFINITION

The term 'observation' refers to the physical assessment of a patient, which in addition to vital signs and specialized assessments (such as neurological observations) includes a review of wounds, intravenous therapy, wound drains and pain (Adam et al. 2017, Spriggins and Chambers 2017) (note that the latter topics are discussed elsewhere in this manual). The term 'vital signs' is traditionally used in the context of the collection of a cluster of physical measurements, such as pulse, respiration rate, temperature, blood pressure, pulse oximetry and more recently level of consciousness (Jarvis et al. 2015).

EVIDENCE-BASED APPROACHES

Rationale

The taking of patient observations forms a fundamental part of the assessment process (Churpek et al. 2017; see also Chapter 2: Admissions and assessment). The findings and results will help to determine the level of care a patient requires and to establish whether an intervention is needed to prevent the patient deteriorating (Uppanaisakorn et al. 2018).

Indications

Observations are usually undertaken:

- to act as a baseline and to help determine a patient's usual range (Bickley 2016)
- to assist in recognizing whether a patient's condition is deteriorating or improving (Keep et al. 2016)
- to assess the effectiveness of interventions (Hodgson et al. 2017).

Principles of care

Adult patients in acute hospital settings should have:

- observations taken when they are admitted or initially assessed (including on transfer from one ward or area to another)

- a clearly documented plan that identifies which observations should be taken and how frequently, taking into consideration the diagnosis, the patient's treatment plan and any co-morbidities
- observations taken at least once every 12 hours, unless specified otherwise by senior staff or the patient's medical team (NICE 2018).

National Early Warning Score and standardizing communication

Caring for acutely unwell patients can be daunting and challenging; however, early detection of changes in observations helps to identify patients who are at risk of clinical deterioration. Early detection may provide an opportunity to intervene and avoid further deterioration (Adam et al. 2017, Tait et al. 2015). Various early warning scores have been created and used across UK hospitals to assist with the identification of critically ill patients and improve patient safety (Farrinden et al. 2017). However, in 2012, and with the view of facilitating a standardized approach, the Royal College of Physicians (RCP) introduced a physiological scoring system called the National Early Warning Score (NEWS). This simple scoring system relies on healthcare staff performing patient observations (respiratory rate, heart rate, blood pressure, peripheral oxygen saturation, temperature and fluid balance) and informing medical staff and/or critical outreach teams of deviations from the norm (Keep et al. 2016). The total score helps to identify not just patients who are at risk and require immediate assessment but also those who are being safely managed, supporting clinical decision making and improving patient outcomes (NICE 2018).

More recently, in December 2017, the RCP updated its 2012 NEWS and published NEWS2 (Figure 14.1) with the aim of improving the recognition of clinical deterioration in adults due to sepsis and hypercapnic respiratory failure (NICE 2018). The updated version now includes a new oxygen saturation scoring system for such patients and recognizes the patient's level of consciousness as an important sign of clinical deterioration (RCP 2017a). A final score of 5 or more identifies patients who require further assessment and early intervention, and this can help to prevent further clinical deterioration and potentially death (NICE 2018). Once a patient 'triggers', they are usually referred to critical care outreach teams or medical emergency teams, who are available in most hospitals to provide support to staff, assess the patient, initiate any required interventions, and alert or assist in critical care admissions (NICE 2018, RCP 2017a).

The use of NEWS has been shown to help nurses improve and focus their recognition of patients who may need further support and monitoring; therefore, it is important that time is taken to accurately calculate the score and act accordingly (Adam et al.

Chapters 2–17 each contain multiple **learning activities**:

- **Learning into practice** asks you to consider issues within your practice environment.
- **Case studies** provide learning around a particular patient case.
- **Clinical applications** ask you to consider how you would apply your knowledge to a clinical situation.
- **Stretch activities** are primarily for more senior students. These activities include more nuanced, advanced issues to consider, learn more about and reflect upon.



Learning Activity 2.1

Learning into practice

- 1 Is there a model of nursing or care underlying the format and structure for patient admissions in your clinical area? What is it?
- 2 Critically appraise how it affects the assessment process.
- 3 Reflect on your daily practice and identify whether you are carrying out the types of assessment identified in Box 2.2.
- 4 Consider the rationales for and the pros and cons of these different types of assessment.

Learning Activity 2.5 Case study

What would you expect to find in relation to the following issues, on initial examination of Angus McKay (see Learning Activity 2.3)? Remember that Angus has presented with shortness of breath and a productive cough. Initial investigations suggest he has pneumonia.

- 1 Respiratory rate
- 2 Respiratory rhythm
- 3 Respiratory effort
- 4 Cyanosis
- 5 Sputum

See the answers on the companion site of this student edition: www.royalmarsdenmanual.com/student10e.



Learning Activity 2.4

Clinical application

Try to observe at least five different people carrying out clinical assessments of patients in your clinical area. As you do this:

- Note their questioning technique, and observe and listen to the patients' responses.
- Ask the professionals to explain their thinking and rationale for their history-taking and clinical-assessment practice.
- Discuss with them their impressions, decisions and diagnoses arising from their clinical assessment.

Then write a reflective account of one observed assessment, identifying your learning and what skills or techniques you would adopt as a result of the observation and use in the future.

✓ Stretch Activity

Further your thinking and learning about clinical practice

Identify which tools are in use to support nursing assessment of patients on admission to your clinical area (e.g. nutrition assessment tool, pressure ulcer risk tool, frailty tool, oral health tool, falls assessment tool, or bowel or stool assessment tool).

- 1 Ask your tutor or supervisor whether alternative assessment tools have been developed (e.g. for pressure ulcers, consider the Waterlow Score, the Braden Risk Assessment tool or PURPOSE-T).
- 2 Source a small range of tools related to a specific nursing assessment.
- 3 Find relevant literature about the tools' development and critically read published evidence about their effectiveness.
- 4 Critically evaluate and compare the tools, identifying the advantages and disadvantages of each.
- 5 Discuss your findings with your tutor and supervisor.

Your manual is full of **photographs, illustrations and tables.**

THE ROYAL MARSDEN MANUAL OF CLINICAL NURSING PROCEDURES

30

Learning Activity 2.5 Case study

What would you expect to find in relation to the following issues, on initial examination of Angus McKay (see Learning Activity 2.3)? Remember that Angus has presented with shortness of breath and a productive cough. Initial investigations suggest he has pneumonia.

- 1 Respiratory rate
- 2 Respiratory rhythm
- 3 Respiratory effort
- 4 Cyanosis
- 5 Sputum

See the answers on the companion site of this student edition: www.royalmarsdenmanual.com/student10e.

Chest deformities

Some examples of chest deformities are barrel chest, pigeon chest, funnel chest and flail chest (Table 2.4). Also check for the presence of any scars that could be indicative of previous lung surgery, radiotherapy tattoos or previous chest drains (Moore 2007).

Legs

Inspect the legs for any evidence of pulmonary oedema, calf swelling (indicative of a deep vein thrombosis) or erythema nodosum (which can be seen in tuberculosis, sarcoidosis or streptococcal throat infections) (Fisher and Potter 2017).

Palpation

Lymph nodes

Part of palpation when examining the respiratory system is to examine the lymph nodes in the neck. Patients often present with a lump or enlarged lymph nodes (lymphadenopathy), which can be an important sign of infection or malignancy (Dover et al. 2018). To do this, stand behind the patient and examine both sides of the neck at the same time. Use your middle and index fingers to softly palpate in circular movements the lymph nodes in the positions illustrated in Figure 2.8.

Chest expansion

To assess for chest expansion and symmetry, adopt the position shown in Figure 2.9 and ask the patient to take a deep breath in. You should be able to see your thumbs move an equal distance apart. Reduced expansion may be indicative of fibrosis, consolidation, effusion or pneumothorax (Fisher and Potter 2017).

Tactile fremitus

Fremitus is the palpable vibration of the patient's voice through the chest wall (Bickley and Seidel 2017). See Figures 2.10 and 2.11 for the appropriate locations to feel for fremitus. Compare the two sides of the chest, using the ball or ulnar surface of your hand (Bickley and Seidel 2017). The vibrations felt should be symmetrical and will decrease as you work down the chest wall. Fremitus is usually decreased or absent over the precordium. Asymmetry could indicate:

- consolidation
- emphysema
- pneumothorax
- pleural effusion (Rushforth 2009).

Faint or absent fremitus in the upper thorax could indicate:

- obstruction of the bronchial tree
- fluid
- obesity (Rushforth 2009).

Table 2.4 Examples of chest deformities

Normal adult	Funnel chest (pectus excavation)	Barrel chest	Pigeon chest (pectus carinatum)	Thoracic kyphosis	Traumatic flail chest
The thorax in the normal adult is wider than it is deep. Its lateral diameter is larger than its anteroposterior diameter.	Possible cause: Marfan syndrome. Note the depression in the lower portion of the sternum. Compression of the heart and great vessels may cause murmurs.	Possible cause: asthma or chronic obstructive pulmonary disease (COPD). Note the increased anteroposterior diameter. This shape is normal during infancy and often accompanies ageing and COPD.	Possible cause: severe childhood asthma. Note that the sternum is displaced anteriorly, increasing the anteroposterior diameter. The costal cartilages adjacent to the protruding sternum are depressed.	Note that the abnormal spinal curvatures and vertebral rotation deform the chest. Distortion of the underlying lungs may make interpretation of lung findings very difficult.	Multiple rib fractures may result in paradoxical movements of the thorax. As descent of the diaphragm decreases intrathoracic pressure, on inspiration (breathing in) the injured area caves inward; on expiration (breathing out), it moves outward.

Percussion

When percussing and auscultating, each side of the chest should be compared. To do this, percuss and auscultate in a ladder-like pattern in the positions shown in Figure 2.12.

CHAPTER 2 ADMISSIONS AND ASSESSMENT

31

Figure 2.8 The lymph nodes of the head and neck.

Figure 2.10 Locations for feeling fremitus: back.

Figure 2.11 Locations for feeling fremitus: front.

Figure 2.9 Position of hands to assess for chest expansion.

Figure 2.12 Ladder pattern for percussion and auscultation of the chest.



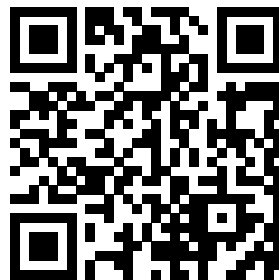
The website icon indicates that you can find more learning exercises on a topic by visiting the companion website: www.royalmarsdenmanual.com/student10e.

About the companion website



Don't forget to visit the companion website for this book:

www.royalmarsdenmanual.com/student10e

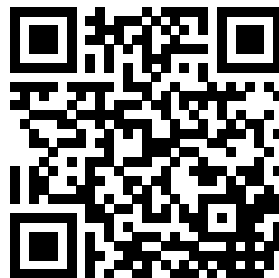


There you will find valuable material designed to enhance your learning, including:

- Answers to the learning activities in the book
- 'Drag and drop' sequencing exercises
- Label the diagram
- Glossary of key terms
- References and websites for further reading

There is also an instructor companion website:

www.royalmarsdenmanual.com/instructor10e



There you will find additional materials, including:

- PowerPoints of figures and procedure guidelines

The context of nursing

Sara Lister



After reading this chapter, you should:

- 1 Understand how the 10th edition of *The Royal Marsden Manual of Clinical Nursing Procedures* is organised
- 2 Understand the importance of evidence-based care in effective, safe nursing and clinical practice
- 3 Have considered the current political, cultural and professional contexts in which nursing is delivered and how these contexts influence patient care
- 4 Appreciate the value of skilled, personalised, compassionate nursing in patients' experience of care

Overview

This introductory chapter presents an overview of the current context of nursing and outlines the purpose of the book, providing details of how it has been structured to reflect the NMC's *Standards Framework for Nursing and Midwifery Education* (2019). It also includes an explanation of the system used to grade the evidence that supports the clinical procedures and an overview of the learning activities provided within each chapter.

Background

The first edition of *The Royal Marsden Manual of Clinical Nursing Procedures* was produced in the early 1980s as a core procedure manual for safe nursing practice within The Royal Marsden Hospital, the world's first cancer hospital. Implicit behind that first edition was the drive to ensure that patients received the very best care, including clinical procedures carried out with professional expertise combined with an attitude of respect and compassion. This vision is still at the forefront of nursing in The Royal Marsden today, reflected in three of the themes of The Royal Marsden's Nursing, Allied Health Professional and Pharmacy Strategy 2020–2024 (Box 1.1).



Box 1.1 Themes of The Royal Marsden's Nursing, Allied Health Professional and Pharmacy Strategy 2020–2024

- 1 Create a first-class experience for all patients
- 2 Provide outstanding quality in patient care and treatment
- 3 Inspire, educate and develop our workforce

Context of nursing

It is argued that the role of the nurse is as essential in responding to the healthcare needs of society today as it was over 30 years ago. In the current *Leading Change, Adding Value: A Framework for Nursing, Midwifery and Care Staff* (NHS England 2016) it is stated that:

Though the world has changed, our values haven't. As nursing, midwifery and care staff we know that compassionate care delivered with courage, commitment and skill is our highest priority. It is the rock on which our efforts to promote health and well-being, support the vulnerable, care for the sick and look after the dying is built. (NHS England 2016, p.5)

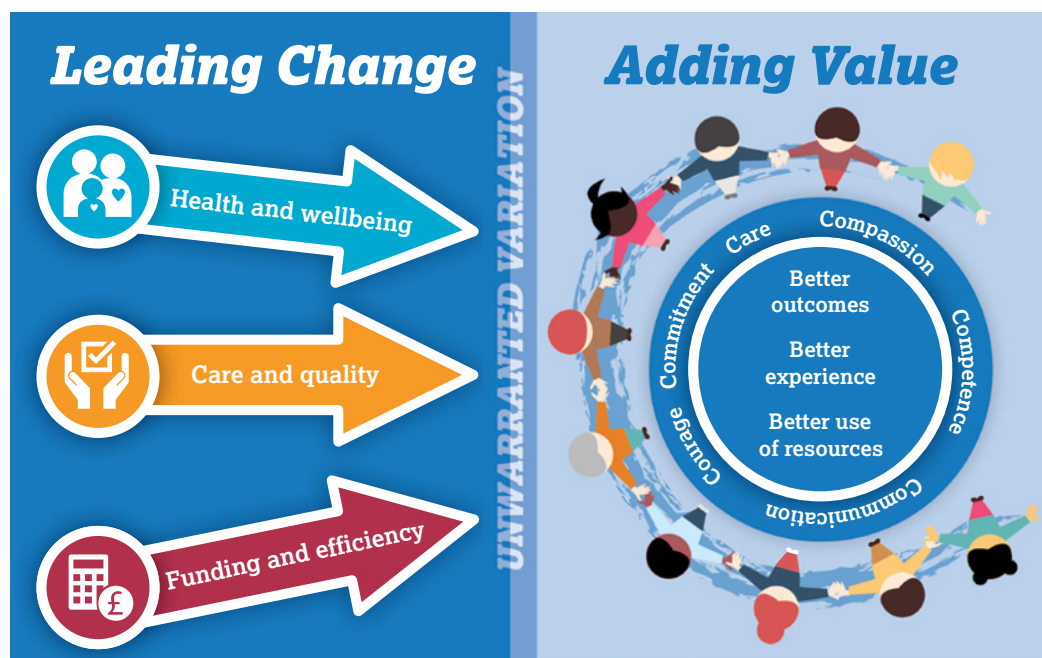
However, in 2021 the context of nursing is different in many ways from that in 1984, when the very first manual was published. In this chapter, two specific influences are identified: political and professional.

Political context

Nurses are the largest group of employees in the NHS, so the context of nursing in the 21st century is shaped by the situation in the NHS. The aforementioned *Leading Change, Adding Value: A Framework for Nursing, Midwifery and Care Staff* (NHS England 2016) (Figure 1.1) was based on the NHS's *Five Year Forward View* (NHS England 2014), which highlighted the changes taking place in society:

- changes in personal health needs and preferences as we live longer with increasingly complex and more long-term conditions, as well as a need to take increased responsibility for our own wellbeing

Figure 1.1 *Leading Change, Adding Value: A Framework for Nursing, Midwifery and Care Staff*. Source: Reproduced from NHS England (2016) with permission of the NHS.



- changes in technology and developments in medical research with opportunities arising from these advances that need to be embraced to further enhance treatment and care
- reductions in funding provision because of the global recession that began in 2008.

UNWARRANTED VARIATION

One of the core principles of the NHS when it was founded 70 years ago was that it should 'meets the needs of everyone' (NHS Liverpool Heart and Chest Hospital 2018, p.1; see also NHS England 2018a). This has continued to guide the development of the NHS; however, as identified in the *Five Year Forward View* (NHS England 2014), changes in society are contributing to three distinct gaps that, if they are not addressed, will impact the long-term provision of healthcare and increase inequalities:

- *Health and wellbeing*: a focus on prevention is needed or the inequalities in health will continue to grow and the budget for healthcare will need to be spent on avoidable illness and not on the development of new treatments.
- *Care and quality*: health needs will go unmet unless we reshape care, harness technology and address variations in quality and safety (NHS England 2018b, p.8).
- *Funding and efficiency*: without efficiencies, a shortage of resources will hinder care services and progress (NHS England 2018b, p.8).

An implicit part of the role of nursing is therefore to be an integral part of closing these gaps, whether at a strategic, national level or locally at the bedside or in the outpatient department. It is suggested that the impact of these gaps is exaggerated because of 'unwarranted variations', which is 'a term used to describe inequalities that cannot be justified by variations in geography, demography or infrastructure' (NHS England 2018b, p.9). At a local level, nurses can be involved in challenging unwarranted variations in the ways shown in Box 1.2.

NHS LONG TERM PLAN

The NHS Long Term Plan (NHS England 2019) sets out a new service model for the 21st century. This responds to 'concern – about funding, staffing, increasing inequalities and pressures from a growing and ageing population' and optimistically holds 'the possibilities for continuing medical advance and better outcomes of care' (NHS England 2019, p.6).

The plans set out have various implications for nursing. The key chapters of the NHS Long Term Plan with direct relevance to nursing practice in an acute setting are set out in Table 1.1 with reference to the chapters in this manual that might be of specific

significance to nurses who are involved in implementing new ways of working.

Professional context

There are many factors influencing the professional context of nursing in 2020. The two highlighted here are patient safety and quality of care, and new roles required to respond to the increasing demand for services.

PATIENT SAFETY AND QUALITY OF CARE

Core to nursing, wherever it takes place, is the commitment to caring for individuals and keeping them safe, so wherever the procedures are used, they are to be carried out within the framework of the Nursing and Midwifery Council's *Code* (NMC 2018a).

One of the original purposes of *The Royal Marsden Manual of Clinical Nursing Procedures* was to promote patient safety through standardized and evidence-based approaches to care. Patient safety is an essential part of nursing care that aims to prevent avoidable errors and patient harm. The Royal College of Nursing (RCN) (2019) highlights four key factors that are important in patient safety:

- 1 *Developing a culture of safety*: this involves promoting attitudes and behaviours that encourage staff to learn from preventable incidents, which will make it less likely that the incident will happen again. Organizations fostering a proactive approach to patient safety should be open, just and informed, and reporting and learning from error should be the norm (Carthy and Clarke 2009).
- 2 *Designing for reliability*: this involves making healthcare more reliable – that is, taking a standard approach to patient care, agreeing to ways of working based on research and evidence where it is available, and agreeing at an organizational level to apply that knowledge to practice.
- 3 *Taking a systemic approach to work*: the system of work – which includes equipment, devices, medication and information systems – makes a considerable difference to quality and safety. Changes to the design of physical things can make a big difference to how well people work. For example, the interfaces of devices, control panels, packaging and lighting levels can improve the speed, accuracy and reliability of a procedure.
- 4 *Human factors*: this refers to the way teams work together and the culture that influences how they act. The discipline of human factors can be defined as enhancing clinical performance through an understanding of the effects of teamwork, tasks, equipment, workspace, culture, organization of human behaviour and abilities, and application of that knowledge in clinical settings (Clinical Human Factors Group 2019). To paraphrase Ives and Hillier (2015), *nurses within healthcare are one of healthcare's greatest sources of strength and the science of human factors and ergonomics is about providing a system which allows them to work to the very best of their ability to provide safe, high-quality care for patients.*

Adapted by the RCN, the consultancy Leadership Management and Quality's Human Factors Model (Figure 1.2) illustrates the interaction between the *direct factors* – dexterity (mental or physical), awareness/memory, distraction/concentration and decision (in the orange circle) – that impact performance and therefore the patient experience and the *potential factors* – stress, fatigue, safety culture, communication, teamwork, leadership and work environment (in the teal circle) – which have the potential to make the situation either better or worse. The *interventions* or *managing factors* (green circle) manage the effect of the potential factors and improve the direct factors (RCN 2019). The interventions or managing factors are many, both at the organizational and the individual levels. The *Royal Marsden Manual of Clinical Nursing Procedures* has a role at the organizational level, providing standardized procedures on which training can be based, and at the individual level, supporting the development of problem prevention and problem solving through the acquisition of knowledge associated with clinical processes.



Box 1.2 Unwarranted variation: turning intention into action

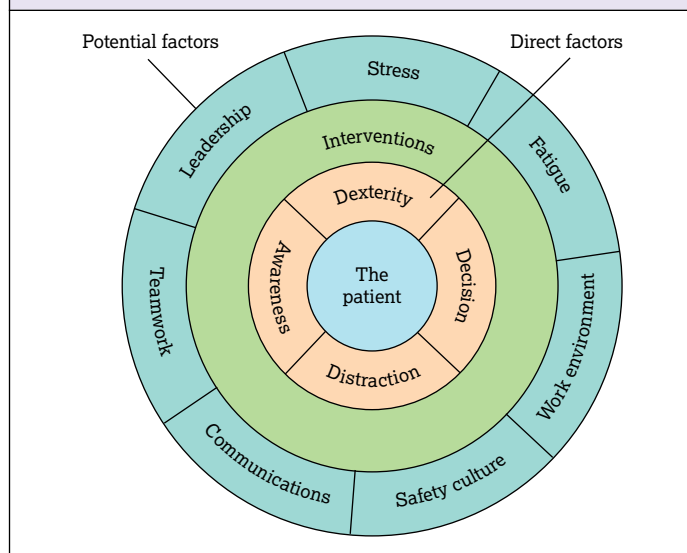
- Taking a closer look at what we do: for example, benchmarking our procedures against the evidence-based procedures in *The Royal Marsden Manual of Clinical Nursing Procedures*.
- Uncovering activities that we need to change, add or take away.
- Challenging established practice because we understand that service can be delivered in a better way: for example, using the online version of *The Royal Marsden Manual of Clinical Nursing Procedures* to upload and disseminate agreed examples of good practice across an organization.
- Striving for high-value care: for example, reviewing equipment and the medication involved in procedures, or exploring whether procedures are being carried out by the most appropriate member of the team.

Source: Adapted from NHS England (2018b, p.11) with permission of the NHS.

Table 1.1 The NHS Long Term Plan (NHS England 2019) and *The Royal Marsden Manual of Clinical Nursing Procedures*

New ways of working identified in the NHS Long Term Plan with direct relevance to nursing practice	Relevant chapter(s) in <i>The Royal Marsden Manual</i>	Related content in <i>The Royal Marsden Manual</i>
Chapter 1: A New Service Model for the 21st Century		
Personalized health budget and self-care	Chapter 5: Communication, psychological wellbeing and safeguarding	Information giving and decision making.
Same-day emergency care and clinical standards for critical illness	Chapter 12: Respiratory care, CPR and blood transfusion Chapter 13: Diagnostic tests See the Professional edition, Chapter 17: Vascular access devices: insertion and management	Nursing procedures for emergency care, e.g. CPR.
Improved discharge	Chapter 3: Discharge care and planning	Processes and procedures for arranging discharge with Social Services.
Chapter 3: Further Progress on Care Quality and Outcomes		
Whole chapter	All chapters	The foundation of this textbook is to provide evidence-based procedures and to underpin rationale for the day-to-day procedures used by nurses in the acute setting with the aim of promoting quality care for the best outcome. This is discussed in more detail in the section below.
Chapter 4: NHS Staff Will Get the Backing They Need		
Workforce changes, including increased flexibility and access to professional development to help manage the pressures of working in the NHS	Chapter 18: Self-care and wellbeing	This chapter specifically considers strategies to help nurses cope with the pressures of working in the NHS.
Chapter 5: Upgrading Technology and Digitally Enabling the NHS		
Whole chapter	n/a	This theme is not specifically addressed; however, references are made where appropriate to digital support for procedures, plus the online version of the manual is continually being enhanced.

Figure 1.2 The Human Factors Model. Source: Adapted from RCN (2019) with permission of the Royal College of Nursing.

**Professional competency**

The development of clinical competency is an integral part of delivering safe care; the Nursing and Midwifery Council's *Code* states that nurses must:

- have the knowledge and skills for safe and effective practice without direct supervision
- keep their knowledge and skills up to date throughout their working life
- recognize and work within the limits of their competence (NMC 2018a).

The Nursing and Midwifery Council (NMC) 'has a duty to review the standards of proficiency it sets for the professions it registers on a regular basis to ensure that standards remain contemporary and fit for purpose in order to protect the public' (NMC 2018b, p.3). In fulfilling this duty, it published *Future Nurse: Standards of Proficiency for Registered Nurses* (NMC 2018b) (Figure 1.3). This document details the knowledge and skills that all registered nurses must demonstrate when caring for people of all ages and across all care settings, reflecting what the public can expect nurses to know and be able to do in order to deliver safe, compassionate and effective nursing care. These proficiencies have a legal standing, fulfilling Article 5(2) of the Nursing and Midwifery Order 2001, which requires the NMC to establish standards of

Figure 1.3 *Future Nurse: Standards of Proficiency for Registered Nurses*. Source: Reproduced from NMC (2018b) with permission of the Nursing and Midwifery Council.



Box 1.3 The seven platforms of Standards of Proficiency for Registered Nurses

- 1 Being an accountable professional
- 2 Promoting health and preventing ill health
- 3 Assessing needs and planning care
- 4 Providing and evaluating care
- 5 Leading and managing nursing care and working in teams
- 6 Improving safety and quality of care
- 7 Co-ordinating care

proficiency necessary for nurses to be admitted to each part of the register and for safe and effective practice under that part of the register (NMC 2018b). The proficiencies are designed to apply across all fields of nursing practice (adult, child, mental health and learning disabilities), 'because registered nurses must be able to meet the person-centred, holistic care needs of the people they encounter in their practice who may be at any stage of life and who may have a range of mental, physical, cognitive or behavioural health challenges' (NMC 2018b, p.60).

The proficiencies are grouped around seven platforms (Box 1.3). These reflect what the nursing profession expects a newly registered nurse to know and be capable of doing safely and proficiently at the start of their career (NMC 2018b).

In addition, there are two annexes that describe what registered nurses should be able to demonstrate they can do at the point of registration in order to provide safe nursing care. Annex A specifies the communication and relationship management skills required, and Annex B specifies the nursing procedures that registered nurses must demonstrate that they are able to perform safely (NMC 2018b). The revised Standards of Proficiency for Registered Nurses (NMC 2018b) have affected the education and training of nurses, requiring a new curriculum and the inclusion of additional skills to prepare students to safely and competently fulfil the wide variety of nursing roles available to them at and after registration (Figure 1.4).

The chapters in this student edition of *The Royal Marsden Manual of Clinical Nursing Procedures* map onto the NMC proficiencies in Annex B of the Standards of Proficiency for Registered Nurses (NMC 2018b); these are detailed in the Appendix of this manual. The manual provides theory and exploration of anatomy and physiology relating to nursing procedures, recognizing that competence is not just about knowing how to do something but also about understanding the rationale for doing it and the impact it may have on the patient. Learning activities, based on clinical experience, are provided within each chapter to encourage readers to apply the principles of a procedure to a clinical situation or a patient scenario, and to help readers to test their knowledge.

NEW ROLES

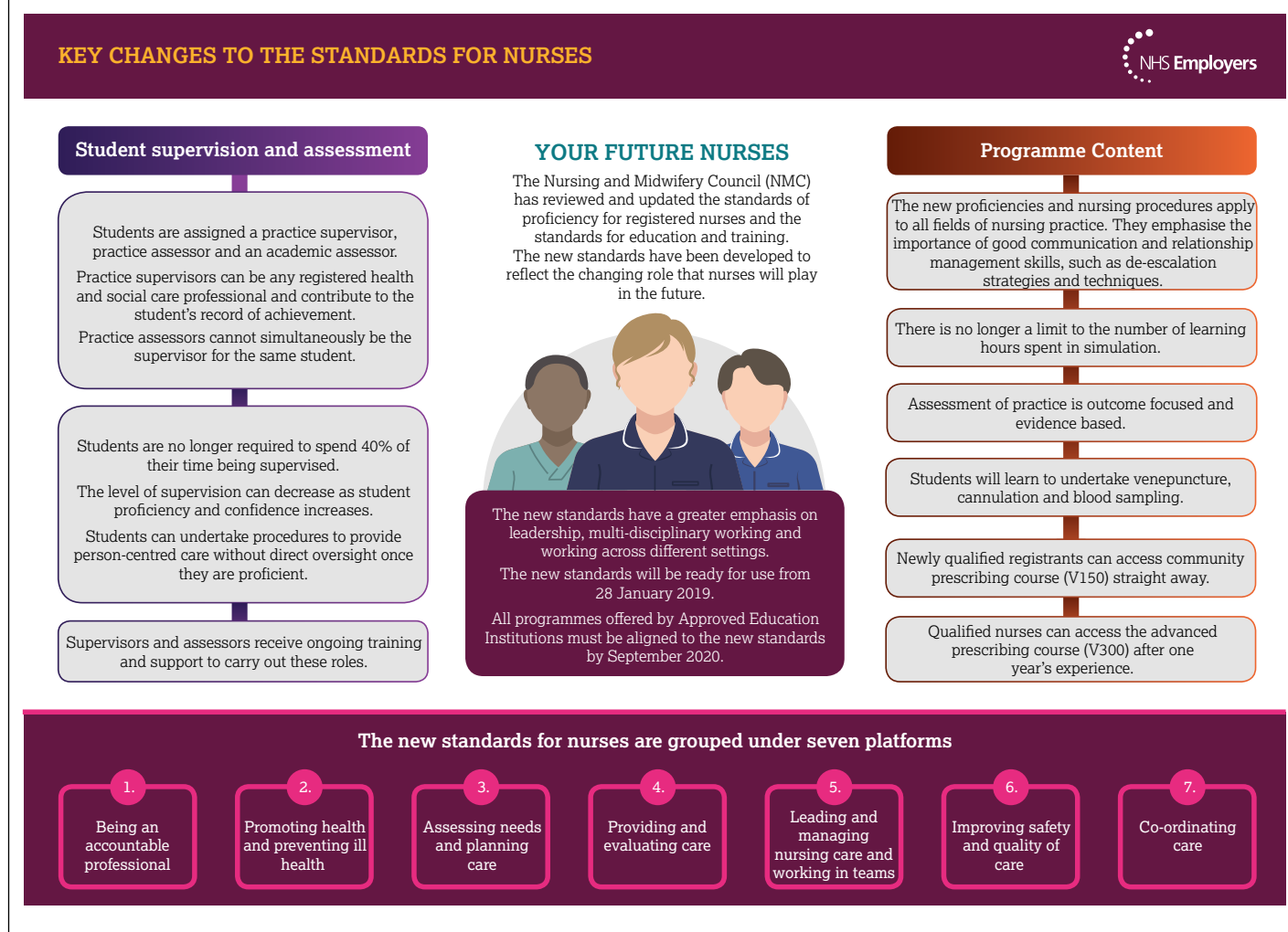
The changes in demand for healthcare and the limited resources (particularly staff) available to provide it have prompted government, employers and the profession to consider new roles. These new roles could potentially provide a faster route to solving staffing problems and offer career development opportunities, which could also help to improve retention. These include expanding physician associate and advanced nurse practitioner roles and the new nursing associate roles (King's Fund 2018).

Nursing associates

The report *Raising the Bar: Shape of Caring – A Review of the Future Education and Training of Registered Nurses and Care Assistants* (Health Education England 2015), led by Lord Willis, made recommendations for the education of nurses and care assistants. One of the key areas it identified was the skills gap between care assistants and registered nurses (NMC 2018c). The nursing associate role, announced by Ben Gummer, Health Minister, in 2015, was developed to address this gap:

The new nursing support role is expected to work alongside healthcare support workers and fully qualified nurses to deliver hands on care, ensuring patients continue to get the compassionate care they deserve. Nursing associates will

Figure 1.4 Summary of key changes to the standards for nurses. *Source: Reproduced from NHS Employers (2018) with permission of the NHS.*



support nurses to spend more time using their specialist training to focus on clinical duties and take more of a lead in decisions about patient care. (Department of Health and Social Care 2015)

The NMC is the regulator for these new roles and has set out standards of knowledge and skills expected of a nursing associate for safe and effective practice (NMC 2018c). The Standards of Proficiency are structured in a similar way to those for registered nurses and are based around six platforms (Box 1.4).

The procedures that it is expected a nursing associate will be able to undertake competently on registration are defined in Annex B of the Standards of Proficiency, which states: 'Nursing associates are expected to apply evidence-based best practice across all procedures. The ability to carry out these procedures, safely, effectively, with sensitivity and compassion is crucial to the provision of person-centred care' (NMC 2018c, p.15). It is hoped that this manual will be a resource for nursing associates in helping them to develop the understanding necessary to apply evidence-based practice to all the procedures they undertake. Trainee nursing associates are advised to select procedures and material from this student edition of the manual relevant to their role. Always ask for clarification and guidance from your educational institution, tutor or clinical supervisor if you are unsure whether a particular procedure or skill is relevant to the qualified nursing associate role.



Box 1.4 Standards of Proficiency for Nursing Associates

- Platform 1: Being an accountable professional
- Platform 2: Promoting health and preventing ill health
- Platform 3: Provide and monitor care
- Platform 4: Working in teams
- Platform 5: Improving safety and quality of care
- Platform 6: Contributing to integrated care

Advanced nurse practitioners

'New solutions are required to deliver healthcare to meet the changing needs of the population. This will need new ways of working, new roles and new behaviours' (NHS England 2017, p.1). Advanced clinical practice roles are seen as an essential part of these solutions (Nuffield Trust 2016). A multiprofessional advanced clinical practice framework has been developed to define advanced clinical practice and set out the core capabilities expected across professions and care settings to foster the development of these new roles in a consistent way to ensure safety, quality and effectiveness (NHS England 2017) (see Box 1.5).

Developing new roles and taking responsibility for new procedures have obvious risks attached and, although every individual nurse is accountable for their own actions, every healthcare



Box 1.5 Definition of advanced clinical practice

Advanced clinical practice is defined as follows:

Clinical practice is delivered by experienced, registered health and care practitioners. It is a level of practice characterized by a high degree of autonomy and complex decision making. This is underpinned by a master's level award or equivalent that encompasses the four pillars of clinical practice, leadership and management, education and research, with demonstration of core capabilities and area specific clinical competence.

Advanced clinical practice embodies the ability to manage clinical care in partnership with individuals, families and carers. It includes the analysis and synthesis of complex problems across a range of settings, enabling innovative solutions to enhance people's experience and improve outcomes. (NHS England 2017, p.7)

Source: NHS England (2017). Reproduced with permission of the NHS.

organization has to assume vicarious liability for the care, treatment and procedures that take place. An organization will have expectations of all of its nurses in respect of keeping patients, themselves and the environment safe. There are obvious ethical and moral reasons for this: 'Nurses have a moral obligation to protect those we serve and to provide the best care we have available' (Wilson 2005, p.118). Clinical governance has therefore become an integral part of day-to-day nursing work; for this reason, the clinical governance implications of the areas of practice have been integrated into each chapter of this edition of the manual.

Evidence-based practice

The moral obligation described above extends to the evidence upon which we base our practice. Nursing now exists in a health-care arena that routinely uses evidence to support decisions, and nurses must justify their rationales for practice. Whereas, historically, nursing and specifically clinical procedures were based on rituals rather than research (Ford and Walsh 1994, Walsh and Ford 1989), over the past 30 years evidence-based practice (EBP) has formed an integral part of practice, education, management, strategy and policy in healthcare. As Draper (2018) states, 'as the global demand for healthcare services increases exponentially, it has never been more important to demonstrate clinical effectiveness to achieve the best outcomes ... while ensuring value for money' (p.2480). Research has played a key role in identifying the specific interventions that lead to the best outcomes, or, in other words, identifying the evidence to underpin clinical practice – that is, evidence-based practice.

What is evidence-based practice?

EBP was first described by David Sackett, a pioneer in introducing EBP in UK healthcare, as follows:

[EBP is] the conscientious, explicit and judicious use of current best evidence in making decisions about the care of the individual patients. The practice of evidence-based medicine [or nursing] means integrating individual clinical expertise with the best available external clinical evidence from systematic research. (Sackett et al. 1996, p.72)

A hierarchy of evidence (Box 1.6) has been developed to provide an indication of the strength of the evidence and therefore, by implication, its usefulness for evidence-based and evidence-informed decision making and clinical practice (Draper 2018, Ingham-Broomfield 2016).

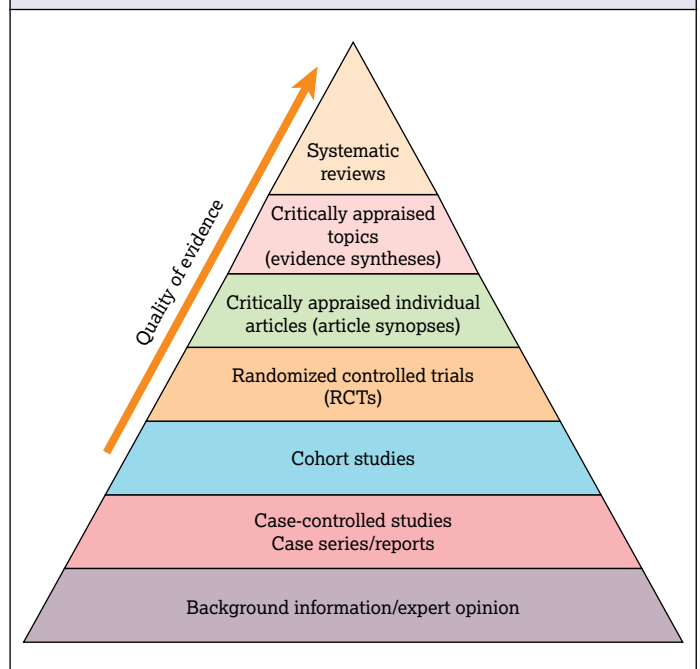


Box 1.6 The traditional hierarchy of evidence

- 1 Systematic reviews and meta-analyses
- 2 Randomized controlled trials with definitive results (i.e. confidence intervals that do not overlap the threshold, a clinically significant effect)
- 3 Randomized controlled trials with non-definitive results (i.e. a suggested clinically significant effect but with confidence intervals overlapping)
- 4 Cohort studies
- 5 Case-control studies
- 6 Cross-sectional surveys
- 7 Case reports

Source: Adapted from Greenhalgh (2014, p.41).

Figure 1.5 Hierarchy of evidence pyramid for nursing.
Source: Adapted from Glover et al. (2006) with permission of Lei Wang.



Glover et al. (2006) present for nursing research a hierarchy of evidence as a pyramid (Figure 1.5), with the seventh level or base of the pyramid being ideas, opinions, anecdotes and editorials. Other sources (e.g. Ingham-Broomfield 2016) have created similar pyramids, and it must be noted that the pyramids vary slightly between authors, organizations and professions.

These hierarchies assume that the most robust evidence is that derived from systematic reviews and meta-analyses of large-scale randomized controlled studies (Draper 2018, Greenhalgh 2014, Ingham-Broomfield 2016). However, they provide no means of including qualitative research studies (Greenhalgh 2014) or those seeking to answer questions about patients' experiences or concerns (Del Mar et al. 2013). Draper (2018) therefore proposes that typologies of evidence are a more appropriate way of defining the quality of evidence. Petticrew and Roberts (2003) propose the following features to be used in evaluating evidence: effectiveness, service delivery, salience, safety, acceptability, cost-effectiveness, appropriateness and satisfaction. Glasby et al. (2007) propose a different approach suggesting three different types of evidence: theoretical, empirical and experiential (Box 1.7).



Box 1.7 A typology of evidence to inform practice

- *Theoretical evidence*: ideas, concepts and models used to describe an intervention, and explain how and why it works.
- *Empirical evidence*: information about the actual use of the intervention, its effectiveness and outcomes when it is used.
- *Experiential evidence*: information about people's experiences of the intervention or service.

Source: Adapted from Glasby et al. (2007, p.434).

This typology is reflective of the seminal work of Carper (1978), who delineated four different forms of knowing encompassed in clinical expertise in nursing. These are:

- empirical evidence
- aesthetic evidence
- ethical evidence
- personal evidence.

The issue of determining which evidence is acceptable in practice is evident throughout this manual, where clinical expertise and guidelines inform the actions and rationales of the procedures. Indeed, these other types of evidence are highly important as long as we can still apply scrutiny to their use.

Porter (2010) describes a wider empirical base upon which nurses make decisions and argues for nurses to take into account and be transparent about other forms of knowledge, such as ethical, personal and aesthetic knowing, echoing Carper (1978). By doing this, and through acknowledging limitations to these less empirical forms of knowledge, nurses can justify their use of them to some extent. Furthermore, in response to Paley's (2006) critique of EBP as a failure to holistically assess a situation, nursing needs to guard against cherry picking (i.e. ensuring that EBP is not brandished ubiquitously and indiscriminately) and know when judicious use of, for example, experiential knowledge (as a form of personal knowing) might be more appropriate.

Evidence-based nursing (EBN) and EBP are differentiated by Scott and McSherry (2009) in that EBN involves additional elements in its implementation. EBN is regarded as an ongoing process by which evidence is integrated into practice and clinical expertise is critically evaluated against patient involvement and optimal care (Scott and McSherry 2009). For nurses to implement EBN, four key requirements are required (Scott and McSherry 2009):

- 1 to be aware of what EBN means
- 2 to know what constitutes evidence
- 3 to understand how EBN differs from evidence-based medicine and EBP
- 4 to understand the process of engaging with and applying the evidence.

We contextualize our information and decisions to deliver best practice for patients; that is, the ability to use research evidence and clinical expertise, together with the preferences and circumstances of the patient, is essential to arrive at the best possible decision for a specific patient (Guyatt et al. 2004).

Knowledge can be gained that is both *propositional* – that is, from research – and *non-propositional* – that is, implicit knowledge derived from practice (Rycroft-Malone et al. 2004). In more tangible, practical terms, evidence can be drawn from a number of different sources, and this pluralistic approach needs to be set in the context of the complex clinical environment in which nurses work in today's NHS (Pearson et al. 2011, Rycroft-Malone et al. 2004). Rycroft-Malone et al. (2004) proposed that the evidence

that informs clinical nursing practice can be considered as arising from four main sources:

- 1 research
- 2 clinical experience, expertise and tradition
- 3 patients, clients and carers
- 4 the local context and environment (Pearson et al. 2011, Rycroft-Malone et al. 2004).

These four sources have all informed the evidence base that is integral to this manual, which acknowledges that 'in reality practitioners draw on multiple sources of knowledge in the course of their practice and interaction with patients' (Rycroft-Malone et al. 2004, p.88).

Evidence-based practice and The Royal Marsden Manual of Clinical Nursing Procedures

The evidence that informs clinical nursing procedures is integral to *The Royal Marsden Manual of Clinical Nursing Procedures*. It is critically discussed in the sections within each chapter on 'related theory' and 'evidence-based approaches'. In these sections, the source of evidence (reflecting the sources described by Rycroft-Malone et al. 2004) is indicated in the rationale that supports the steps in procedures. In previous editions, the level on the research hierarchy was also included, in an attempt to represent the robustness of the evidence. In this edition, that nomenclature has been dropped for two reasons: because the hierarchy does not include qualitative studies, some of which are significant in informing nursing practice, and because the hierarchy does not recognize the quality of a study, just the methodological approach.

The following key is used to indicate the sources of evidence:

- **Clinical experience (E)**
Encompasses expert practical know-how, gained through working with others and reflecting on best practice.
Example: (Dougherty 2008, **E**). This is drawn from the following article that gives an expert clinical opinion: Dougherty, L. (2008) Obtaining peripheral vascular access. In: Dougherty, L. & Lamb, J. (eds) *Intravenous Therapy in Nursing Practice*, 2nd edn. Oxford: Blackwell.
- **Patient (P)**
Gained through expert patient feedback and extensive experience of working with patients.
Example: (Diamond 1998, **P**). This was gained from a personal account of care written by a patient: Diamond, J. (1998) *C: Because Towards Get Cancer Too*. London: Vermilion.
- **Context (C)**
Can include audit and performance data, social and professional networks, local and national policy, guidelines from professional bodies (e.g. the RCN) and manufacturers' recommendations.
Example: (NMC 2018a, **C**). This reference is: NMC (2018a) *The Code: Professional Standards of Practice and Behaviour for Nurses, Midwives and Nursing Associates*. London: Nursing and Midwifery Council.
- **Research (R)**
Evidence gained through research.
Example: (Stevenson et al. 2017, **R**). Stevenson, J.C., Emerson, L. & Millings, A. (2017) The relationship between adult attachment orientation and mindfulness: A systematic review and meta-analysis. *Mindfulness*, 8, 1438–1455.

In the text, the source will be represented as shown in Box 1.8. If there is no written evidence to support clinical experience or there are no guidelines to justify undertaking a procedure, the text will be referenced as an '**E**' but will not be preceded by an author's name. Through this process, it is hoped that the reader will be aware of the source of the evidence upon which the care of patients is based and continue to critically evaluate their practice, engaging in research and audit where there are gaps or where best practice is not confirmed.



Box 1.8 Examples of sources

- Clinical experience and guidelines (Dougherty 2008, **E**)
- Patient (Diamond 1998, **P**)
- Context (NMC 2018a, **C**)
- Research (Stevenson et al. 2017, **R**)

Structure of the manual

The chapters have been organized into five broad sections that represent – as far as possible – the needs of a patient along their care pathway. The first section, ‘Managing the patient journey’, presents the generic information that a nurse needs for every patient who enters the acute care environment. The second section, ‘Supporting patients with human functioning’, relates to the support a patient may require with normal human functions such as elimination, nutrition and respiration, and includes procedures relevant to those areas. The third section, ‘Supporting patients through the diagnostic process’, relates to all aspects of supporting a patient through the diagnostic process, from simple procedures such as taking a temperature to preparing a patient for complex procedures such as a liver biopsy. The fourth section, ‘Supporting patients through treatment’, includes procedures related to specific types of treatment or therapies a patient is receiving. An additional final section and chapter has been added focusing on the wellbeing and self-care of the nurse. This has been included for two reasons. Firstly, the new NMC Standards of Proficiency for Registered Nurses state that self-care is a professional responsibility: ‘in order to respond to the impact and demands of professional nursing practice, [nurses] must be emotionally intelligent and resilient individuals, who are able to manage their own personal health and wellbeing, and know when and how to access support’ (NMC 2018b, p.3). Secondly, there is a common tendency for nurses and other care workers to become ‘invisible patients’ because their own needs are often ignored or pushed to the bottom of the list (Sheridan 2016). The health and wellbeing of those who care for patients is being recognized as one of the most important aspects of enabling them to care safely (Sign Up to Safety 2019). The final chapter is included to provide accessible strategies that any nurse or care worker can put into practice.

Structure of the chapters

The structure of the chapters is consistent throughout the manual. The core of each chapter is the procedures or guidelines. The other sections provide supporting information so that each procedure can be carried out with understanding of the clinical, technical, physiological, psychological and professional knowledge and evidence from which it has been developed. In each chapter there are the following elements:

- **Overview:** as the chapters are large and have considerable content, each one begins with an overview to guide the reader, informing them of the scope and the constituent sections of the chapter.
- **Definition:** each section begins with a definition of the terms and an explanation of the aspects of care, with any technical or difficult concepts explained.
- **Anatomy and physiology:** if it is necessary to understand the anatomy or physiology of a part of the body to perform a procedure, then the chapter or section includes a discussion of the related anatomy and physiology. If appropriate, this is illustrated with diagrams so the context of the procedure can be fully understood by the reader (e.g. electrical functioning of the heart to explain how electrocardiography works).

- **Related theory:** if it is necessary to understand theoretical principles in order to understand a procedure, then these are included (e.g. theory of communication).
- **Evidence-based approaches:** these sections provide background information and present the research and expert opinion in the relevant area. If appropriate, the indications and contraindications are included, as are any principles of care.
- **Clinical governance:** these sections outline any professional guidance, law or other national policy that may be relevant to the procedures. If relevant, this also includes any professional competences or qualifications required in order to perform the procedures. Any risk management considerations are also included in these sections, including principles of harm-free care.
- **Pre-procedural considerations:** when carrying out any procedure, there are certain actions that may need to be completed, or equipment prepared, or medication given, before the procedure begins. These are made explicit under this heading.
- **Procedure:** each chapter includes the current procedures that are used in the acute hospital setting. They have been drawn from the daily nursing practice at The Royal Marsden NHS Foundation Trust. Only procedures about which the authors have knowledge and expertise are included. Each procedure gives detailed, step-by-step actions, supported by rationales. Where available, the known evidence underpinning these rationales is indicated.
- **Problem solving and resolution:** if relevant, each procedure is followed by a table of potential problems that may be encountered while carrying out the procedure as well as suggestions as to the cause, prevention and any action that may help to resolve the problem.
- **Post-procedural considerations:** care for the patient does not end with the procedure. This section details any documentation the nurse may need to complete, education and information that needs to be given to the patient, and ongoing observations or referrals to other members of the multiprofessional team that may be required.
- **Complications:** any ongoing problems or potential complications associated with the procedure are discussed in a final section. Evidence-based suggestions for resolution are also included.
- **Illustrations:** colour illustrations have been used to demonstrate the steps of some procedures. These will enable the nurse to see in greater detail, for example, the correct position of the hands or the angle of a needle.
- **Websites and references:** many of the chapters have a list of related websites (available on the companion website: www.royalmarsdenmanual.com/student10e) that can be consulted for further information. All of the chapters end with a reference list. Only texts from the past 10 years have been included, unless they are seminal texts.

Finally

This book is intended as a reference and a resource, not as a replacement for practice-based education. None of the procedures in this book should be undertaken without prior instruction and subsequent supervision from an appropriately qualified and experienced professional. We hope that *The Royal Marsden Manual of Clinical Nursing Procedures* will continue to be a resource to help nurses deliver high-quality care that maximizes the wellbeing and improves the health outcomes of patients in acute hospital settings.

To paraphrase the quote from *Leading Change, Adding Value* (NHS England 2016, p.5) near the beginning of this chapter, compassionate care delivered with courage, commitment and skill is our highest priority as nurses. This is made more explicit in Commitment 4 of *Leading Change, Adding Value* (NHS England 2016, p.21), which highlights the importance of putting the person at the centre of care (Box 1.9).



Box 1.9 Commitment 4: We will focus on individuals experiencing high value care

We will ensure that individuals are always supported to influence and direct their own healthcare decisions, so that they are confident that 'no decision is taken about me without me'.

Care planning should involve the development of a personalized plan for each individual who is entering, leaving or transitioning care environments whether within a hospital, in their own home, care home or rehabilitation unit.

We need to encourage people to take more responsibility for their health by focusing on personalized care planning, self-management and behaviour change.

Source: Adapted from NHS England (2016) with permission of the NHS.

It is important to remember that even if a procedure is very familiar to us and we are very confident in carrying it out, it may be new to the patient, so time must be taken to explain it and gain consent, even if this is only verbal consent: 'the views of the person [receiving the treatment] should also be taken into account when choosing which treatment is most likely to be successful for

an individual' (NMC 2018a, p.38). The diverse range of technical procedures to which patients may be subjected should act as a reminder not to lose sight of the unique person undergoing such procedures and the importance of individualized patient assessment in achieving this.

When a nurse
Encounters another
What occurs is never a neutral event
A pulse taken
Words exchanged
A touch
A healing moment
Two persons
Are never the same

(Anon. in Dossey et al. 2005)

Nurses have a central role to play in helping patients to manage the demands of the procedures described in this manual. It must not be forgotten that for the patient, the clinical procedure is part of a larger picture, which encompasses an appreciation of their unique experience of the reason they have needed nursing care in the first place.

REFERENCES

- Carper, B. (1978) Fundamental patterns of knowing in nursing. *Advances in Nursing Science*, 1(1), 13–23.
- Carthy, J. & Clarke, J. (2009) *The 'How to Guide' for Implementing Human Factors in Healthcare*. Patient Safety First. Available at: <https://chfg.org/how-to-guide-to-human-factors-volume-1>
- Clinical Human Factors Group (2019) *What Are Clinical Human Factors?* Available at: <https://chfg.org/what-are-clinical-human-factors>
- Del Mar, C., Hoffman, T. & Glasziou, P. (2013) Information needs, asking questions, and some basics of research studies. In: Hoffman, T., Bennett, S. & Del Mar, C. (eds) *Evidence Based Practice across the Health Professions*, 2nd edn. Sydney: Churchill Livingstone Australia, pp. 16–37.
- Department of Health and Social Care (2015) *Nursing Associate Role Offers New Route into Nursing*. Available at: <https://www.gov.uk/government/news/nursing-associate-role-offers-new-route-into-nursing>
- Diamond, J. (1998) *C: Because Cowards Get Cancer Too*. London: Vermilion.
- Dossey, B.M., Keegan, L. & Guzzetta, C.E. (2005) *Holistic Nursing: A Handbook for Practice*, 4th edn. Sudbury, MA: Jones & Bartlett.
- Dougherty, L. (2008) Obtaining peripheral vascular access. In: Dougherty, L. & Lamb, J. (eds) *Intravenous Therapy in Nursing Practice*, 2nd edn. Oxford: Blackwell.
- Draper, J. (2018) Healthcare education research: The case for rethinking hierarchies of evidence (editorial). *Journal of Advanced Nursing*, 74, 2480–2483.
- Ford, P. & Walsh, M. (1994) *New Rituals for Old: Nursing through the Looking Glass*. Oxford: Butterworth-Heinemann.
- Glasby, J., Walshe, K. & Harvey, G. (2007) Making evidence fit for purpose in decision-making: A case-study of the hospital discharge of older people. *Evidence & Policy*, 3(3), 425–437.
- Glover, J., Izzo, D., Odato, K. & Wang, L. (2006) *EBM Pyramid*. Hanover, NH / New Haven, CT: Dartmouth University / Yale University.
- Greenhalgh, T. (2014) *How to Read a Paper: The Basics of Evidence Based Medicine*, 5th edn. London: BMJ Books.
- Guyatt, G., Cook, D. & Haynes, B. (2004) Evidence based medicine has come a long way. *BMJ*, 329(7473), 990–991.
- Health Education England (2015) *Raising the Bar: Shape of Caring – A Review of the Future Education and Training of Registered Nurses and Care Assistants*. Available at: <https://www.hee.nhs.uk/sites/default/files/documents/2348-Shape-of-caring-review-FINAL.pdf>
- Ingham-Broomfield, R. (2016) A nurses' guide to the hierarchy of research designs and evidence. *Australian Journal of Advanced Nursing*, 33(3), 38–43.
- Ives, C. & Hillier, S. (2015) *Human Factors in Healthcare: Common Terms*. Clinical Human Factors Group. Available at: <http://s753619566.websitehome.co.uk/wp-content/uploads/2018/06/chfg-human-factors-common-terms.pdf>
- King's Fund (2018) *Examining the Evidence for New Roles in Health and Social Care*. Available at: <https://www.hee.nhs.uk/sites/default/files/documents/Examining%20the%20evidence%20for%20new%20roles%20in%20health%20and%20care.pdf>
- NHS Employers (2018) *Key Changes to the Standards for Nurses*. Available at: https://www.nhsemployers.org/-/media/Employers/Publications/Workforce-Supply/Key_Changes_to_the_standards_for_nurses.pdf
- NHS England (2014) *NHS England: Five Year Forward View*. London: NHS England.
- NHS England (2016) *Leading Change, Adding Value: A Framework for Nursing, Midwifery and Care Staff*. Available at: <https://www.england.nhs.uk/wp-content/uploads/2016/05/nursing-framework.pdf>
- NHS England (2017) *Multi-professional Framework for Advanced Clinical Practice in England*. Available at: <https://www.hee.nhs.uk/sites/default/files/documents/Multi-professional%20framework%20for%20advanced%20clinical%20practice%20in%20England.pdf>
- NHS England (2018a) *About the NHS*. Available at: <https://www.nhs.uk/using-the-nhs/about-the-nhs/principles-and-values>
- NHS England (2018b) *Leading Change, Adding Value: A Framework for Nursing, Midwifery and Care Staff – A Learning Tool to Support All Nursing, Midwifery and Care Staff to Identify and Address Unwarranted Variation in Practice*. Available at: <https://www.england.nhs.uk/wp-content/uploads/2018/05/lcav-e-learning-tool-v1.pdf>
- NHS England (2019) *NHS Long Term Plan*. Available at: <https://www.longtermplan.nhs.uk/wp-content/uploads/2019/01/nhs-long-term-plan-june-2019.pdf>
- NHS Liverpool Heart and Chest Hospital (2018) *70 NHS Facts*. Available at: <https://www.lhch.nhs.uk/media/5967/nhs70-facts.pdf>
- NMC (Nursing and Midwifery Council) (2018a) *The Code: Professional Standards of Practice and Behaviour for Nurses, Midwives and Nursing Associates*. Available at: <https://www.nmc.org.uk/standards/code>
- NMC (2018b) *Future Nurse: Standards of Proficiency for Registered Nurses*. Available at: <https://www.nmc.org.uk/globalassets/sitedocuments/education-standards/future-nurse-proficiencies.pdf>
- NMC (2018c) *Standards of Proficiency for Nursing Associates*. Available at: <https://www.nmc.org.uk/globalassets/sitedocuments/education-standards/print-friendly-nursing-associates-proficiency-standards.pdf>
- NMC (2019) *Standards Framework for Nursing and Midwifery Education*. Available at: <https://www.nmc.org.uk/standards-for-education-and-training/standards-framework-for-nursing-and-midwifery-education>
- Nuffield Trust (2016) *Reshaping the Workforce to Deliver the Care Patients Need*. Available at: <https://www.nuffieldtrust.org.uk/research/reshaping-the-workforce-to-deliver-the-care-patients-need>
- Paley, J. (2006) Evidence and expertise. *Nursing Enquiry*, 13(2), 82–93.
- Pearson, A., Field, J. & Jordan, Z. (2011) *Evidence-Based Clinical Practice in Nursing and Health Care: Assimilating Research, Experience, and Expertise*. Oxford: Wiley-Blackwell.
- Petticrew, M. & Roberts, H. (2003) Evidence, hierarchies and typologies: Horses for courses. *Journal of Epidemiology & Community Health*, 57(7), 527–529.

- Porter, S. (2010) Fundamental patterns of knowing in nursing: The challenge of evidence-based practice. *ANS Advances in Nursing Science*, 33(1), 3–14.
- RCN (Royal College of Nursing) (2019) *Patient Safety and Human Factors*. Available at: <https://www.rcn.org.uk/clinical-topics/patient-safety-and-human-factors>
- Rycroft-Malone, J., Seers, K., Titchen, A., et al. (2004) What counts as evidence in evidence-based practice? *Journal of Advanced Nursing*, 47(1), 81–90.
- Sackett, D.L., Rosenberg, W.M., Gray, J.A., et al. (1996) Evidence based medicine: What it is and what it isn't. *BMJ*, 312(7023), 71–72.
- Scott, K. & McSherry, R. (2009) Evidence-based nursing: Clarifying the concepts for nurses in practice. *Journal of Clinical Nursing*, 18(8), 1085–1095.
- Sheridan, C.B. (2016) *The Mindful Nurse: Using the Power of Mindfulness and Compassion to Help You Thrive in Your Work*. Galway, NY: Rivertime Press.
- Sign Up to Safety (2019) *Did You Know that Nearly Everyone's Job Affects the Safety of Patients?* Available at: <https://www.signuptosafety.org.uk/nearly-everyones-job-affects-safety>
- Stevenson, J.C., Emerson, L. & Millings, A. (2017) The relationship between adult attachment orientation and mindfulness: A systematic review and meta-analysis. *Mindfulness*, 8, 1438–1455.
- Walsh, M. & Ford, P. (1989) *Nursing Rituals, Research and Rational Actions*. Oxford: Heinemann Nursing.
- Wilson, C. (2005) Said another way: My definition of nursing. *Nursing Forum*, 40(3), 116–118.

Part One

Managing the patient journey

2 Admissions and assessment 15

3 Discharge care and planning 47

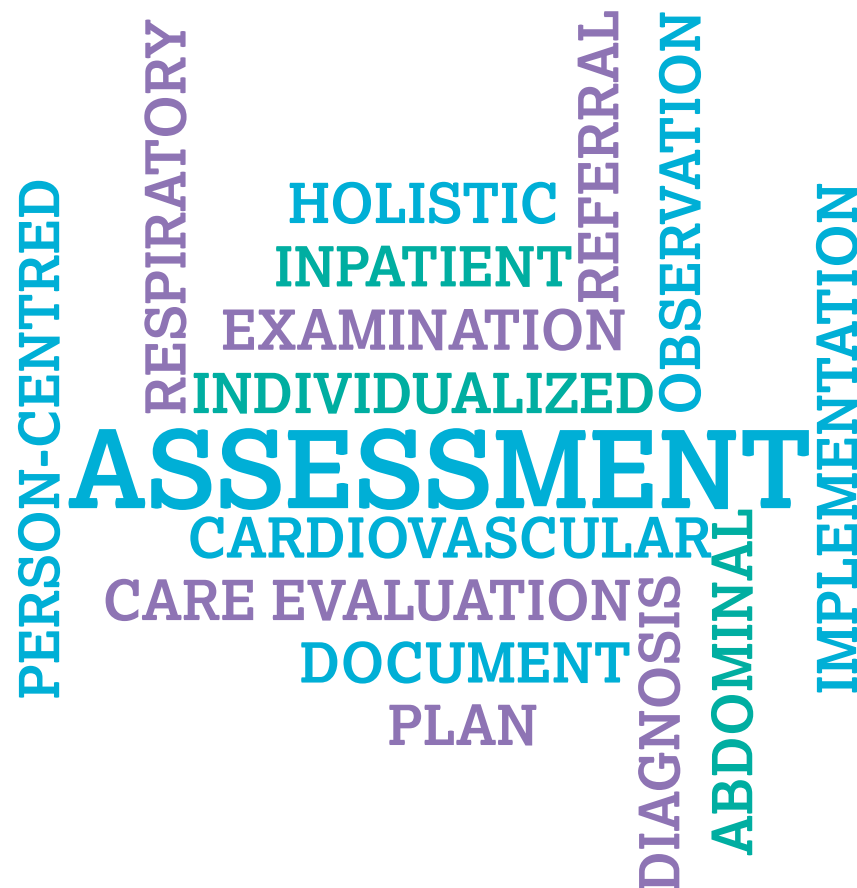
4 Infection prevention and control 69



Admissions and assessment

Lorraine Guinan and Victoria Ward with Elizabeth Hendry, Emma Masters, Andrew Rayner, Emma Thistlethwayte, Manuela Trofor, Charlotte Weston and Claire White

2



After reading this chapter and undertaking the learning activities within it, you should:

- 1 Know the importance of undertaking a person-centred, holistic nursing assessment, in collaboration with the patient and their family
- 2 Understand the principles of designing a person-centred care plan for patients in order to establish and instigate appropriate, effective, safe and compassionate nursing care
- 3 Apply evidence-based, best-practice approaches to the clinical assessment of the respiratory, cardiovascular and gastrointestinal systems

Key terms are highlighted in the text in pink. Glossary definitions of these terms can be found on the companion site of this student edition: www.royalmarsdenmanual.com/student10e.



Procedure guidelines

- 2.1 Respiratory examination
- 2.2 Cardiovascular examination

- 2.3 Abdominal examination

Being an accountable professional

At the point of registration, the nurse will:

1. Use evidence-based, best practice approaches to take a history, observe, recognise and accurately assess people of all ages:
 - 1.1 mental health and wellbeing status
 - 1.2 physical health and wellbeing

2. Use evidence-based, best practice approaches to undertake the following procedures:

- 2.7 undertake a whole body systems assessment including respiratory, circulatory, neurological, musculoskeletal, cardiovascular and skin status
- 2.8 undertake chest auscultation and interpret findings

Future Nurse: Standards of Proficiency for Registered Nurses (NMC 2018)

Overview

This chapter gives an overview of inpatient assessment, the process of care and the importance of observation in the assessment process.

Assessment forms an integral part of patient care and is considered to be the first step in the process of individualized nursing care. It provides information that is critical to the development of a plan of action that enhances personal health status. Early and continued assessments are vital to the success and management of patient care. It is critical that nurses have the ability to assess patients and document and communicate their findings in a systematic way.

The patient's age, health and mode of presentation will determine the extent of the physical assessment required (Innes et al. 2018). Observation – coupled with one or more of cardiovascular, respiratory or abdominal examinations – is discussed in this chapter. See Chapter 14: Observations for information on neurological assessment.

Inpatient assessment and the process of care

To appropriately care for a patient within the hospital setting or the community, the nurse must assess the patient in order to develop a care plan tailored to the individual (Saxon and Lillyman 2011). The nursing process is an organized, systematic and deliberate approach that aims to improve standards in nursing care (Rush et al. 1996). This process is cyclical, ongoing and generally used in conjunction with various theoretical nursing models or philosophies. The process is both holistic and problem solving; each stage is intimately interconnected with the other stages and is explicable only by reference to the whole – used in partnership with the patient and their family. This process, similar to those used in problem solving and scientific reasoning, incorporates assessment, diagnosis, planning, implementation and evaluation phases, as demonstrated in Figure 2.1 and Table 2.1 (Pratt and Van Wijgerden 2009). Each step of the nursing process depends on the accuracy of the preceding step. This nursing process has evolved over the past decades and is now used by nurses throughout the world as a framework for providing individualized, person-centred care.

DEFINITION

Assessment is the systematic and continuous collection, organization, validation and documentation of information (Berman et al. 2010).

RELATED THEORY

Nurses perform assessments on patients to inform professional judgements on what care is required. Assessment takes place from the time a nurse encounters the patient and is ongoing, continuing until discharge from the nurse's care. Nurses use various tools to facilitate the process of assessment (Crouch and Meurier 2005).

Figure 2.1 Phases of the nursing process. *Source: Reproduced from Weber and Kelley (2014) with permission of Lippincott Williams & Wilkins.*

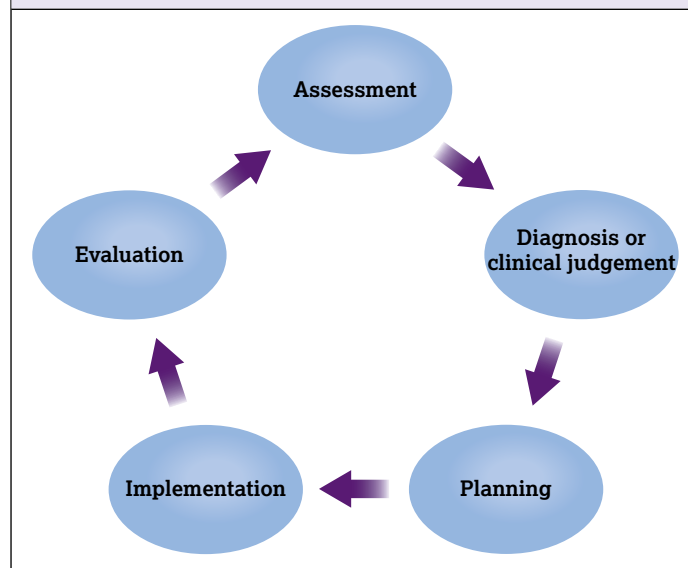


Table 2.1 Phases of the nursing process

Phase	Title	Description
1	Assessment	Collecting objective and subjective data
2	Diagnosis	Analysing subjective and objective data to make a professional nursing judgement
3	Planning	Determining outcome criteria and developing a plan
4	Implementation	Carrying out the plan
5	Evaluation	Assessing whether the outcome criteria have been met and revising the plan as necessary

Source: Reproduced from Weber and Kelley (2014) with permission of Lippincott Williams & Wilkins.

A health assessment involves the collection and analysis of data in order to identify the patient's problems. The nursing health assessment incorporates a comprehensive health history and a complete physical examination, both of which are used to evaluate the health status of a person; it is a deliberate

and interactive process. The need to solicit information, understand the findings and apply knowledge can initially be daunting to the new nurse. Regardless of who collects the data, a total health assessment is needed when a patient first enters the healthcare system.

The nursing assessment should focus on the patient's response to a health need rather than disease process and pathology (Wilkinson 2007). The process of assessment requires nurses to make accurate and relevant observations and to gather, validate and organize data; this process supports the nurse in making judgements to determine care and treatment needs. The nursing assessment should include physical, psychological, spiritual, social and cultural dimensions; it is vital that these dimensions are explored with the person being assessed.

Effective patient assessment is integral to the safety, continuity and quality of patient care. The main principles of assessment fulfil the nurse's legal and professional obligations in practice (Table 2.2).

Assessment tools

Assessment tools in clinical practice can be used to assess a patient's general needs – for example, via the Supportive Care Needs Survey (Bonevski et al. 2000) – or to assess a specific problem – for example, via the Oral Assessment Guide (Eilers et al. 1988). The choice of tool depends on the clinical setting, although, in general, the aim of using an assessment tool is to link the assessment of clinical variables with the measurement of clinical interventions (Frank-Stromborg and Olsen 2004). To be useful in clinical practice, an assessment tool must be simple and acceptable to patients, have a clear and interpretable scoring system, and demonstrate reliability and validity (Brown et al. 2001).

The use of patient self-assessment tools appears to facilitate the process of assessment in a number of ways. It enables patients

to indicate their subjective experience more easily, gives them an increased sense of participation (Kearney 2001) and prevents them from being distanced from the process by nurses rating their symptoms and concerns (Brown et al. 2001). Many authors have demonstrated the advantages of increasing patient participation in assessment by the use of patient self-assessment questionnaires (Rhodes et al. 2000).

The methods used to facilitate patient assessment are important adjuncts to assessing patients in clinical practice. There is a danger that too much focus can be placed on the framework, system or tool, preventing nurses from thinking about the significance of the information that they are gathering from the patient (Harris et al. 1998). Rather than following assessment structures and prompts rigidly, it is essential that nurses utilize their critical thinking and clinical judgement throughout the process in order to continually develop their skills in eliciting information about patients' concerns and use this to inform care planning (Edwards and Miller 2001).

Structure of assessment

Structuring patient assessment is vital to monitoring the success of care and detecting the emergence of new problems. There are many conceptual frameworks or nursing models, such as Roper's model for assessing activities of daily living (Roper et al. 2000), Orem's self-care model (Orem et al. 2001) and Gordon's functional health patterns framework (Gordon, 1994). There remains, however, much debate about the effectiveness of such models for assessment in practice, with some arguing that individualized care can be compromised by fitting patients into a rigid or complex structure (Kearney 2001, McCrae 2012). Nurses therefore need to take a pragmatic approach and utilize assessment frameworks that are appropriate to their particular area of practice.

The framework of choice at The Royal Marsden NHS Foundation Trust is based on Gordon's functional health patterns framework (Box 2.1; Gordon 1994). This framework facilitates an assessment that focuses on patients' and families' problems and functional status; the framework applies clinical cues to interpret deviations from the patient's usual patterns (Johnson 2000). Gordon's functional health patterns framework is applicable to all levels of care, allowing problem areas to be identified. Information derived from the patient's initial functional health patterns is crucial for interpreting both the patient's and their family's pattern of response to disease and treatment.

Types of patient assessment

There are several types of assessment, including mini assessment, comprehensive assessment, focused assessment and ongoing assessment (Box 2.2).

Table 2.2 Principles of assessment

1	Assessment is patient focused, being governed by the notion of an individual's actual, potential and perceived needs.
2	It provides baseline information from which to plan the interventions to be used and decide the outcomes of care to be achieved.
3	It facilitates evaluation of the care given and is a dimension of care that influences a patient's outcome and potential survival.
4	It is a dynamic process that starts when problems or symptoms develop and continues throughout the care process, accommodating continual changes in the patient's condition and circumstances.
5	It is an interactive process in which the patient actively participates.
6	Optimal functioning, quality of life and the promotion of independence should be primary concerns.
7	The process includes observation, data collection, clinical judgement and validation of perceptions.
8	Data used for the assessment process are collected from several sources by a variety of methods, depending on the healthcare setting.
9	To be effective, the process must be structured and clearly documented.

Source: Adapted from Alfaro-LeFevre (2014), NMC (2018), Teytelman (2002), White (2003).



Box 2.1 Gordon's functional health patterns

- Health perception and health management
- Nutrition and metabolism
- Elimination
- Activity and exercise
- Sleep and rest
- Cognition and perception
- Self-perception and self-concept
- Coping and stress tolerance
- Roles and relationships
- Sexuality and reproductive
- Values and beliefs

Source: Adapted from Gordon (1994) with permission of Mosby / Elsevier.



Box 2.2 Types of patient assessment

Mini assessment

A snapshot view of the patient based on a quick visual and physical assessment. Consider the patient's ABC (airway, breathing and circulation), then assess mental status, overall appearance, level of consciousness and vital signs before focusing on the patient's main problem.

Comprehensive assessment

An in-depth assessment of the patient's health status, risk factors, and psychological and social aspects of health, along with a physical examination; it usually takes place on admission or transfer to a hospital or healthcare agency. It also considers the patient's health status prior to admission.

Focused assessment

An assessment of a specific condition, problem, identified risk or care need – for example, continence assessment, nutritional assessment, neurological assessment following a head injury, assessment for day care or outpatient consultation for a specific condition.

Ongoing assessment

Continuous assessment of the patient's health status accompanied by monitoring and observation of specific problems identified in a mini, comprehensive or focused assessment.

Source: Ahern and Philpot (2002), Holmes (2003), White (2003).



Learning Activity 2.1

Learning into practice

- 1 Is there a model of nursing or care underlying the format and structure for patient admissions in your clinical area? What is it?
- 2 Critically appraise how it affects the assessment process.
- 3 Reflect on your daily practice and identify whether you are carrying out the types of assessment identified in Box 2.2.
- 4 Consider the rationales for and the pros and cons of these different types of assessment.

EVIDENCE-BASED APPROACHES

Collecting data

Data collection is the process of gathering information about the patient's health needs. Information for assessment is collected by means of:

- interview
- observation
- physical examination.

This information can consist of both objective and subjective data. Objective data are measurable and can be detected by someone other than the patient. Objective data include vital signs, physical signs and symptoms, and laboratory results. Subjective data are based on what the patient perceives. Subjective data may include descriptions of the patient's concerns, their support network, their awareness and knowledge of their abilities/disabilities, their understanding of their illness, and their attitude to and readiness for learning (Wilkinson 2007). While the patient is the primary source of information, data may be elicited from a variety of secondary sources including family, friends, other healthcare

professionals and the patient's medical records (Kozier 2012, Walsh et al. 2007).

Assessment is the first and most critical step of the nursing process; it should be systematic and scientific, and should aim to obtain as much accurate and relevant information or data about the patient as possible. Inadequate data or omissions may lead to inaccurate or incorrect judgements.

Assessment interviews

Communication is vital to assessment. It is important to build a good rapport with the patient. The initial assessment interview not only allows the nurse to obtain baseline information about the patient but also facilitates the establishment of a therapeutic relationship (Crumbie 2006). It is vital that the nurse demonstrates interest and respect to the patient from the very start of the interview. Some of the information requested is likely to be of a searching and intimate nature, which may be difficult for the patient to disclose. The nurse should emphasize the confidential nature of the discussion and take steps to reduce anxiety and ensure privacy; the patient may modify their words and behaviour depending on the environment. Taking steps to establish trust and develop the relationship early on will set the scene for effective and accurate information exchange (Silverman et al. 2013).

Interviewing is a skill and an art; it should be both patient centred and clinician centred. The clinician seeks to elicit the full story of the patient's symptoms but must also collect key information in order to complete the assessment and develop a plan. Allowing patients to lead the interview process allows clinicians to understand patients' thoughts, ideas and concerns without adding their own perspective (see Chapter 5: Communication, psychological wellbeing and safeguarding).

In contrast, a clinician-centred or symptom-focused interview is used to elicit specific information in order to identify a disease or problem. Evidence suggests that patients are best served by integrating the two styles as the combination of the two approaches conveys the caring attributes of respect, empathy, humility and sensitivity (Fortin et al. 2012, Haidet and Paterniti 2003). The interview should be open ended, drawing on a range of techniques to cue patients to tell their stories; active listening, guided questioning, non-verbal affirmation, empathetic responses, validation and reassurance are all useful tools (Bickley and Szilagyi 2017).

Observation

Observation is the conscious, deliberate use of the physical senses to gather data from the patient and the environment. For an initial assessment, these observations may include vital signs, physical signs and symptoms, and laboratory results. These are all measurable and objective.

Physical examination

Physical examination is a systematic assessment of all body systems and is concerned with identifying strengths and deficits in the patient's functional abilities. Physical examination elicits both objective and subjective data as it combines elements of both interviewing and observation. It is important to remember that physical examination can be viewed with some anxiety as patients can feel vulnerable, exposed and apprehensive. Good communication (both verbal and non-verbal), together with observational skills, is key, as are ensuring that the environment is appropriate and that all required equipment is readily available.

Principles of an effective nursing assessment

The admitting nurse is responsible for ensuring that an initial assessment is completed when the patient is admitted. The patient's needs, identified following this process, must then be documented in their care plan. Box 2.3 discusses each area of assessment, indicating points for consideration and suggesting questions that it may be helpful to ask the patient as part of the assessment process.



Box 2.3 Points for consideration and suggested questions for use during the assessment process

19

1 Cognitive and perceptual ability

Communication

The nurse needs to assess the level of sensory functioning with or without aids/support (such as hearing aid(s), speech aid(s), glasses or contact lenses) and the patient's capacity to use and maintain aids/support correctly. Furthermore, it is important during this part of the assessment to assess whether there are or might be any potential language or cultural barriers. Knowing the norm within the patient's culture will facilitate understanding and lessen miscommunication (Galanti 2000).

- How good are the patient's hearing and eyesight?
- Is the patient able to express their views and wishes using appropriate verbal and non-verbal methods of communication in a manner that is understandable by most people?
- Are there any potential language or cultural barriers to communicating with the patient?

For further information see Chapter 5: Communication, psychological wellbeing and safeguarding.

Information

During this part of the assessment, the nurse will assess the patient's ability to comprehend the present environment without showing levels of distress. This will help to establish whether there are any barriers to the patient's understanding of their condition and treatment. It may help them to be in a position to give informed consent.

- Is the patient able and ready to understand any information about their forthcoming treatment and care? Are there any barriers to learning?
- Is the patient able to communicate an understanding of their condition, plan of care and potential outcomes/responses?
- Will they be able to give informed consent?

Neurological

It is important to assess the patient's ability to reason logically and decisively, and determine that they are able to communicate in a contextually coherent manner.

- Is the patient alert and orientated to time, place and person?

For further information see Chapter 14: Observations.

Pain

To provide optimal patient care, the assessor needs to have appropriate knowledge of the patient's pain and an ability to identify the pain type and location. Assessment of a patient's experience of pain is a crucial component in providing effective pain management. Dimond (2002) asserts that it is unacceptable for patients to experience unmanaged pain or for nurses to have inadequate knowledge about pain. Pain should be measured using an assessment tool that identifies the quantity and/or quality of one or more of the dimensions of the patient's experience of pain.

During the assessment, the nurse should also observe for signs of neuropathic pain, including descriptions such as shooting, burning or stabbing, and descriptions consistent with allodynia (pain associated with gentle touch) (Jensen et al. 2003, Rowbotham and MacIntyre 2003, Schug et al. 2015).

- Is the patient pain free at rest and/or on movement?
- Is the pain a primary complaint or a secondary complaint associated with another condition?
- What is the location of the pain and does it radiate?
- When did it begin and what circumstances are associated with it?
- How intense is the pain, at rest and on movement?
- What makes the pain worse and what helps to relieve it?
- How long does the pain last – for example, continuous, intermittent?
- Ask the patient to describe the character of the pain using quality/sensory descriptors, such as sharp, throbbing or burning.

For further details regarding pain assessment, see Chapter 10: Pain assessment and management.

2 Activity and exercise

Respiratory

Respiratory pattern monitoring addresses the patient's breathing pattern, rate and depth.

- Does the patient have any difficulty breathing?
- Is there any noise when they are breathing, such as wheezing?
- Does breathing cause them pain?
- How deep or shallow is their breathing?
- Is their breathing symmetrical?
- Does the patient have any underlying respiratory problems, such as chronic obstructive pulmonary disease, emphysema, tuberculosis, bronchitis, asthma or any other airway disease?
- If appropriate, discuss smoking cessation.

For further details see Chapter 12: Respiratory care, CPR and blood transfusion.

Cardiovascular

A basic assessment is carried out and vital signs such as pulse (rhythm, rate and intensity) and blood pressure should be noted. Details of cardiac history should be taken for this part of the assessment. Medical conditions and experience of previous surgery should be noted.

- Does the patient take any cardiac medication?
- Do they have a pacemaker?

(continued)


Box 2.3 Points for consideration and suggested questions for use during the assessment process (continued)

20

Physical abilities; personal hygiene, mobility and toileting; independence with activities of daily living

The aim during this part of the nursing assessment is to establish the level of assistance required by the person to tackle activities of daily living such as walking and use of stairs. An awareness of obstacles, level of independent mobility and dangers to personal safety is an important factor and part of the assessment.

- Is the patient able to stand, walk and go to the toilet?
- Is the patient able to move up and down, roll and turn in bed?
- Does the patient need any equipment to be mobile?
- Has the patient good motor power in their arms and legs?
- Does the patient have any history of falling?
- Can the patient take care of their own personal hygiene needs independently or do they need assistance?
- What type of assistance do they need – for example, do they need help with mobility or fine motor movements such as doing up buttons or shaving?

It might be necessary to complete a separate manual handling risk assessment – see Chapter 7: Moving and positioning.

3 Elimination

Gastrointestinal

During this part of the assessment, it is important to determine a baseline with regard to independence.

- Is the patient able to attend to their elimination needs independently and is the patient continent?
- What are the patient's normal bowel habits? Are bowel movements within the patient's own normal pattern and consistency?
- Does the patient have any underlying medical conditions, such as Crohn's disease or irritable bowel syndrome?
- Does the patient have diarrhoea or are they prone to having – or currently having – constipation?
- How does this affect the patient?

For further discussion see Chapter 6: Elimination.

Genitourinary

This part of the assessment is focused on the patient's baseline observations with regard to urinary continence/incontinence. It is also important to note whether there is any penile or vaginal discharge or bleeding.

- Does the patient have a urinary catheter in place? If so, note the type, size and date of insertion. If the patient previously had a urinary catheter, note the date it was removed. Urinalysis results should also be noted here.
- How often does the patient need to urinate (frequency)?
- How immediate is the need to urinate (urgency)?
- Do they wake in the night to urinate (nocturia)?
- Are they able to maintain control over their bladder at all times (incontinence – inability to hold urine)?

For further discussion see Chapter 6: Elimination.

4 Nutrition and oral care

Oral care

As part of the inpatient admission assessment, the nurse should obtain an oral health history that includes oral hygiene beliefs and practices, and current state of oral health. During this assessment it is important to be aware of treatments and medications that affect the oral health of the patient. If deemed appropriate, use an oral assessment tool to perform the initial and ongoing oral assessments.

- Lips – are they pink, moist and intact?
- Gums – are they pink, with no signs of infection or bleeding?
- Teeth – are there dentures, a bridge, crowns or caps?

For details on how to conduct a full oral assessment, see Chapter 9: Patient comfort and supporting personal hygiene.

Hydration

An in-depth assessment of hydration will provide the information needed for nursing interventions aimed at maximizing wellness and identifying problems for treatment. The assessment should ascertain whether the patient has any difficulty drinking. During the assessment, the nurse should observe signs of dehydration – for example, dry mouth, dry skin, thirst or whether the patient shows any signs of an altered mental state.

- Is the patient able to drink adequately? If not, why not?
- How much and what does the patient drink?
- Note the patient's alcohol intake in the format of units per week (see Figure 2.2).
- Also note their caffeine intake, measured in number of cups per day.

Nutrition

A detailed diet history provides insight into a patient's baseline nutritional status. Assessment includes questions regarding chewing or swallowing problems; avoidance of eating related to abdominal pain; changes in appetite, taste or intake; and the use of a special diet or nutritional supplements. A review of past medical history should identify any relevant conditions and highlight increased metabolic needs, altered gastrointestinal function and the patient's capacity to absorb nutrients.

- What is the patient's usual daily food intake?
- Do they have a good appetite?

- Are they able to swallow/chew the food – any **dysphagia**?
 - Is there anything they don't or can't eat?
 - Have they experienced any recent weight changes or taste changes?
 - Are they able to eat independently?
- (adapted from Arrowsmith 1999, BAPEN and Malnutrition Advisory Group 2000, DH 2005)
- For further information on hydration and nutrition, see Chapter 8: Nutrition and fluid balance.

Nausea and vomiting

During this part of the assessment, the nurse should ascertain whether the patient has any history of nausea and/or vomiting. Nausea and vomiting can cause dehydration, electrolyte imbalance and nutritional deficiencies (Marek 2003), and can also affect a patient's psychosocial wellbeing. They may become withdrawn, isolated and unable to perform their usual activities of daily living.

- Does the patient feel nauseous?
 - Is the patient vomiting? If so, what are the frequency, volume, content and timing?
 - Does nausea precede vomiting?
 - Does vomiting relieve nausea?
 - When did the symptoms start? Did they coincide with changes in therapy or medication?
 - Does anything make the symptoms better?
 - Does anything make the symptoms worse?
 - What is the effect of any current or past antiemetic therapy, including dose, frequency, duration, effect and route of administration?
 - What is the condition of the patient's oral cavity?
- (adapted from Perdue 2005)

For further discussion see Chapter 6: Elimination.

5 Skin

A detailed assessment of a patient's skin is an essential part of the admission and care process. The ASSKING bundle is a tool that can be used to help staff and patients to monitor skin concerns and proactively reduce the risk of developing a pressure ulcer. Documenting each aspect of the ASSKING checklist can help to achieve this (MacDonald and RMH Pressure Ulcer MDT Collaborative 2019).

ASSKING stands for:

- A** ssessment of risk
- S** kin inspection and care
- S** upport surface selection and use
- K** eep your patient moving
- I** ncontinence and moisture care
- N** utrition and hydration management
- G** iving information

For further information see Chapter 17: Wound management.

6 Controlling body temperature

This assessment is carried out to establish the patient's baseline temperature, determine whether the temperature is within the normal range, and ascertain whether there might be intrinsic or extrinsic factors causing altered body temperature. It is important to note whether any changes in temperature are in response to specific therapies (e.g. antipyretic medication, immunosuppressive therapies, invasive procedures or infection) (Bickley and Szilagyi 2017). White blood count should be recorded to determine whether it is within normal limits (see Chapter 14: Observations).

- Is the patient feeling excessively hot or cold?
- Have they been shivering or sweating excessively?

7 Sleep and rest

This part of the assessment is performed to find out sleep and rest patterns and reasons for variation. The nurse should document the patient's description of their sleep patterns and routines, and the habits they use to achieve a comfortable sleep. The nurse should also include the presence of emotional and/or physical problems that may interfere with sleep.

- Does the patient have enough energy for desired daily activities?
- Do they tire easily?
- Do they have any difficulty falling asleep or staying asleep?
- Do they feel rested after sleep?
- Do they sleep during the day?
- Do they take any aids to help them sleep?
- What are their normal hours for going to bed and waking?

(continued)



Box 2.3 Points for consideration and suggested questions for use during the assessment process (*continued*)

22

8 Stress and coping

This assessment is focused on the patient's perception of stress and their coping strategies. Support systems should be evaluated and symptoms of stress should be noted. This assessment includes the individual's reserve or capacity to resist challenges to self-integrity, and their modes of handling stress. The effectiveness of a person's coping strategies in terms of stress tolerances may be further evaluated.

- What are the things in the patient's life that are stressful?
 - What do they do when they are stressed?
 - How do they know they are stressed?
 - Is there anything they do to help them cope when life gets stressful?
 - Is there anybody they go to for support?
- (adapted from Gordon 1994)

9 Roles and relationships

It is important to understand the patient's role in the world and their relationships with others. Assessment in this area includes finding out about the patient's perceptions of the major roles and responsibilities they have in life, and about satisfaction and/or disturbances in their family, work and/or social relationships. An assessment of home life should be undertaken and must include how the patient will cope at home post-discharge, how those at home (e.g. dependants, children and/or animals) will cope while they are in hospital, and whether they have any financial concerns.

- Who is at home?
- Are there any dependants? (Include children, pets and anybody else the patient cares for.)
- What responsibilities does the patient have for the day-to-day running of the home?
- What will happen if they are not there?
- Do they have any concerns about their home while they are in hospital?
- Are there any financial issues related to their hospital stay?
- Will there be any issues related to employment or study while they are in hospital?

10 Perception/concept of self

This assessment concerns body image or self-esteem. Body image is highly personal, abstract and difficult to describe. The rationale for this section is to assess the patient's level of understanding and general perception of self. This includes their attitudes about self, their perception of their abilities (cognitive, affective and physical), their body image, their identity, their general sense of worth and their general emotional pattern. An assessment of body posture and movement, eye contact, voice and speech patterns should also be included.

- How do you describe yourself?
- How do you feel about yourself most of the time?
- Has it changed since your diagnosis?
- Have there been changes in the way you feel about yourself or your body?

11 Sexuality and reproduction

Understanding sexuality as the patient's perceptions of their own body image, family roles and functions, relationships and sexual function can help the assessor to improve assessment and diagnosis of actual or potential alterations in sexual behaviour and activity.

- Are you currently in a relationship?
- Has your condition had an impact on the way you and your partner feel about each other?
- Has your condition had an impact on the physical expression of your feelings?
- Has your treatment or current problem had any effect on your interest in being intimate with your partner?

12 Values and beliefs

This area concerns the patient's religious, spiritual and cultural beliefs. The aim is to assess the patient's needs in this area to provide culturally and spiritually specific care while concurrently providing a forum to explore spiritual strengths that might be used to prevent problems or cope with difficulties. A patient's experience of their stay in hospital may be influenced by their religious beliefs or other strongly held principles, cultural background or ethnic origin.

- Are there any spiritual or cultural beliefs or practices that are important to you?
- Do you have any specific dietary needs related to your religious, spiritual or cultural beliefs?
- Do you have any specific personal care needs related to your religious, spiritual or cultural beliefs (e.g. washing rituals, dress)?

13 Health perception and management

This assessment concerns any relevant medical conditions, side-effects and complications of treatment. The nurse should document the patient's perceived pattern of health and wellbeing and how their health is managed. Any relevant history of previous health problems, including side-effects of medication, should be noted. Examples of other useful information that should be documented are compliance with medication regimen, use of health promotion activities (such as regular exercise) and whether the patient has annual check-ups.

- What does the patient know about their condition and planned treatment?
- How would they describe their current overall level of fitness?
- What do they do to keep well: exercise, diet, annual check-ups or screening?

Figure 2.2 Examples of 1 unit of alcohol. Source: Drinkaware (2019). Reproduced with permission of Drinkaware.



Learning Activity 2.2

Clinical application

Conducting an initial assessment on a patient being admitted to hospital can sometimes become a lengthy 'question and answer' activity, with the nurse asking many questions using the admissions framework as a template, and the patient providing relatively brief, focused answers.

Consider an alternative approach to the admission of Mrs Beth Jones, aged 78, being admitted for gynaecological surgery for postmenopausal bleeding. The medical notes and letters to the GP inform you that she lives in a bungalow with her 85-year-old husband, who has mild dementia. Beth is his main carer. Beth has osteoarthritis and has undergone bilateral hip and right-knee replacements in the past. She also has diverticular disease, for which she takes Fybogel.

Write down some ways you could conduct Beth's assessment to minimize the use of closed, short questions.

See the answers on the companion site of this student edition: www.royalmarsdenmanual.com/student10e.



Box 2.4 Examples of measurable and non-measurable verbs for use in outcome statements

Measurable verbs (use these to be specific)

- state, verbalize, communicate, list, describe, identify
- demonstrate, perform
- will lose, will gain, has an absence of
- walk, stand, sit

Non-measurable verbs (do not use)

- know
- understand
- think
- feel

Source: Reproduced from Alfaro-LeFevre (2014) with permission of Lippincott Williams & Wilkins.

POST-PROCEDURAL CONSIDERATIONS

Care planning

The purpose of collecting information through the process of assessment is to enable the nurse to make a series of clinical judgements (which are known in some circumstances as nursing diagnoses), and subsequently decisions about the nursing care each individual needs. Nursing diagnoses provide a focus for planning and implementing effective and evidence-based care. This process consists of identifying nursing-sensitive patient outcomes and determining appropriate interventions (Alfaro-LeFevre 2014, Shaw 1998, White 2003). The key steps are:

- To determine the immediate priorities and recognize whether the patient's problems require nursing care or whether a referral should be made to someone else.
- To identify the anticipated outcome for the patient, noting what the patient will be able to do and within what time frame. The use of 'measurable' verbs that describe patient behaviour or what the patient says facilitates the evaluation of patient outcomes (Box 2.4).
- To determine the nursing interventions – that is, what nursing actions will prevent or manage the patient's problems so that the patient's outcomes may be achieved.

- To record the care plan for the patient, which may be written or individualized from a standardized (sometimes called 'core') care plan or a computerized care plan.

Outcomes should be patient focused and realistic, stating how the outcomes or goals are to be achieved and when the outcomes should be evaluated. Outcomes may be short, intermediate or long term, enabling the nurse to identify the patient's health status and progress (stability, improvement or deterioration) over time. Setting realistic outcomes and interventions requires the nurse to distinguish between nursing diagnoses that are life threatening or an immediate risk to the patient's safety, and those that may be dealt with at a later stage.

It is important to continue to assess the patient on an ongoing basis while implementing the care planned. Assessing the patient's current status prior to implementing care will enable the nurse to check whether the patient has developed any new problems that require immediate action. During and after any nursing intervention, the nurse should assess and reassess the patient's response to care. The nurse will then be able to determine whether changes to the patient's care plan should be made immediately or at a later stage. If there are any patient care needs that require immediate action – for example, consultation or referral to a doctor – recording the actions taken is essential. Involving the patient and their family or friends will promote the patient's wellbeing and self-care abilities. The use of clinical documentation in the nursing shift report, or 'handover', will help to ensure that the care plans are up to date and relevant (Alfaro-LeFevre 2014, White 2003).



Learning Activity 2.3

Learning into practice

Core care plans and care pathways are increasingly being used to plan and deliver patient care. These are primarily created to reflect the medical diagnosis linked to a standardized treatment or management protocol. However, patients will have additional, individual needs for nursing care that lie outside the core care plan, so it is vitally important that nurses are able to create a person-centred care plan for their patients to supplement those documented in any pre-designed document.

Mr Angus McKay is 64 years old and has presented with shortness of breath and a productive cough. Initial investigations suggest he has pneumonia. Intravenous (IV) antibiotics and an IV infusion have been commenced. On admission, he states that he has unintentionally lost a stone in weight in the past month. The medical team has started to investigate some possible causes of these symptoms. Angus is a dairy farmer and lives with his wife and adult son some 30 miles away.

Develop a care plan to include:

- 1 Problems that Angus may be concerned about
- 2 Goals of care
- 3 Nursing interventions

See the answers on the companion site of this student edition:
www.royalmarsdenmanual.com/student10e.

Evaluating care

Effective evaluation of care requires the nurse to critically analyse the patient's health status to determine whether the patient's condition is stable, has deteriorated or has improved. Seeking the patient's and their family's views in the evaluation process will facilitate decision making. By evaluating the patient's outcomes, the nurse is able to decide whether changes need to be made to the care planned. Evaluation of care should take place in a structured manner and on a regular basis by a registered nurse.

Documentation

Nurses have a professional responsibility to ensure that health-care records provide an accurate account of treatment, care planning and delivery, and are viewed as a tool of communication within the team. There should be clear evidence of the care planned, the decisions made, the care delivered and the information shared (NMC 2018) (Box 2.5). The content and quality of record keeping are a measure of standards of practice relating to the skills and judgement of the nurse (NMC 2018).

Observation**DEFINITION**

Observation is the conscious, deliberate use of the physical senses to gather data from the patient and the environment. Observation occurs whenever the nurse is in contact with the patient. At each patient contact, it is important for the nurse to

**Box 2.5 The Royal Marsden NHS Trust's guidelines for nursing documentation (2011) (adopted in line with NMC 2018)****Assessment and care planning**

- 1 The first written assessment and the identification of the patient's immediate needs must begin within 4 hours of admission. This must include any allergies or infection risks of the patient and the contact details of the next of kin.
- 2 The following must be completed within 24 hours of admission and updated as appropriate:
 - nutritional, oral, pressure ulcer and manual handling risk assessments;
 - other relevant assessment tools, for example pain and wound assessment or a venous thromboembolism (VTE) assessment.
- 3 All sections of the nursing admission assessment must be completed at some point during the patient's hospital stay along with the identification of the patient's care needs. If it is not relevant or if it is inappropriate to assess certain functional health patterns (e.g. if the patient is unconscious) then the reasons should be indicated accordingly. The ongoing nursing assessment should identify whether the patient's condition is stable, has deteriorated or has improved.
- 4 Wherever possible, care plans should be written with the involvement of the patient, in terms that they can understand, and include:
 - patient-focused, measurable, realistic and achievable goals;
 - nursing interventions reflecting best practice;
 - relevant core care plans that are individualized, signed, dated and timed.
- 5 Update the care plan with altered or additional interventions as appropriate.
- 6 The nursing documentation must be referred to at shift handover so it needs to be kept up to date.

Principles of assessment

- 1 Assessment should be a systematic, deliberate and interactive process that underpins every aspect of nursing care (Heaven and Maguire 1996).
- 2 Assessment should be seen as a continuous process (Cancer Action Team 2007).

Structure of assessment

- 1 The structure of a patient assessment should take into consideration the speciality and care setting and also the purpose of the assessment.
- 2 Functional health patterns provide a comprehensive framework for assessment, which can be adapted for use within a variety of clinical specialities and care settings (Gordon 1994).

Methods of assessment

- 1 Methods of assessment should elicit both subjective and objective assessment data.
- 2 An assessment interview must be well structured and progress logically in order to facilitate the nurse's thinking and to make the patient feel comfortable in telling their story.

- 3 Specific assessment tools should be used, where appropriate, to enable nurses to monitor particular aspects of care, such as symptom management (e.g. pain, fatigue), over time. This will help the nurse to evaluate the effectiveness of nursing interventions and it also often provides an opportunity for patients to become more involved in their care (O'Connor and Eggert 1994).

Decision making

- 1 Nurses should be encouraged to provide a rationale for their clinical judgements and decision making within their clinical practice (NMC 2018).

Planning and implementing care

- 1 When planning care, it is vital that nurses recognize whether patient problems require nursing care or whether a referral should be made to someone else.
- 2 When a nursing problem has been recognized, the anticipated outcome for the patient must be identified in a manner that is specific, achievable and measurable (NMC 2018).
- 3 Nursing interventions should be determined with the aim of addressing the nursing need and achieving the desired outcomes.

Evaluating care

- 1 Nursing care should be evaluated using measurable outcomes on a regular basis with interventions adjusted accordingly.
- 2 Progress towards achieving outcomes should be recorded in a concise and precise manner. Using a method such as charting by exception can facilitate this (Murphy 2003).

Documenting and communicating care

- 1 The content and quality of record keeping are a measure of standards of practice relating to the skills and judgement of the nurse (NMC 2018).
- 2 In addition to the written record of care, the important role that the handover plays in the communication and continuation of patient care should be considered, particularly when considering the role of electronic records.

try to develop a sequence of observations. These might include the following:

- 1 On approaching the patient, observe for signs of distress, such as pallor, laboured breathing, and behaviours indicating pain or emotional distress.
- 2 Scan the area for safety hazards, such as any floor spillages.
- 3 Look at the equipment, such as urinary catheter, intravenous pumps, oxygen and monitors.
- 4 Notice other people in the area – who is there and how do these people interact with the patient?
- 5 Observe the patient more closely for physical data such as skin temperature, breath sounds, drainage and dressing odours, condition of drains and dressings, and need for repositioning (Wilkinson 2007).

Accurate measurements of the patient's vital signs provide crucial information about body functions (see Chapter 14: Observations).

Physical assessment

Patient assessment should be systematic; it can be defined as the systematic collection of information concerning the patient's health status with the aim of identifying the patient's current health status, actual and potential health problems, and areas for health improvement (Estes 2013).

DEFINITION

Physical examination is the systematic assessment of all body systems; it is concerned with identifying strengths and deficits in the patient's functional abilities. Physical assessment provides objective data that can be used to validate the subjective data gained when taking the patient's history (Wilkinson 2007).

The patient's history is one of the most important components of a physical assessment; the history guides the nature of the physical assessment that needs to be carried out (Peacock 2004).

The components of a thorough health history are (Bickley and Szilagyi 2017):

- chief complaint
- history of chief complaint
- past medical history
- family history
- social history
- systems review.

The findings of the history will determine which body system to examine and what investigations are required; the nurse will determine whether a focused or comprehensive physical examination is required based on the patient's clinical presentation (Baid 2006).

The aims of the physical examination are:

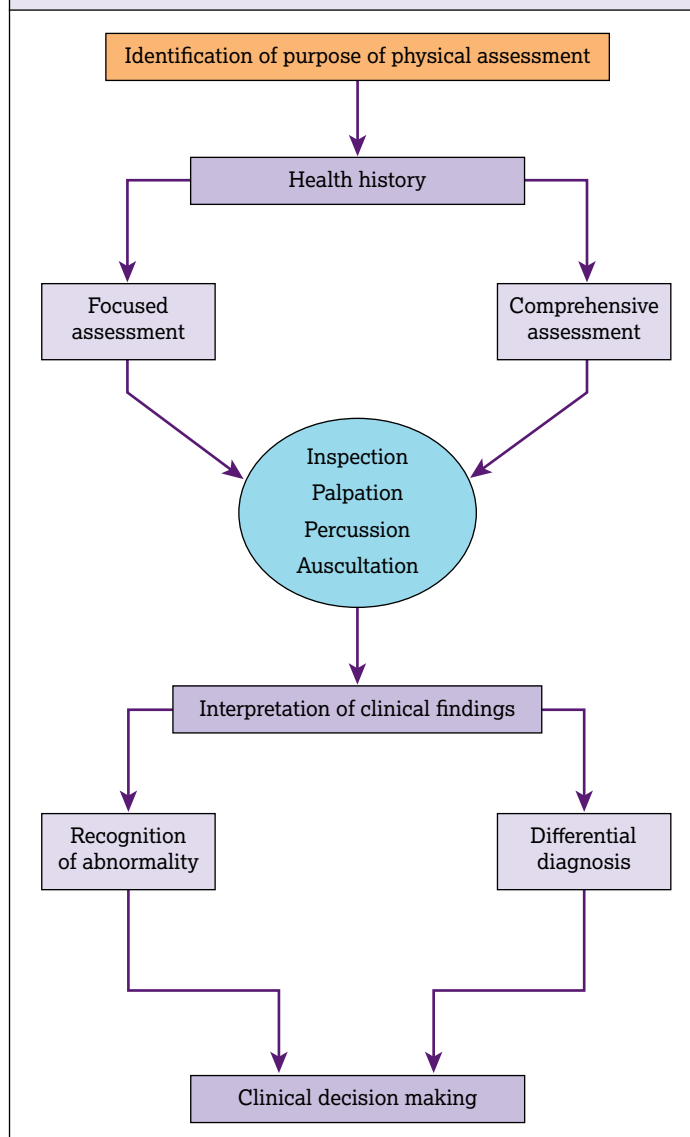
- to identify potential diagnoses
- to make a diagnosis
- to obtain information on the patient's overall health status
- to enable additional information to be obtained about any symptoms reported by the patient
- to detect changes in the patient's condition
- to evaluate how the patient is responding to interventions
- to establish the patient's fitness for surgery or anaesthetic (Abbott and Ranson 2017; Crouch and Meurier 2005).

During the physical assessment, a systematic approach is taken to build on the patient's history, using the key assessment skills of inspection, palpation, percussion and auscultation (Figure 2.3).

ANATOMY AND PHYSIOLOGY

When examining an area of the body, it is essential to understand the basic anatomy of that area. This will ensure that the appropriate system is examined and that the findings of the examination are understood. It will also help in the formation of differential diagnoses and in ensuring that appropriate investigations are ordered.

Figure 2.3 Physical assessment framework. *Source:* Reproduced from Baid (2006) with permission of MA Healthcare Limited.



Learning Activity 2.4

Clinical application

Try to observe at least five different people carrying out clinical assessments of patients in your clinical area. As you do this:

- Note their questioning technique, and observe and listen to the patients' responses.
- Ask the professionals to explain their thinking and rationale for their history-taking and clinical-assessment practice.
- Discuss with them their impressions, decisions and diagnoses arising from their clinical assessment.

Then write a reflective account of one observed assessment, identifying your learning and what skills or techniques you would adopt as a result of the observation and use in the future.

RELATED THEORY

Alongside history taking and investigations, physical assessment is essential to helping a patient from their presenting complaint to diagnosis and treatment. Successful assessment requires critical thinking skills and a good knowledge base to decide which assessments to make, how much information is needed and how to get the information (Wilkinson 2007).

The clinical reasoning model permits the clinician to question and examine an existing problem in order to formulate and critically analyse a comprehensive hypothesis, elaborate strategies, establish a diagnosis and initiate a treatment (Barrows and Pickell 1991). This model represents a step-by-step approach to the clinical decision-making process (Walsh 2006b); it is 'the art of thinking about your thinking while you're thinking so as to make your thinking more clear, precise, accurate, relevant, consistent, and fair' (Paul 1988, pp.2–3).

The systems that this chapter will cover are respiratory, cardiovascular and abdominal. Neurological examination is covered in Chapter 14: Observations.

EVIDENCE-BASED APPROACHES

Rationale

Before commencing a physical assessment, a detailed health history should be taken. The patient's present complaints, the findings of the history taking, and the nurse's knowledge of anatomy and physiology will determine which body system to examine and what investigations are required (Price et al. 2000). Furthermore, it is also important to consider the patient's entire problem, including from social and psychological perspectives (Barrows and Pickell 1991).

Each system-based examination is divided into the following categories:

- inspection (looking)
- palpation (feeling)
- percussion (tapping)
- auscultation (listening).

Inspection

Inspection is simply observing the patient while looking for the presence or absence of physical signs that confirm or refute the differential diagnoses obtained from the history (Dover et al. 2018). A general survey of the patient should include observations of posture, gait, height and weight, posture, mood and alertness (Bickley and Szilagyi 2017).

Prior to taking a history, the nurse should introduce themselves to the patient and define their role. The patient may be particularly worried that the examination will identify a serious problem so it is important to build a rapport and trust. The nurse should provide the patient with their full attention and use appropriate facial expressions. After introducing themselves, the nurse should ask the patient open-ended questions to facilitate conversation (Jarvis 2016). Closed questions can be used to ask for specific information and clarifying questions can be used where appropriate. The nurse must ensure the patient feels confident to share information.

During the interview and the physical examination, the nurse should continue to observe the patient's behaviour, general demeanour and appearance. Having the opportunity to take the patient's history often allows subtle clues about their health to be identified. For example, a patient's voice can provide important clues about neurological and respiratory functions (Baid 2006).

The precise points to consider during inspection are informed to some extent by the history; however, inspection starts as soon as the nurse first sees the patient. This is called the 'global view of the patient', 'general survey' or 'first impression' (Innes et al. 2018).

Inspection will then continue throughout the physical examination (Seidel et al. 2011). Typically, the first impression includes looking at the patient as a whole, examining the nails, skin and eyes, and assessing vital signs (Rushforth 2009, Swartz 2014, Tidman 2018). The following should be considered:

- **General appearance:** are they well kept? Are they wearing appropriate clothing?
- **Nutrition:** do they look well nourished?
- **Pain:** do they appear to be in any pain? What is their facial expression?
- **Nausea and vomiting:** are they retching?
- **Posture and gait:** how do they get into the room? Walk? Limp? Wheelchair?
- **Orientation:** are they orientated to time and place? (see Chapter 14: Observations)
- **Consciousness:** what is their level of consciousness? (see Chapter 14: Observations)
- **Symmetry:** are they moving both sides of their body symmetrically?
- **Speech:** is their speech impaired?

Once inspection has been completed, the nurse should move on to the system(s) of concern and examine the area(s) closely.

Palpation

Palpation requires use of the whole hand (including the palm and the full length of the fingers) using touch to feel and assess an area (Bickley and Szilagyi 2017, Rushforth 2009, Swartz 2014).

This includes assessment of:

- texture
- tenderness
- temperature
- contours
- pulse
- lymph nodes
- moisture
- mobility.

The order of palpation is not important unless there is an area of pain or tenderness, in which case always examine that area last. There are two variations of palpation: light palpation and deep palpation:

- **Light palpation** requires a gentle touch, depressing the skin with one hand to a maximum of 2 cm (Rushforth 2009). When lightly palpating, temperature, tenderness, texture, moisture, elasticity, pulsation and any superficial organs or masses should be assessed (see Figure 2.21).
- **Deep palpation** uses the same technique as light palpation but often two hands are used, one on top of the other at a depth of around 4 cm, as illustrated in Figure 2.22. When palpating deeply, internal organs and masses should be assessed. As the nurse palpates, they should watch the patient's face assessing for any discomfort or tenderness (Rushforth 2009).

Percussion

Percussion helps to identify organs, allowing assessment of size and shape. The technique is done by laying the tip and first joint of the middle finger flat on the patient, ensuring that no other part of the finger or hand is touching the patient. The joint is then struck in a quick, fluid movement with the fingertip of the middle finger of the other hand (Bickley and Szilagyi 2017), as illustrated in Figure 2.20. The sound produced by the impact is heard as percussion tones called 'resonance' (Seidel et al. 2011). The percussion technique is the same for all the structures of the body.

The sound produced through percussion can help to identify whether the structures are solid or filled with liquid or air (Table 2.3). It takes experience and practice to be able to hear and identify the different sounds.

Auscultation

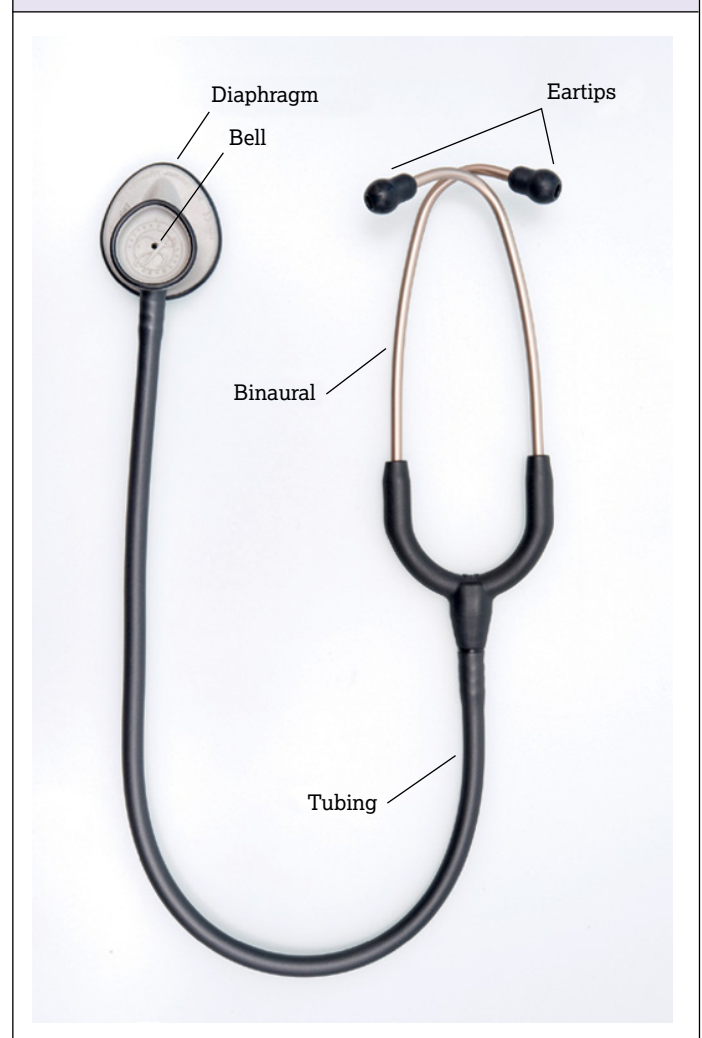
Auscultation involves listening to various sounds in the body using a stethoscope (Bickley and Szilagyi 2017, Rushforth 2009). A stethoscope is a medical device and has a bell and a diaphragm (Figure 2.4), which is often used to listen to internal sounds of the

Table 2.3 Different sounds heard on percussion

Sound	Quality	Example of source
Flat	Soft, high-pitched, dull sound	Thigh
Dull	Medium-level, thud-like sound	Liver, spleen
Resonant	Loud, low-pitched, hollow sound	Lung
Hyper-resonant	Very loud, low, booming, hollow sound	No normal organ
Tympanic	Loud, high-pitched, drum-like sound	Gastric air bubble

Source: Adapted from Bickley and Szilagyi (2017), Rushforth (2009).

Figure 2.4 Stethoscope.



human body. The bell should be used to hear low-pitched sounds, for example murmurs; the diaphragm should be used when listening to high-pitched sounds, for example bowel sounds. A good-quality stethoscope will aid diagnosis as more subtle sounds will be heard clearly.

CLINICAL GOVERNANCE

As in all aspects of care, nurses must be aware of their ethical and legal responsibilities when assessing patients. Issues of honesty and confidentiality are frequently encountered during assessment (Wilkinson 2007).

Consent

The Royal College of Nursing (2017) states that registered nurses must ensure consent is obtained and clearly documented prior to commencing any procedure or treatment. Before gaining consent, information about the procedure should be given to the patient in a clear, honest and jargon-free manner (NMC 2018).

According to Burns et al. (2011), there are three main components of valid consent. To be competent (or to have the capacity) to give consent, the patient must:

- understand the information that has been given
- believe that information
- be able to retain and evaluate the information so as to make a decision.

PRE-PROCEDURAL CONSIDERATIONS

Prior to commencing a patient assessment, the nurse should prepare the physical environment, taking into consideration the patient's privacy and dignity (Smith and Rushton 2015).

Equipment

Prior to the examination, the nurse should ensure the environment is at a suitable temperature and prepare the appropriate equipment. Good preparation of equipment is essential for a competent physical assessment (Crouch and Meurier 2005). The following equipment may be useful as part of a physical examination:

- pen torch
- stethoscope
- examination couch
- tongue depressor
- ruler (must measure in centimetres and be at least 10 cm long).

Patient preparation

During the physical assessment, the use of sheets, blankets and gowns will help to minimally expose the area being examined, maximizing privacy and dignity. Whatever system(s) are being examined, the nurse should organize their steps to minimize the number of times the patient needs to change position (Rushforth 2009). The nurse must consider whether the patient has any needs requiring specific adjustments, whether the patient requires translation and the possibility of a chaperone (Donnelly and Martin 2016).

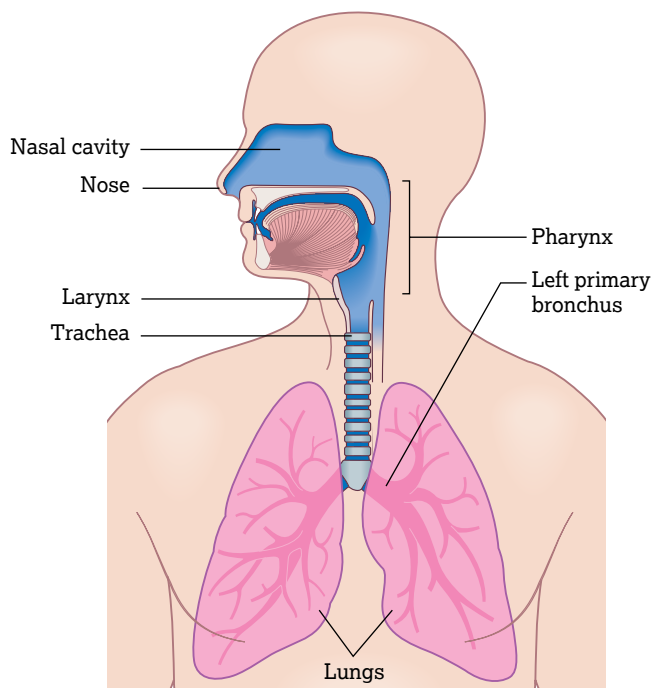
Respiratory examination

ANATOMY

The respiratory system consists of an upper and lower airway (Figure 2.5). The upper airway starts with the nasopharynx and the oropharynx, then continues to the laryngopharynx and the larynx (Rushforth 2009). The lower airway starts at the trachea, which divides into two bronchi; these then divide into lobar bronchi, then secondary bronchi, tertiary bronchi, terminal bronchioles, respiratory bronchioles and alveolar ducts (Rushforth 2009).

The right lung is made up of three lobes: upper, middle and lower. The left lung only has two lobes: upper and lower (Figure 2.6). The lungs are not stationary but expand and contract

Figure 2.5 Structures of the respiratory system. *Source: Reproduced from Peate et al. (2014) with permission of John Wiley & Sons, Ltd.*



during inhalation and exhalation (Bickley and Szilagyi 2017). In order for this to happen smoothly, they are covered in two serous membranes: the visceral pleura and the parietal pleura (Bickley and Szilagyi 2017). The space between these two membranes can occasionally become filled with substances such as air, blood and fluid (Rushforth 2009).

The lungs are within the thorax and are protected by the ribcage, which surrounds them; when examining the lungs, it can be helpful to use the thorax as a point of reference when describing the location of findings (Figure 2.7).

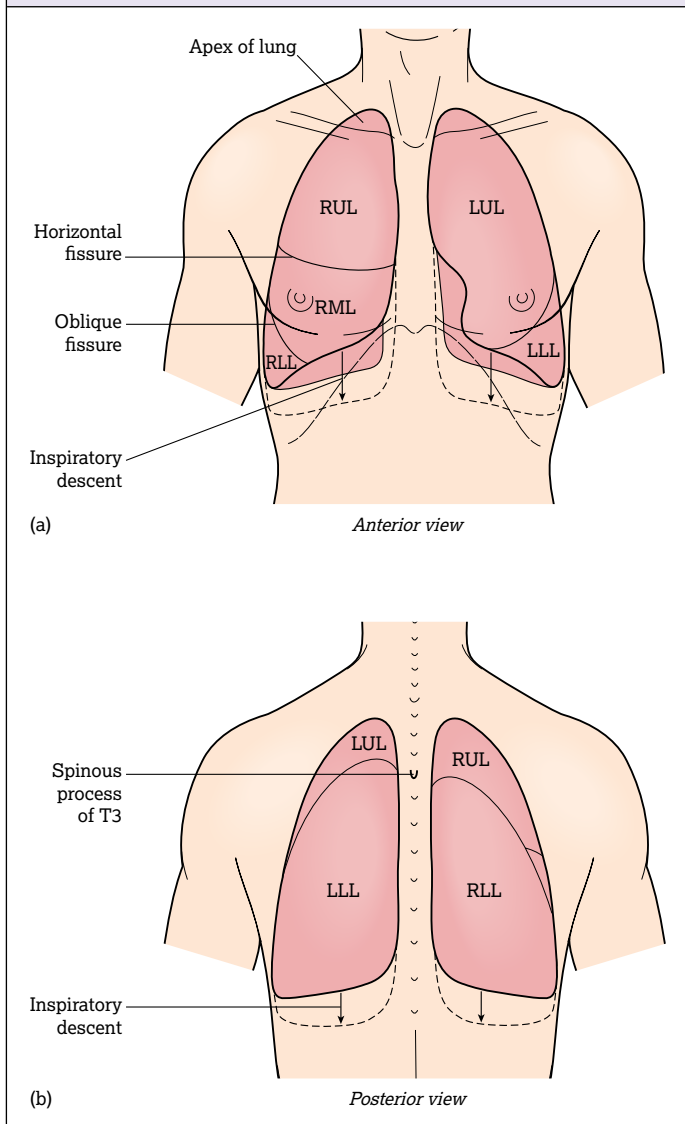
PHYSIOLOGY

The respiratory system has two main functions: delivery of oxygen to cells and removal of carbon dioxide, which accumulates as a result of cellular metabolism (Moore 2007). The control of ventilation is either voluntary or involuntary. The former involves regulation of the respiratory muscles (intercostal muscles and diaphragm) via the central nervous system. Involuntary control of the respiratory muscles occurs via the respiratory centre (medulla oblongata and pons) in the brain (Moore 2007). Stimulation of the respiratory centre occurs when carbon dioxide levels in arterial blood become elevated. Detection of raised carbon dioxide levels results in an increase in the rate and depth of breathing to aid carbon dioxide removal. Hence, in normal pathology, the trigger for breathing is carbon dioxide (hypercapnia) and not oxygen levels. It is important to note that in a patient with chronic obstructive pulmonary disease (COPD), the trigger for respiration is hypoxia (low oxygen levels). This is due to chronically elevated carbon dioxide levels. Consequently, patients with COPD are at risk of respiratory arrest if over-oxygenated (Moore 2007).

RELATED THEORY

The purpose of the respiratory assessment is to further refine the differential diagnoses identified from the patient history. The respiratory assessment will also assess the adequacy of gas

Figure 2.6 Lung, fissures and lobes. RUL, right upper lobe; RML, right middle lobe, RLL, right lower lobe; LUL, left upper lobe; LLL, left lower lobe.



exchange, the delivery of oxygen to the tissues and the removal of carbon dioxide (Moore 2007).

The order of examination for the respiratory system is:

- inspection
- palpation
- percussion
- auscultation.

Both the anterior (front) and the posterior (back) chest must be examined and the same techniques are used for both sides.

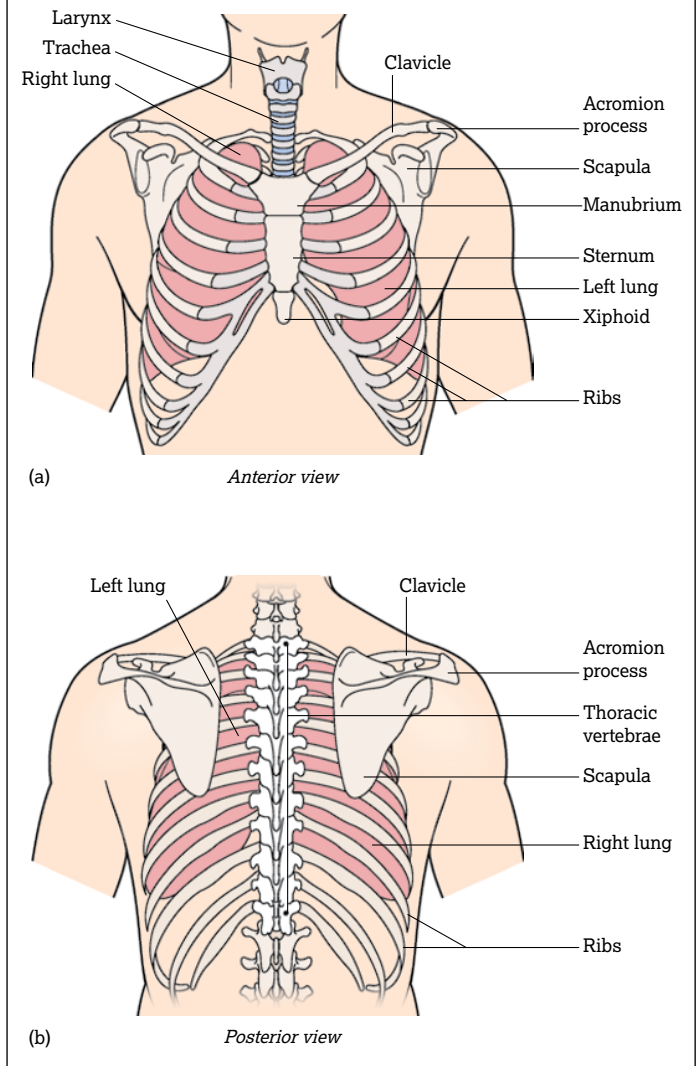
Inspection

Respiratory rate

When inspecting the respiratory rate, consider the rate, rhythm and effort. Signs to look out for include:

- **Rate:** tachypnoea (more than 18 breaths per minute) can be indicative of respiratory distress (acute asthma attack, pain, anxiety). Bradypnoea (less than 10 breaths per minute) can indicate a reduced level of consciousness, opioid overdose or depression of the respiratory centre.

Figure 2.7 Structures of the chest and thorax.



- **Rhythm:** examples of abnormal rhythms include Kussmaul respirations (rapid deep breathing, as seen in states of acidosis such as diabetic ketoacidosis) and Cheyne–Stokes respirations (apnoeic episodes often seen towards the end of life).
- **Effort:** use of accessory muscles (shoulders and sternocleidomastoid muscles), nasal flaring and pursed lip breathing.

Skin colour

When inspecting skin colour, signs to look out for include:

- **Peripheral cyanosis:** this is usually evident in the skin and nail beds and is indicative of poor circulation.
- **Central cyanosis:** this is usually evident in a bluish tinge of the tongue and lips, and is indicative of circulatory or ventilator problems.

Sputum

If the patient has a productive cough, inspection of the sputum can help to ascertain possible causes (Fisher and Potter 2017). The following can be indicative:

- **Purulent, yellow or green:** infection.
- **Mucoid, clear, grey or white:** COPD or asthma.
- **Serous, clear, pink or frothy:** pulmonary oedema.
- **Blood:** malignancy, pulmonary embolus, clotting disorders or infection.

Learning Activity 2.5 Case study

What would you expect to find in relation to the following issues, on initial examination of Angus McKay (see Learning Activity 2.3)? Remember that Angus has presented with shortness of breath and a productive cough. Initial investigations suggest he has pneumonia.

- 1 Respiratory rate
- 2 Respiratory rhythm
- 3 Respiratory effort
- 4 Skin colour
- 5 Sputum

See the answers on the companion site of this student edition: www.royalmarsdenmanual.com/student10e.

Chest deformities

Some examples of chest deformities are barrel chest, pigeon chest, funnel chest and flail chest (Table 2.4). Also check for the presence of any scars that could be indicative of previous lung surgery, radiotherapy tattoos or previous chest drains (Moore 2007).

Legs

Inspect the legs for any evidence of pulmonary oedema, calf swelling (indicative of a deep vein thrombosis) or **erythema nodosum** (which can be seen in tuberculosis, sarcoidosis or streptococcal throat infections) (Fisher and Potter 2017).

Palpation

Lymph nodes

Part of palpation when examining the respiratory system is to examine the lymph nodes in the neck. Patients often present with a lump or enlarged lymph nodes (lymphadenopathy), which can be an important sign of infection or malignancy (Dover et al. 2018). To do this, stand behind the patient and examine both sides of the neck at the same time. Use your middle and index fingers to softly palpate in circular movements the lymph nodes in the positions illustrated in Figure 2.8.

Chest expansion

To assess for chest expansion and symmetry, adopt the position shown in Figure 2.9 and ask the patient to take a deep breath in. You should be able to see your thumbs move an equal distance apart. Reduced expansion may be indicative of fibrosis, **consolidation**, **effusion** or **pneumothorax** (Fisher and Potter 2017).

Tactile fremitus

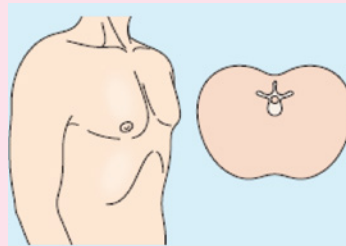
Fremitus is the palpable vibration of the patient's voice through the chest wall (Bickley and Szilagyi 2017). See Figures 2.10 and 2.11 for the appropriate locations to feel for fremitus. Compare the two sides of the chest, using the ball or ulnar surface of your hand (Bickley and Szilagyi 2017). The vibrations felt should be symmetrical and will decrease as you work down the chest wall. Fremitus is usually decreased or absent over the precordium. Asymmetry could indicate:

- consolidation
- emphysema
- pneumothorax
- plural effusion (Rushforth 2009).

Faint or absent fremitus in the upper thorax could indicate:

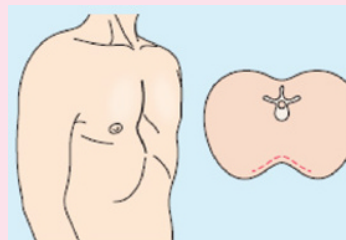
- obstruction of the bronchial tree
- fluid
- obesity (Rushforth 2009).

Table 2.4 Examples of chest deformities



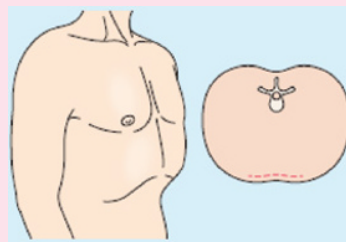
Normal adult

The thorax in the normal adult is wider than it is deep. Its lateral diameter is larger than its anteroposterior diameter.



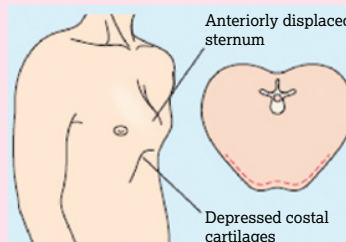
Funnel chest (pectus excavatum)

Possible cause: Marfan syndrome
Note the depression in the lower portion of the sternum. Compression of the heart and great vessels may cause murmurs.



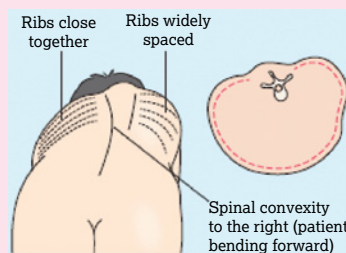
Barrel chest

Possible cause: asthma or chronic obstructive pulmonary disease (COPD)
Note the increased anteroposterior diameter. This shape is normal during infancy and often accompanies ageing and COPD.



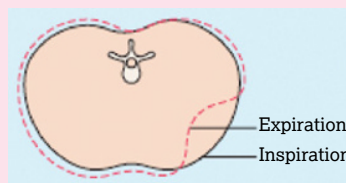
Pigeon chest (pectus carinatum)

Possible cause: severe childhood asthma
Note that the sternum is displaced anteriorly, increasing the anteroposterior diameter. The costal cartilages adjacent to the protruding sternum are depressed.



Thoracic kyphoscoliosis

Note that the abnormal spinal curvatures and vertebral rotation deform the chest. Distortion of the underlying lungs may make interpretation of lung findings very difficult.



Traumatic flail chest

Multiple rib fractures may result in paradoxical movements of the thorax. As descent of the diaphragm decreases intrathoracic pressure, on inspiration (breathing in) the injured area caves inward; on expiration (breathing out), it moves outward.

Percussion

When percussing and auscultating, each side of the chest should be compared. To do this, percuss and auscultate in a ladder-like pattern in the positions shown in Figure 2.12.

Figure 2.8 The lymph nodes of the head and neck.

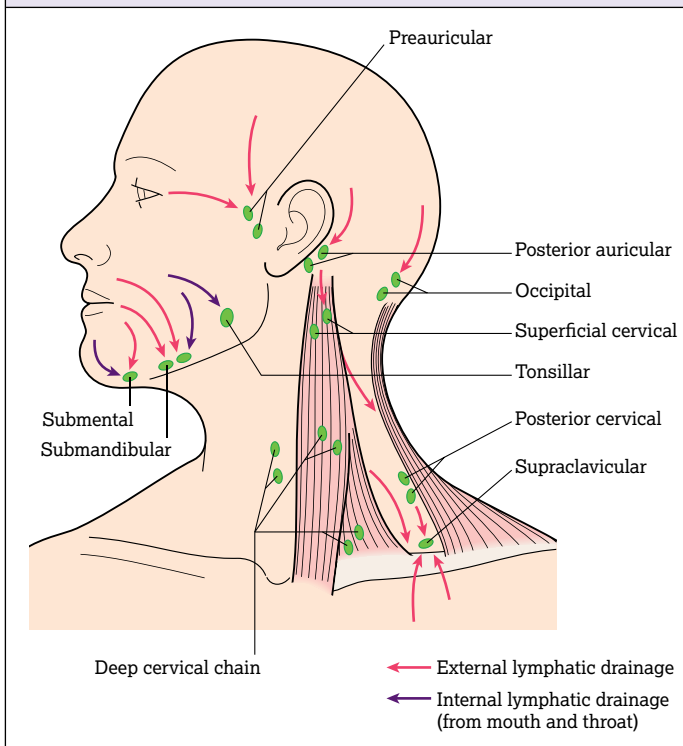


Figure 2.10 Locations for feeling fremitus: back.

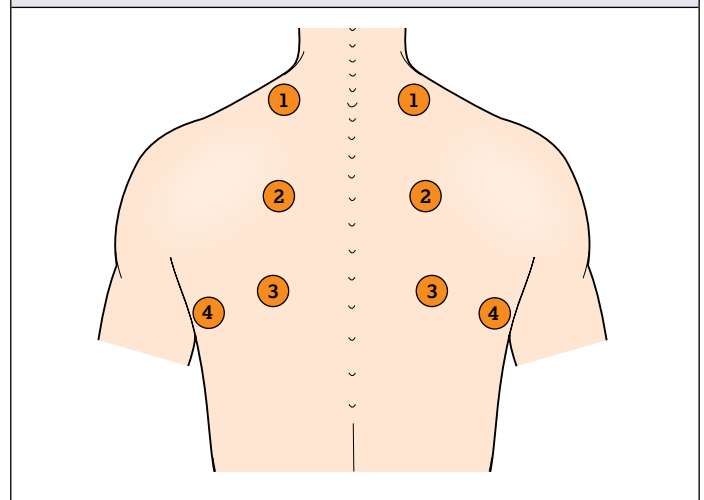


Figure 2.11 Locations for feeling fremitus: front.

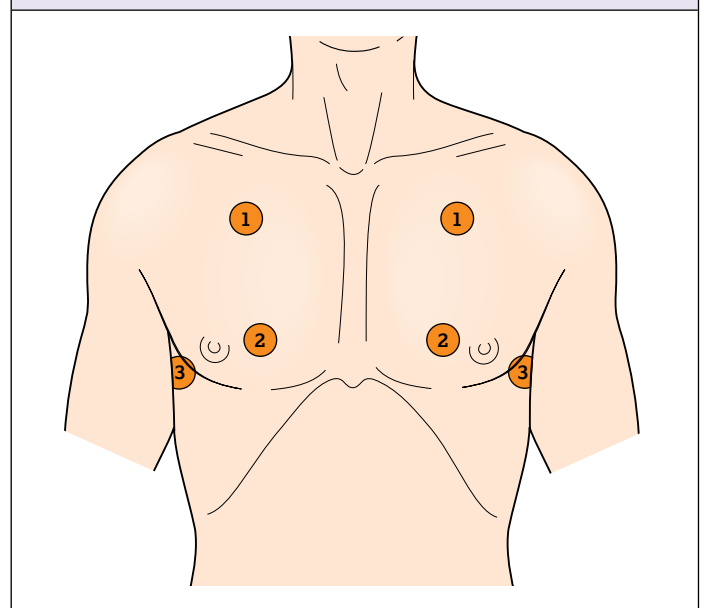
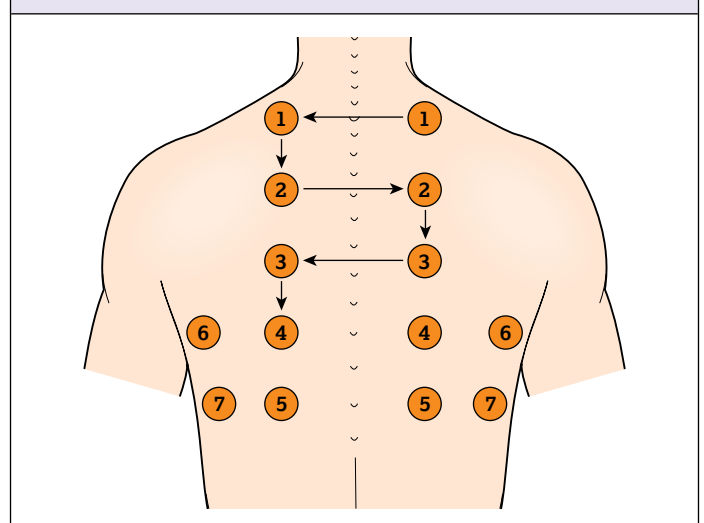


Figure 2.9 Position of hands to assess for chest expansion.



Figure 2.12 Ladder pattern for percussion and auscultation of the chest.



Resonance is heard over normal aerated lung tissue. There are two main types of percussion notes, which are associated with different lung pathologies. The two notes are dullness and **hyper-resonance** (Fisher and Potter 2017):

- **Dullness:** heard over solid organ or fluid; can be indicative of a pleural effusion, consolidation or pleural thickening.
- **Hyper-resonance:** heard over hyper-inflated lung tissue or where there is air in the pleural space; can be indicative of a pneumothorax or COPD.

Auscultation

Auscultation should be performed using the bell of the stethoscope (see Figure 2.4) on both the anterior and the posterior chest.

Breath sounds

Normal breath sounds are also known as 'vesicular breath sounds'; they are soft and are louder and longer on breathing in (inspiration) compared with breathing out (expiration) (Talley and O'Connor 2006). Bronchial breaths sound different; they have a hollow quality and are audible throughout expiration (Talley and O'Connor 2006). There is often a short, silent gap between inspiration and expiration (Bickley and Szilagyi 2017).

Adventitious sounds are added sounds on top of breath sounds. See Table 2.5 for examples of adventitious sounds.

Vocal resonance can also be assessed as this will give an indication of the lungs' ability to transmit sound. The method of doing this is to ask the patient to say '99' while auscultating over the chest. The patient's voice will become clearer in an area of consolidation while their voice will become muffled if there is a pleural effusion (Fisher and Potter 2017). This can be repeated while asking the patient to whisper '99' (whispering pectoriloquy); increased transmission of sound will be heard over areas of consolidation.

Table 2.5 Examples of adventitious sounds

Breath sound	Description	Potential cause
Wheeze	High-pitched, hissing sound	Airway narrowing (bronchospasm or airway swelling), e.g. acute asthma attack
Stridor	High-pitched sound, usually on inspiration	Life threatening: due to laryngeal or tracheal obstruction, e.g. choking or anaphylaxis
Coarse crackles	Low-pitched, bubbling, gurgling sound	Pneumonia, bronchiectasis or fluid overload
Fine crackles	High-pitched, popping sound	Restrictive and obstructive diseases, e.g. pulmonary fibrosis
Rhonchi	Continuous, low-pitched, snoring sound	Problems causing obstruction of the trachea or bronchi, e.g. bronchitis

EVIDENCE-BASED APPROACHES

Rationale

Information obtained from the patient's history, the differential diagnoses identified, and the nurse's knowledge of anatomy and physiology will help to inform when it is appropriate to do a respiratory physical examination. Some examples of presentations that would lead to a respiratory examination are:

- **dyspnoea**
- cough
- chest pain
- wheezing.

Procedure guideline 2.1 Respiratory examination

Essential equipment

- Personal protective equipment
- Stethoscope
- Examination couch

Action

Rationale

Pre-procedure

- | | |
|--|--|
| 1 Introduce yourself to the patient, explain and discuss the procedure with them, and gain their consent to proceed. | To ensure that the patient feels at ease, understands the procedure and gives their valid consent (NMC 2018, C). |
| 2 Gain the patient's verbal consent. | Consent must be gained before any procedure takes place (NMC 2018, C). |
| 3 Make sure the patient is warm and comfortable and sitting on the edge of the bed or on a chair. | To ensure that both the anterior (front) and posterior (back) thorax and lungs can be examined (Bickley and Szilagyi 2017, E). |
| 4 Expose the patient from head to waist while maintaining privacy and dignity. | To allow a thorough examination (Talley and O'Connor 2006, E). |

Procedure

- | | |
|-----------------------|---|
| 5 Wash and dry hands. | To prevent the spread of infection (NHS England and NHI 2019, C). |
|-----------------------|---|

General inspection

- | | |
|--------------------------------------|-------------------------|
| 6 Take a global view of the patient. | See 'Inspection' above. |
|--------------------------------------|-------------------------|

7 Look at the patient's skin and nails. Feel the texture, temperature and turgor of the skin.	Abnormalities of the skin and nails can be an indication of a variety of different conditions, for example heart disease, lung disease, cyanosis and/or anaemia (Bickley and Szilagyi 2017, Rushforth 2009). Look for tobacco staining (Innes and Tiernan 2018). E
8 Press either side of the patient's finger (first digit) firmly between your finger and thumb for 5 seconds and then let go. Count how many seconds it takes for the colour to return.	To assess capillary refill; this can give an indication of the status of circulation (Paterson and Dover 2018). Normal return is 2 seconds. E
9 Ask the patient to hold out their arms with their wrists flexed and their palms facing forwards for 1 minute.	To assess for flapping tremor; a fine tremor can be a side-effect of high-dose beta-agonist bronchodilators. A coarse flapping tremor of the outstretched hands is seen in patients with carbon dioxide retention (Innes and Tiernan 2018, E).
10 Look at the patient's eyes.	To assess for any abnormalities, particularly looking for any signs of hypercholesterolaemia (corneal arcus or xanthelasma) or anaemia (conjunctival pallor). Look for any signs of unilateral ptosis or pupillary constriction, which may constitute Horner's syndrome (Innes and Tiernan 2018, E).
11 Look at and in the patient's mouth.	The mouth can give a snapshot of the patient's general state of health. Look for signs of malnutrition, dehydration, infection, central cyanosis and any sores (Bickley and Szilagyi 2017). Look for signs of mouth breathing and upper respiratory tract infection (Innes et al. 2018). E
12 Look at and in the patient's nose.	To assess for nasal flare, deviated septum and nasal polyps (Talley and O'Connor 2006, E).
13 Listen to the patient's breathing.	To assess for any audible wheeze or stridor (Bickley and Szilagyi 2017, E).
14 Look at the patient's neck.	To assess whether accessory muscles are being used and whether the trachea is at the midline (Bickley and Szilagyi 2017, E).
15 Check the patient's jugular venous pressure (JVP). To do this, ensure the patient is positioned at 30–45° and ask them to turn their head away from you. Measure the JVP (number of centimetres vertically from the sternal angle to the upper border of pulsation). (For more information, see the section 'Steps for measuring the JVP' below.)	To check for a raised JVP, which can indicate pulmonary hypertension, tension pneumothorax or large pulmonary embolism (Innes and Tiernan 2018, E).
16 Palpate the trachea gently with your index finger and thumb.	To ensure it is at the midline with no deviation (Innes and Tiernan 2018, E).
17 Palpate the head and neck nodes (see Figure 2.8).	To assess for enlarged nodes; this can be a sign of malignancy or infection (Dover et al. 2018, E).
Posterior chest	
18 Inspect the patient's chest.	To assess for any scars, masses, deformities and asymmetry (Bickley and Szilagyi 2017, E).
Palpation	
19 Lightly palpate the chest.	To assess for any signs of tenderness, pain or masses (Bickley and Szilagyi 2017, Rushforth 2009, E).
20 Place your thumbs at the level of the 10th rib either side of the spine with your fingers fanned out towards the lateral (side) chest. Ask the patient to take a deep breath in (see Figure 2.9).	To assess chest expansion (Bickley and Szilagyi 2017, Rushforth 2009, Talley and O'Connor 2006, E).
21 Place the edge of your palm and little finger on the patient's chest at the points seen in Figure 2.10 and ask the patient to say '99'. Assess both sides of the chest together using both hands.	To assess for tactile fremitus (Bickley and Szilagyi 2017, Rushforth 2009, Talley and O'Connor 2006, E).
Percussion	
22 Percuss the chest (see Figure 2.12).	To assess for normal resonance in the lungs and identify any abnormalities (Bickley and Szilagyi 2017, E).

(continued)

Procedure guideline 2.1 **Respiratory examination (continued)**

Action	Rationale
Auscultation	
23 Auscultate the lungs using the diaphragm of the stethoscope (see Figure 2.12).	To assess for vesicular breath sounds and any adventitious sounds (Bickley and Szilagyi 2017, E).
Anterior chest	
24 Inspect the patient's chest.	To assess for any scars, masses, deformities and asymmetry (Bickley and Szilagyi 2017, E).
Palpation	
25 Lightly palpate the chest	To assess for any signs of tenderness, pain or masses (Bickley and Szilagyi 2017, Rushforth 2009, E).
26 Place your thumbs along each costal margin at about the fifth or sixth rib with your fingers fanned out towards the lateral chest. Ask the patient to take a deep breath in.	To assess chest expansion (Bickley and Szilagyi 2017, Rushforth 2009, Talley and O'Connor 2006, E).
27 Place the edge of your palm and little finger on the patient's chest at the points seen in Figure 2.11 and ask the patient to say '99'. Assess both sides of the chest together using both hands.	To assess for tactile fremitus (Bickley and Szilagyi 2017, Rushforth 2009, Talley and O'Connor 2006, E).
Percussion	
28 Percuss the anterior chest (see Figure 2.12).	To assess for normal resonance in the lungs and identify any abnormalities (Bickley and Szilagyi 2017, E).
Auscultation	
29 Auscultate the lung using the bell of the stethoscope for the apex of the lung (above the clavicle) and the diaphragm of the stethoscope for the rest of the chest (see Figure 2.12).	To assess for vesicular breath sounds and any adventitious sounds (Bickley and Szilagyi 2017, E).
Post-procedure	
30 Document fully.	Accurate records should be kept of all discussions and/or assessments made (NMC 2018, C).
31 Report any abnormal findings to a senior nurse or to medical staff.	Patients should be cared for as part of a multidisciplinary team and, where appropriate, patient care should be referred to another more experienced practitioner (NMC 2018, C).
32 Clean the equipment used and wash hands.	To prevent the spread of infection (NHS England and NHSI 2019, C).
33 Explain findings to the patient.	The patient should be told, in a way they can understand, the information they want or need to know about their health (NMC 2018, C).
34 Discuss plan of care with the patient.	Where possible, patients should be involved in planning their care (NMC 2018, C).
35 Additional bedside investigations: assess vital signs, and inspect sputum and send for microbiology, culture and sensitivity.	This additional information can be used to assess the adequacy of gas exchange (Fisher and Potter 2017, E).
36 Order further investigations as needed to include blood, chest X-ray and lung function tests.	This additional information can further refine the differential diagnoses (Fisher and Potter 2017, E).

Cardiovascular examination**ANATOMY AND PHYSIOLOGY**

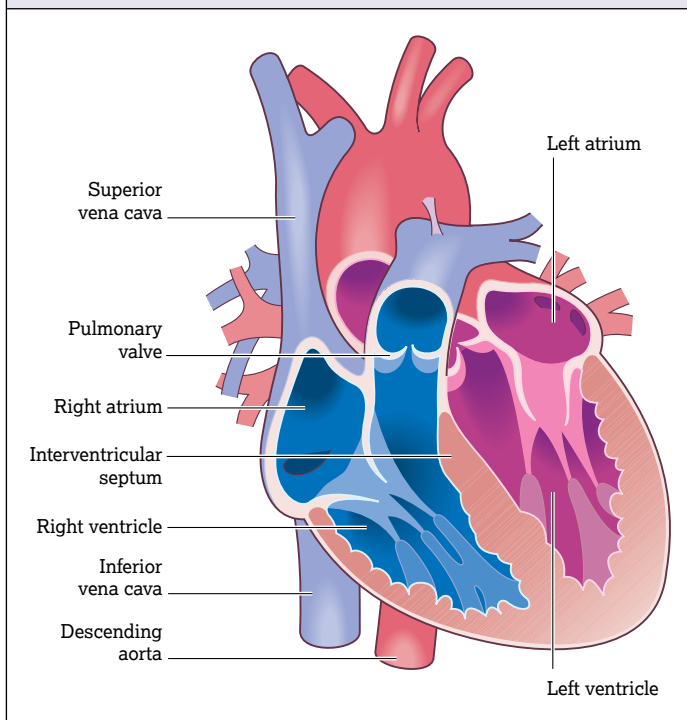
The heart is a muscular organ that delivers blood to the pulmonary and systemic systems (Mills et al. 2018) (Figure 2.13). A good understanding of the vascular system of the heart is important.

RELATED THEORY

When carrying out a cardiovascular assessment, the order of examination is:

- inspection
- palpation
- auscultation.

Figure 2.13 Structure of the heart. *Source:* Reproduced from Peate et al. (2014) with permission of John Wiley & Sons, Ltd.



Note that percussion is not part of a cardiovascular assessment.

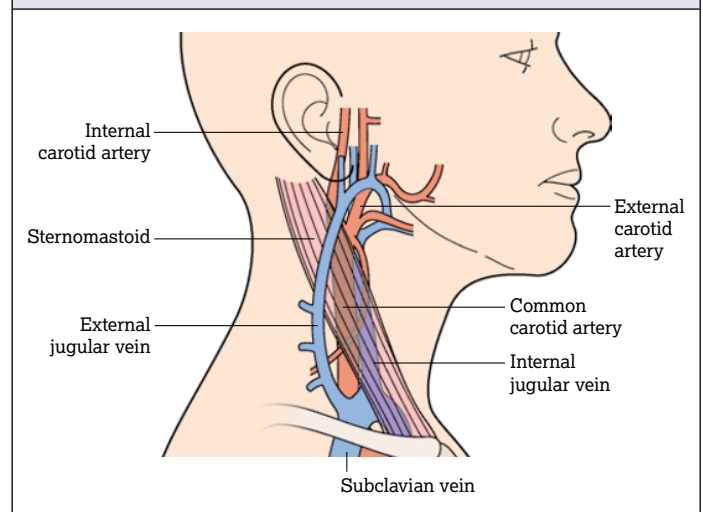
Many symptoms that necessitate a cardiac examination can be life threatening, so first take a moment to assess whether the patient is well enough for a full examination or whether they need immediate treatment in order to be stabilized first (Rushforth 2009).

Inspection

Ideally the patient should be positioned between 30° and 45° and the patient's chest should be exposed to enable a comprehensive assessment. Note that due to the condition of the patient, the patient may be uncomfortable or in pain; in such cases, the assessment should be adjusted to meet the needs of the patient. It can be helpful to visualize the structure of the heart as you undertake inspection.

- 1 Observe the patient for signs of distress, pain or breathlessness.
- 2 Starting at the hands, assess for cold extremities. Inspect the nails for any unusual changes, such as **koilonychia** or **splinter haemorrhages**. Assess capillary refill time (it should be less than 2 seconds). See Procedure guideline 2.2: Cardiovascular examination for further information.
- 3 Assess skin for **turgor**, temperature and any rashes or lesions on hands or arms.
- 4 Observe the patient's face; assess the conjunctiva for signs of anaemia and xanthelasmata around the eyes. Xanthelasmata are fatty deposits that typically present as yellow plaques around the eyes (Nair and Singhal 2018). They can indicate hyperlipidaemia, thyroid dysfunction or diabetes mellitus (Gangopadhyay et al. 1998).
- 5 Observe for any flushing of the skin on the face. Look at the tongue and mucous membranes for any signs of central **cyanosis**.
- 6 Observe the exposed chest for scars, bruising, trauma, surgery or asymmetry (Mills et al. 2018, Powell 2006, Talley and O'Connor 2006).
- 7 Inspect for **heaves** or thrills. These are ventricular movements that may be visible over the heart.

Figure 2.14 Location of the internal jugular veins within the sternomastoid muscles in the neck.



- 8 Inspect the legs and ankles for any sign of peripheral oedema, poor circulation or peripheral vascular disease. Observe for a shiny, hairless appearance of the skin on the legs, and examine the feet and legs for pain, swelling, discoloration, ulceration and temperature (Mills et al. 2018).

Part of cardiovascular inspection is measuring the jugular venous pressure (JVP) (Figure 2.14). JVP reflects the pressure in the right atrium and is a good indicator of cardiac function (Powell 2006). To measure JVP, locating the right internal jugular vein is paramount. The vein runs deep within the sternomastoid muscle so it is not directly visible (Bickley and Szilagyi 2017). Instead, it can be located by looking for its pulsation within the sternomastoid muscle (Bickley and Szilagyi 2017) (Figure 2.14).

Steps for measuring the JVP

- 1 Make the patient comfortable.
- 2 Raise the patient's head to an angle of approximately 30° (up to a 45° angle).
- 3 Turn the patient's head slightly away from the side you are inspecting.
- 4 Use **tangential lighting** and examine both sides of the neck. Identify the external jugular vein on each side, then find the internal jugular venous pulsations.
- 5 Focus on the right internal jugular vein. Look for pulsations in the suprasternal notch. Distinguish the pulsations of the internal jugular vein from those of the carotid artery (carotid pulsations are palpable and have a more vigorous thrust with a single outward component; additionally, these pulsations are not eliminated by pressure on the veins at the sternal end of the clavicle, and the height of the pulsations is unchanged by the position of the chest and by inspiration).
- 6 Identify the highest point of pulsation in the right jugular vein. Extend a long rectangular object or card horizontally from this point and a centimetre ruler vertically from the sternal angle, making an exact right angle (as demonstrated in Figure 2.15). Measure the vertical distance in centimetres above the sternal angle. This is usually less than 3–4 cm (Bickley and Szilagyi 2017).

Palpation

The palpable pulse in an artery reflects the pressure wave generated by the ejection of blood into the circulation from the left ventricle. When taking a pulse assess:

- **Rate:** the number of pulses occurring per minute.
- **Rhythm:** the pattern or regularity of pulses.

Figure 2.15 Measuring a jugular venous pressure.



- **Volume:** the perceived degree of pulsation.
- **Character:** an impression of the pulse waveform or shape.

The rate and rhythm of the pulse are usually determined at the arterial artery; use the larger pulses (brachial, carotid or femoral) to assess pulse volume and character (Mills et al. 2018).

A weak pulse can be a sign of various conditions, including decreased cardiac output (Rushforth 2009). A bounding pulse can indicate an increased cardiac output, which can be present in hypertension and anaemia (Rushforth 2009). Pulses on each side of the body should be compared simultaneously if possible. There are two exceptions to this: the popliteal pulse and the carotid pulses. The nurse will need to use both hands to assess each popliteal pulse; the carotid pulses should always be palpated separately, as doing both together may make the patient feel faint.

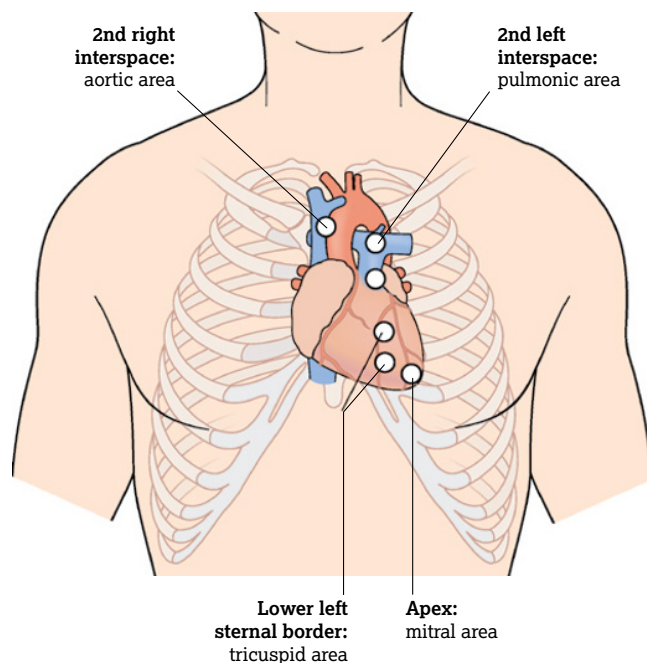
The nurse should feel across the chest for evidence of pain, heaves, thrills and lifts. Lifts and heaves are forceful cardiac contractions that can result in transient movement of the sternum and/or ribs and if present will be felt through the flat of the hand being lifted rhythmically during palpation (Bickley and Szilagyi 2017). They can be a sign of an enlarged ventricle or atrium or sometimes a ventricular aneurysm (Bickley and Szilagyi 2017). Thrills are vibrations that can be felt from light palpation over the chest, usually over the areas of the heart valves, and are the result of a loud heart murmur. They will be felt most clearly using the ball of the hand palpating in the area of the murmur and may feel like a buzzing or vibration (Bickley and Szilagyi 2017).

The nurse should palpate the apical impulse (point of maximum impulse). Start from the fifth intercostal space, inside the mid-clavicular line (Camm and Camm 2016). If the impulse is difficult to find, the patient should be asked to roll slightly onto their left side. Observe the apical impulse for size, amplitude, location, impulse and duration.

Auscultation

When auscultating, the heart sounds should be characterized and identified, as should any added sounds and/or murmurs (Mills et al. 2018). All elements of the cardiac cycle can be heard on auscultation and thus it is important to identify all of them (Camm and Camm 2016). The sound of the beating heart is often described as 'lub dub' and is caused by the closure of valves (Powell 2006). The 'lub', which is also referred to as 'S1', is the sound made when the mitral and tricuspid valves are closing; it is often heard best over the apex. The 'dub' or 'S2' is the sound

Figure 2.16 Auscultation points and location of the heart valves.



made when the aortic and pulmonary valves close (Camm and Camm 2016, Powell 2006) and can be heard well across the precordium. There are extra sounds that can sometimes be heard called 'S3' and 'S4'. S3 is occasionally heard immediately after S2 and is caused by the vibration of rapid ventricular filling (Mills et al. 2018). S4 can rarely be heard immediately before S1 and marks atrial contraction. Both of these sounds can indicate a change in ventricular compliance (Bickley and Szilagyi 2017).

Murmurs can be heard in a number of different conditions; they are caused by turbulent blood flow. While murmurs are sometimes harmless, they can indicate valvular heart disease (Bickley and Szilagyi 2017). Heart sounds and murmurs that originate in the four valves radiate widely; see Figure 2.16 for an illustration of the relevant auscultation points.

Assessment of carotid bruits is an important component of cardiovascular assessment. Bruits are often described as 'whooshing' sounds and can indicate atherosclerotic arterial disease (Bickley and Szilagyi 2017).

EVIDENCE-BASED APPROACHES

Rationale

The patient's health history and the nurse's knowledge of anatomy and physiology will help to guide when it is appropriate to do a cardiovascular physical examination. The list of presentations that may lead to a cardiovascular examination is vast; some examples include:

- chest pain
- palpitation
- leg ulcer
- breathlessness
- oedema
- dizziness.

Procedure guideline 2.2 Cardiovascular examination

Essential equipment

- Personal protective equipment
- Stethoscope
- Examination couch
- Pen torch
- Ruler

Action	Rationale
Pre-procedure	
1 Introduce yourself to the patient, explain and discuss the procedure with them, and gain their consent to proceed.	To ensure that the patient feels at ease, understands the procedure and gives their valid consent (NMC 2018, C).
2 Gain the patient's verbal consent.	Consent must be gained before any procedure takes place (NMC 2018, C).
3 Check that the patient has an empty bladder.	A full bladder will interfere with the examination (Walsh 2006b, E).
4 Make sure the patient is warm and comfortable and ideally have them in the supine position, with their head at 30–45° and their arms by their sides.	This is the optimum position from which to assess the jugular venous pressure (JVP) (Talley and O'Connor 2006, E).
5 Expose the patient from head to waist while maintaining privacy and dignity. You will also need access to their legs.	To allow a thorough examination (Talley and O'Connor 2006, E).
Procedure	
6 Wash and dry hands.	To prevent the spread of infection (NHS England and NHSI 2019, C).
General inspection	
7 Take a global view of the patient.	See 'Inspection' above.
8 Look at the patient's skin and nails. Feel the texture, temperature and turgor of the skin.	Abnormalities of the skin and nails can be an indication of a variety of different conditions, for example heart disease, endocarditis, hypercholesterolaemia and/or anaemia (Bickley and Szilagyi 2017, Tidman 2018). Also look for tobacco staining. E
9 Press the patient's fingernail (on the first digit) firmly between your finger and thumb for 5 seconds and then let go. Count how many seconds it takes for the colour to return to the nail.	To assess the capillary refill; this can give an indication of the status of circulation (Paterson and Dover, 2018). Normal return is 2 seconds. E
10 Look at the patient's eyes.	To assess for any abnormalities, particularly looking for any signs of hypercholesterolaemia or anaemia (Talley and O'Connor 2006, E).
11 Look at and in the patient's mouth.	The mouth can give a snapshot of the patient's general state of health. Look for signs of malnutrition, infection, central cyanosis and any sores (Innes et al. 2018, E).
12 Ask the patient to turn their head to the left, use tangential lighting and locate the highest pulsation point of the internal jugular vein (see Figure 2.15). Place a ruler vertically from the sternal angle, then use a tongue depressor placed horizontally to make a right angle from the pulsation to the ruler. The JVP is measured in centimetres and the measurement is where the tongue depressor meets the ruler.	To assess the JVP (Bickley and Szilagyi 2017, E).
13 Inspect the precordium.	To assess for scars, deformities, heaves , lifts and the apical impulse (Bickley and Szilagyi 2017, E).
14 Inspect the legs.	To assess for signs of venous disease and ischaemic changes (Mills et al. 2018, E).
Palpation	
15 Palpate the pulses.	To assess cardiac output (Rushforth 2009, E).
16 Palpate the chest.	To assess for tenderness, heaves, lifts and thrills (Bickley and Szilagyi 2017, Rushforth 2009, E).

(continued)

Procedure guideline 2.2 Cardiovascular examination (*continued*)

Action	Rationale
17 Palpate with the finger tips the fifth intercostal space, inside the mid-clavicular line.	To assess the apical impulse (Bickley and Szilagyi 2017, Rushforth 2009, E).
Auscultation	
18 Listen with the bell of the stethoscope to the carotid pulse.	To assess for bruits (Bickley and Szilagyi 2017, E).
19 Auscultate at the aortic, pulmonary, tricuspid and mitral valves (see Figure 2.16) with the diaphragm of the stethoscope.	To assess S1 and S2 (Bickley and Szilagyi 2017, Camm and Camm 2016, E).
20 Auscultate at the aortic, pulmonary, tricuspid and mitral valves (see Figure 2.16) with the bell of the stethoscope.	To assess for S3, S4 and murmurs (Bickley and Szilagyi 2017, Camm and Camm 2016, E).
21 Ask the patient to roll partially onto their left side and listen with the bell of the stethoscope to the apical impulse.	To assess for a mitral murmur (Bickley and Szilagyi 2017, Camm and Camm 2016, E).
22 Ask the patient to sit up and lean forward, exhale completely and hold their breath. Listen with the diaphragm of the stethoscope to the apical impulse and along the left sternal border. Make sure to tell the patient to start breathing normally again.	To assess for an aortic murmur and pericardial friction rubs (Bickley and Szilagyi 2017, Camm and Camm 2016, Rushforth 2009, E).
23 Ask the patient to sit up and listen to the lung bases with the diaphragm of the stethoscope.	To assess for lung congestion, which can be caused by heart failure (Rushforth 2009, E).
Post-procedure	
24 Document fully.	Accurate records should be kept of all discussions and/or assessments made (NMC 2018, C).
25 Report any abnormal findings to a senior nurse or to medical staff.	Patients should be cared for as part of a multidisciplinary team and, where appropriate, patient care should be referred to another more experienced practitioner (NMC 2018, C).
26 Clean the equipment used and wash hands.	To prevent the spread of infection (NHS England and NHSI 2019, C).
27 Explain findings to the patient.	The patient should be told, in a way they can understand, the information they want or need to know about their health (NMC 2018, C).
28 Discuss plan of care with the patient.	Where possible, patients should be involved in planning their care (NMC 2018, C).

Learning Activity 2.6 Case study

Miss Jennifer Murphy is 72 years old and has been referred by her GP for investigation after a 10-day history of mild intermittent chest pain during and following moderate daily activities, such as housework and gardening. You are about to carry out a cardiac assessment of Jennifer.

- 1 Suggest the position Jennifer should be placed in to facilitate a thorough examination.
- 2 When assessing Jennifer's circulation, the time taken for capillary refill is 2 seconds. Is this normal?
- 3 Jennifer's jugular venous pressure (JVP) measures 3 cm. Is this high?
- 4 Jennifer's pulse rate is regular and of a good volume; the rate is 82 beats per minute. Can you comment on this?
- 5 Describe the steps you would take to perform the auscultation phase of the assessment.

See the answers on the companion site of this student edition: www.royalmarsdenmanual.com/student10e.

Abdominal examination**ANATOMY AND PHYSIOLOGY**

The abdominal cavity houses large parts of the gastrointestinal (GI) system, the renal system and the reproductive system. It is therefore important to have an understanding of the anatomy and physiology of all three systems when examining the abdomen.

The GI system includes the entire GI tract as well as the accessory organs (Figure 2.17). When examining the abdominal area, it is important to be able to visualize which organs are in which quadrant. This will help to form possible differential diagnoses.

The physiology of the GI system is covered in Chapter 6: Elimination and Chapter 8: Nutrition and fluid balance.

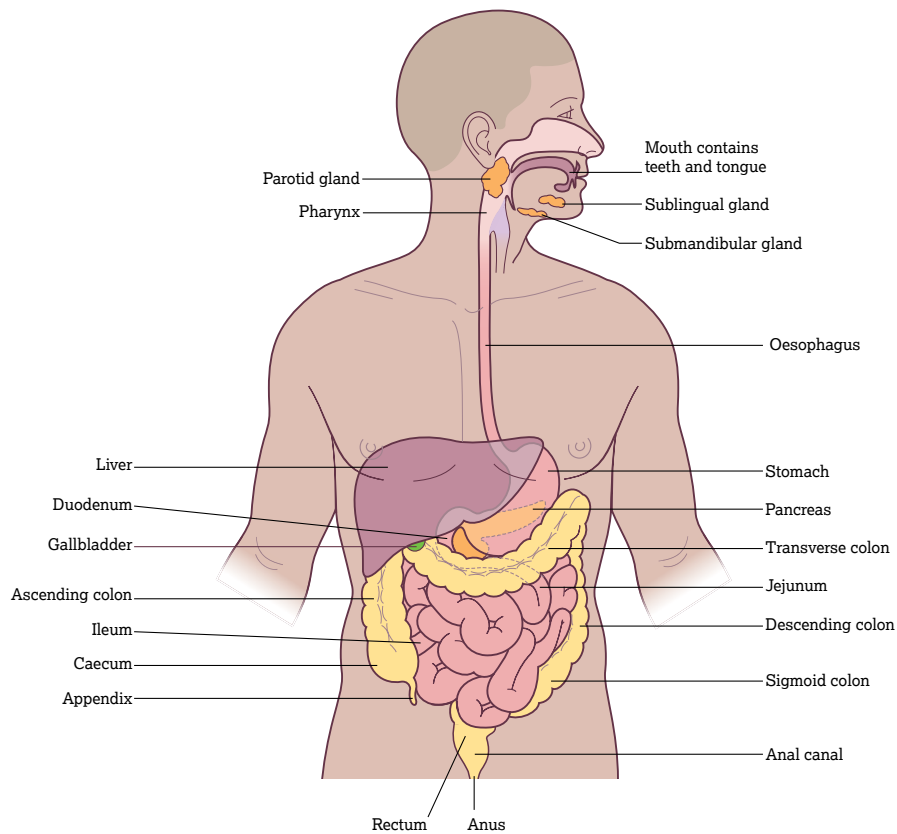
RELATED THEORY

A full abdominal examination combines the following techniques:

- inspection
- auscultation
- percussion
- palpation.

The assessment of the abdomen starts with inspection, followed by auscultation, then percussion and palpation. Auscultation is performed prior to percussion and palpation to avoid abdomen

Figure 2.17 **Organs of the gastrointestinal system.** *Source:* Reproduced from Peate et al. (2014) with permission of John Wiley & Sons, Ltd.



and small bowel manipulation, which may change findings (Fritz and Becker Weilitz 2016).

Inspection

Externally, the abdomen should appear flat and symmetrical. The most common causes of abdominal distension are:

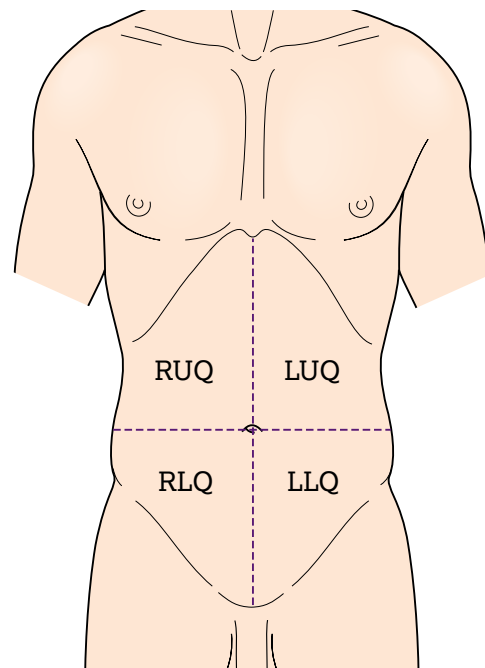
- fat in obesity
- flatus in pseudo-obstruction or bowel obstruction
- faeces in subacute obstruction or constipation
- fluid in ascites (accumulation of fluid in the peritoneal cavity)
- tumours (especially ovarian) or distended bladder
- the foetus in pregnancy
- functional bloating (often in irritable bowel syndrome) (Plevris and Parks 2018).

Look at the abdomen for any abnormally prominent veins on the abdominal wall suggestive of portal hypertension or vena cava obstruction. Any abdominal swelling, scars and stomas should also be noted (Plevris and Parks 2018). The umbilicus position can sometimes help to identify why there is distension.

Auscultation

Bowel sounds should be listened for in all four quadrants of the abdomen (Figure 2.18). Bowel sounds are often described as 'clicks' or 'gurgles' and it should be possible to hear 5–35 clicks in 1 minute. Listening for up to 2 minutes may be required for someone with hypoactive bowel sounds (Fritz and Becker Weilitz 2016). Bowel sounds are often described as active (i.e. normal), absent, hypoactive or hyperactive. Absence of bowel sounds may indicate bowel obstruction and hyperactive bowel sounds may be present if patients are having altered bowel function.

Figure 2.18 **The four quadrants of the abdomen.** LLQ, left lower quadrant; LUQ, left upper quadrant; RLQ, right lower quadrant; RUQ, right upper quadrant.



Assessment of bruits is an important component of physical assessment. Bruits are often described as ‘whooshing’ or harsh intermittent sounds and can indicate atherosclerotic arterial disease (Bickley and Szilagyi 2017). If the bruits are over the renal artery, it can be a sign of renal artery stenosis (Bickley and Szilagyi 2017). See Figure 2.19 for stethoscope positioning.

Percussion

Percussion is used to detect air, fluid, faeces, organs and masses (Walsh 2006a). Predominantly, the abdomen should have a distribution of tympany and dullness – tympany where there is gas in the GI tract and dullness where other organs and faeces lie (Bickley and Szilagyi 2017). Large areas of dullness may indicate organomegaly (enlarged organs), a tumour or ascites (Bickley and Szilagyi 2017). Percussion is also used to locate and measure the size of the liver (Fritz and Becker Weilitz 2016). A normal liver measures 6–12 cm (Talley and O'Connor 2006). See Figure 2.20 for the relevant percussion technique.

Palpation

Percussion requires indirect tapping of the abdomen to assess the size of the organs and to check for the presence of air or fluid, or air-filled or solid masses (Fritz and Becker Weilitz 2016). If a mass is found, palpation should be used to gather more information about it. Talley and O'Connor (2006) suggest that the following information should be included when describing a mass:

- site
- tenderness
- size
- surface
- edge
- consistency
- mobility
- whether it has a pulse or not.

Likewise, if an organ is found, it should be described. The spleen and kidneys are not normally palpable if they are not enlarged but

Figure 2.20 Percussion technique during abdominal examination.



(a)



(b)

Figure 2.19 Stethoscope positioning for auscultating bruits.

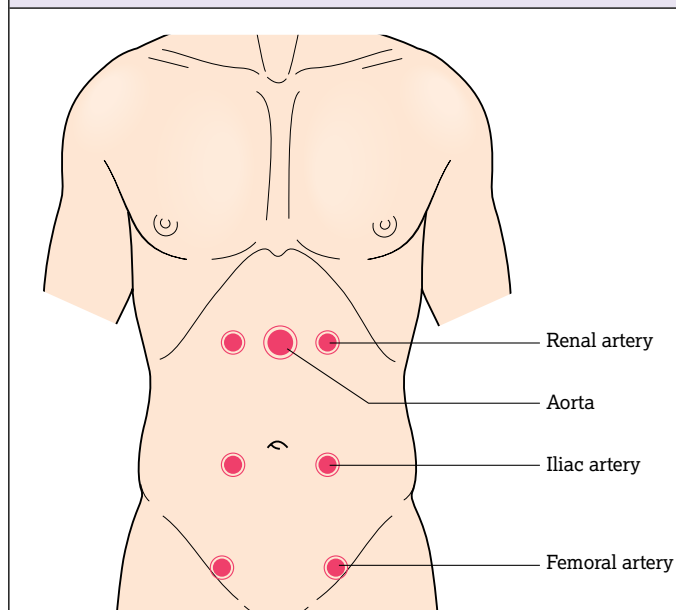


Figure 2.21 Light palpation during abdominal examination.



a normal liver edge can sometimes be felt (Talley and O'Connor 2006). If palpable, it should feel soft, regular and smooth with a well-defined border (Talley and O'Connor 2006). See Figures 2.21 and 2.22 for light and deep palpation techniques to be used during abdominal examination.

Figure 2.22 Deep palpation during abdominal examination.



EVIDENCE-BASED APPROACHES

Rationale

The patient's health history and the nurse's knowledge of anatomy and physiology will help to guide when it is appropriate to do an abdominal physical examination. The list of presentations that may lead to an abdominal examination is vast; as discussed in the anatomy and physiology section, they could involve the GI, renal and/or reproductive systems. Some examples include:

- abdominal pain
- nausea and/or vomiting
- change in bowel habits
- weight change
- jaundice
- bleeding
- dysuria/urgency or frequency
- flank pain
- suprapubic pain.

Procedure guideline 2.3 Abdominal examination*Essential equipment*

- Personal protective equipment
- Stethoscope
- Examination couch
- Pen torch
- Tongue depressor

Action	Rationale
Pre-procedure	
1 Introduce yourself to the patient, explain and discuss the procedure with them, and gain their consent to proceed.	To ensure that the patient feels at ease, understands the procedure and gives their valid consent (NMC 2018, C).
2 Gain the patient's verbal consent.	Consent must be gained before any procedure takes place (NMC 2018, C).
3 Check that the patient has an empty bladder.	A full bladder will interfere with the examination (Walsh 2006a, P).
4 Make sure the patient is warm and comfortable and ideally have them in the supine position, with their arms by their sides.	If the patient is uncomfortable or cold the abdominal muscles will be tense (Rushforth 2009). The supine position helps to relax the abdominal muscles and is the optimum position for abdominal palpation (Talley and O'Connor 2006). E
5 Expose the patient from nipple to pubis, maintaining patient dignity at all times.	To ensure a thorough examination. E
Procedure	
6 Wash and dry hands.	To prevent the spread of infection (NHS England and NHSI 2019, C).
General inspection	
7 Take a global view of the patient.	See 'Inspection' above.
8 Look at the patient's skin and nails. Feel the texture and turgor of the skin.	Abnormalities of the skin and nails can be an indication of a variety of different conditions, for example bowel disease, malnutrition, liver disease, dehydration and/or anaemia (Bickley and Szilagyi 2017, Dover et al. 2018, Tidman 2018, E).
9 Ask the patient to extend their arms, flex their wrists and part their fingers. Ask them to stay in this position for 15 seconds.	To assess for liver flap; this can be a sign of liver and/or renal failure (Talley and O'Connor 2006, E).
10 Look at the patient's eyes.	To assess for any abnormalities, particularly looking for any signs of jaundice, hypercholesterolaemia and anaemia (Talley and O'Connor 2006, E).

(continued)

Procedure guideline 2.3 Abdominal examination (*continued*)

Action	Rationale
11 Look at the patient's nose.	To assess for signs of telangiectasia , which can indicate liver disease (Bickley and Szilagyi 2017, E).
12 Look at and in the patient's mouth	The mouth can give a snapshot of the patient's general state of health. Look for signs of malnutrition, infection and any sores (Innes et al. 2018, E).
13 Smell the patient's breath.	To assess for signs of fetor (unpleasant-smelling breath) (Talley and O'Connor, 2006). Sweet-smelling breath can be a sign of ketoacidosis. E
14 Ask the patient to shrug their shoulders and lightly palpate, using the finger tips, directly above the clavicle.	To assess for a raised supraclavicular lymph node, which can indicate gastrointestinal malignancy (Talley and O'Connor 2006, E).
15 Move to the foot of the bed to inspect the abdomen.	Assessing the abdomen from different angles will help to identify any abnormalities (Walsh 2006a, E).
16 Observe the contour of the abdomen and position of the umbilicus.	To assess for asymmetry or distension, peristalsis and/or pulsations (Bickley and Szilagyi 2017, Walsh 2006a, E).
17 Move to the side of the bed and observe the contour of the abdomen tangentially.	This will allow any subtle changes in contour to be observed (Cox 2004, E).
18 Look at the patient's skin.	To assess for any signs of spider naevi , striae , scars, caput medusa , bruising and rashes (Plevris and Parks 2018, E).
Auscultation	
19 Using the diaphragm of the stethoscope, listen in all four quadrants for 1 minute each.	To assess for bowel sounds (Bickley and Szilagyi 2017, E). Bowel sounds normally occur every 5–10 seconds but frequency varies (Plevris and Parks 2018, E).
20 Using the bell of the stethoscope, listen over the aortic, renal, iliac and femoral arteries (see Figure 2.19).	To assess for bruits (Bickley and Szilagyi 2017, E).
Percussion	
21 Percuss in the nine areas of the abdomen.	To listen for a normal distribution of tympany and dullness (see Table 2.3) (Bickley and Szilagyi 2017, E).
22 Percuss for liver span. To do this, percuss upwards, starting in the right lower quadrant at the mid-clavicular line. Stop when you hear the dullness of the liver. Next percuss down, starting from the intersection of the nipple line and the mid-clavicular line; stop when the sound changes from the resonant lung to the dull liver. Measure between those two points.	To assess the size and location of the liver (Walsh 2006a, E).
23 The above technique can be employed to percuss the spleen, bladder and kidneys.	Not routinely done but may be useful if abnormality, in particular organomegaly, is suspected. E
24 Percuss from the midline out to the flanks for dullness. Keep your finger on the site of dullness in the flank, ask the patient to turn onto their opposite side and then percuss again. If the area of dullness is now resonant, shifting dullness is present.	To assess for shifting dullness (Plevris and Parks 2018, E).
Palpation	
25 Lightly palpate the abdomen using one hand. Look at the patient's face at all times, to ensure they are not in discomfort.	To assess for tenderness, rebound tenderness, superficial organs and masses (Talley and O'Connor 2006, E).
26 Deeply palpate the abdomen.	To assess the organs, identify deeper masses and define masses that have already been discovered (Talley and O'Connor 2006, E).
27 Palpate for the liver. To do this, place your left hand in the small of the patient's back and your right in the right lower quadrant pointing towards the upper left quadrant. Ask the patient to take a deep breath and palpate up. If nothing is felt, move up towards the liver and repeat until you reach the ribcage.	To assess for hepatomegaly or gallbladder tenderness (known as Murphy's sign) (Plevris and Parks 2018, E).

28 Palpate for the spleen. Ask the patient to tip slightly onto their right side. Start from the umbilicus region and mimic the technique above, moving towards the spleen.	To assess for splenomegaly (Plevris and Parks 2018, E).
29 Palpate for the kidneys. Do each kidney separately. For the right side, stand on the right side of the patient, place your left hand just below the 12th rib and lift up. Place your other hand on the right upper quadrant of the abdomen. Ask the patient to take a deep breath. As they do, press your right hand deeply into the abdomen, trying to feel the kidney between your hands. Repeat for the left side, standing on the left of the patient.	To assess for kidney enlargement; if the kidney is normal, it is not usually palpable (Plevris and Parks 2018, E).
30 Lightly palpate each costovertebral angle (the area directly overlying the kidneys) for tenderness; if none is felt, place one hand flat over the costovertebral angle and strike the hand firmly with the other fist.	Pain can indicate pyelonephritis (Bickley and Szilagyi 2017, E).
Post-procedure	
31 Document fully.	Accurate records should be kept of all discussions and/or assessments made (NMC 2018, C).
32 Report any abnormal findings to a senior nurse or to medical staff.	Patients should be cared for as part of a multidisciplinary team and, where appropriate, patient care should be referred to another more experienced practitioner (NMC 2018, C).
33 Clean the equipment used and wash hands.	To prevent the spread of infection (NHS England and NHSI 2019, C).
34 Explain the findings to the patient.	The patient should be told, in a way they can understand, the information they want or need to know about their health (NMC 2018, C).
35 Explain the plan of care to the patient.	Where possible, patients should be involved in planning their care (NMC 2018, C).

POST-PROCEDURAL CONSIDERATIONS

Documentation

Nurses should ensure that the following components are documented:

- rationale for examination
- patient's consent to examination
- type of examination performed
- findings from the examination
- plan of care.

As with all record keeping, documentation in relation to physical examinations should be clear, concise, accurate and without jargon or abbreviations (NMC 2018).

Record keeping should include evidence of clinical reasoning in order to identify patients' needs for nursing care. While this becomes more automatic with experience, it should always be possible for a nurse to explain how they arrive at a decision about an individual within their care (Gordon 1994, Putzier and Padrick 1984, Rolfe 1999).



Stretch Activity

Further your thinking and learning about clinical practice

Identify which tools are in use to support nursing assessment of patients on admission to your clinical area (e.g. nutrition assessment tool, pressure ulcer risk tool, frailty tool, oral health tool, falls assessment tool, or bowel or stool assessment tool).

- 1 Ask your tutor or supervisor whether alternative assessment tools have been developed (e.g. for pressure ulcers, consider the Waterlow Score, the Braden Risk Assessment tool or PURPOSE-T).
- 2 Source a small range of tools related to a specific nursing assessment.
- 3 Find relevant literature about the tools' development and critically read published evidence about their effectiveness.
- 4 Critically evaluate and compare the tools, identifying the advantages and disadvantages of each.
- 5 Discuss your findings with your tutor and supervisor.

Now Test Yourself



If you would like to test your learning further, there are additional questions on the companion site of this student edition:
www.royalmarsdenmanual.com/student10e.

REFERENCES

- Abbott, H. & Ranson, M. (2017) *Clinical Examination Skills for Health Professionals*. Glasgow: M&K Update.
- Ahern, J. & Philpot, P. (2002) Assessing acutely ill patients on general wards. *Nursing Standard*, 16, 47–54.
- Alfaro-LeFevre, R. (2014) *Applying Nursing Process: The Foundation for Clinical Reasoning*. Philadelphia: Lippincott Williams & Wilkins.
- Arrowsmith, H. (1999) A critical evaluation of the use of nutrition screening tools by nurses. *British Journal of Nursing*, 8, 1483–1490.
- Baid, H. (2006) The process of conducting a physical assessment: A nursing perspective. *British Journal of Nursing*, 15(13), 710–715.
- BAPEN & Malnutrition Advisory Group (2000) *Explanatory Notes for the Screening Tool for Adults at Risk of Malnutrition*. London: British Association for Parenteral and Enteral Nutrition, Malnutrition Advisory Group.
- Barrows, H. & Pickell, G. (1991) *Developing Clinical Problem-Solving Skills*. London: Norton Medical Books.
- Berman, A., Kozier, B. & Erb, G.L. (2010) *Kozier and Erb's Fundamentals of Nursing*. Frenchs Forest, NSW: Pearson.
- Bickley, L.S. & Szilagyi, P.G. (2017) *Bates' Guide to Physical Examination and History Taking*, 12th edn. Philadelphia: Wolters Kluwer.
- Bonevski, B., Sanson-Fisher, R., Girgis, A., et al. (2000) Evaluation of an instrument to assess the needs of patients with cancer. *Cancer*, 88, 217–225.
- Brown, V., Sitzia, J., Richardson, A., et al. (2001) The development of the Chemotherapy Symptom Assessment Scale (C-SAS): A scale for the routine clinical assessment of the symptom experiences of patients receiving cytotoxic chemotherapy. *International Journal of Nursing Studies*, 38, 497–510.
- Burns, E.A., Korn, K., Whyte, J., et al. (2011) *Oxford American Handbook of Clinical Examination and Practical Skills*. New York: Oxford University Press.
- Camm, C.F. & Camm, A.J. (eds) (2016) *Clinical Guide to Cardiology*. Oxford: Wiley Blackwell.
- Cancer Action Team (2007) *Holistic Common Assessment of Supportive and Palliative Care Needs for Adults with Cancer: Assessment Guidance*. London: Cancer Action Team.
- Cox, C.L. (ed) (2004) *Physical Assessment for Nurses*. Oxford: Blackwell.
- Crouch, A.T. & Meurier, C. (eds) (2005) *Health Assessment*. Oxford: Blackwell.
- Crumbie, A. (2006) Taking a history. In: Walsh, M. (ed) *Nurse Practitioners: Clinical Skills and Professional Issues*, 2nd edn. Edinburgh: Butterworth-Heinemann, pp.14–26.
- DH (Department of Health) (2005) *Choosing a Better Diet: A Food and Health Action Plan*. London: Department of Health.
- Dimond, B. (2002) *Legal Aspects of Pain Management*. Dinton, UK: Quay Books.
- Donnelly, M. & Martin, D. (2016) History taking and physical assessment in holistic palliative care. *British Journal of Nursing*, 25(22), 1250–1255.
- Dover, A.R., Innes, J.A. & Fairhurst, K. (2018) General aspects of examination. In: Innes, J.A., Dover, A.R. & Fairhurst, K. (eds) *Macleod's Clinical Examination*, 14th edn. London: Elsevier, pp.19–36.
- Drinkaware (2019) *What Is an Alcoholic Unit?* Available at: <https://www.drinkaware.co.uk/alcohol-facts/alcoholic-drinks-units/what-is-an-alcohol-unit>
- Edwards, M. & Miller, C. (2001) Improving psychosocial assessment in oncology. *Professional Nurse*, 16, 1223–1226.
- Eilers, J., Berger, A.M. & Petersen, M.C. (1988) Development, testing, and application of the Oral Assessment Guide. *Oncology Nursing Forum*, 15, 325–330.
- Estes, M.E.Z. (2013) *Health Assessment and Physical Examination*, 5th edn. New York: Delmar Cengage Learning.
- Fisher, E. & Potter, J. (eds) (2017) *Respiratory Examination*. Available at: www.oxfordmedicaleducation.com/category/clinical-examinations/respiratory-examination
- Fortin, M., Stewart, M., Poitras, M.E., et al. (2012) A systematic review of prevalence studies on multimorbidity: Toward a more uniform methodology. *Annals of Family Medicine*, 10(2), 142–151.
- Frank-Stromborg, M. & Olsen, S.J. (eds) (2004) *Instruments for Clinical Healthcare Research*. Sudbury, MA: Jones & Bartlett.
- Fritz, D. & Becker Weillitz, P. (2016) Abdominal assessment. *Home Healthcare Now*, 34(3), 151–155.
- Galanti, G.A. (2000) An introduction to cultural differences. *Western Journal of Medicine*, 172, 335–336.
- Gangopadhyay, D.N., Dey S.K., Chandra, M., et al. (1998) Serum lipid profile in xanthelasma. *Indian Journal of Dermatology*, 43, 53–56.
- Gordon, M. (1994) *Nursing Diagnosis: Process and Application*. St Louis, MO: Mosby.
- Haidet, P. & Paterniti, D.A. (2003). Building a history rather than taking one: A perspective on information sharing during the medical interview. *Archives of Internal Medicine*, 163(10), 1134–1140.
- Harris, R., Wilson-Barnett, J., Griffiths, P. & Evans, A. (1998) Patient assessment: Validation of a nursing instrument. *International Journal of Nursing Studies*, 35, 303–313.
- Heaven, C.M. & Maguire, P. (1996) Training hospice nurses to elicit patient concerns. *Journal of Advanced Nursing*, 23, 280–286.
- Holmes, H.N. (ed) (2003) *Three-Minute Assessment*. Philadelphia: Lippincott Williams & Wilkins.
- Innes, J.A., Dover, A.R. & Fairhurst, K. (2018) General aspects of history taking. In: Innes, J.A., Dover, A.R. & Fairhurst, K. (eds) *Macleod's Clinical Examination*, 14th edn. London: Elsevier, pp.9–18.
- Innes, J.A. & Tiernan, J. (2018) The respiratory system. In: Innes, J.A., Dover, A.R. & Fairhurst, K. (eds) *Macleod's Clinical Examination*, 14th edn. London: Elsevier, pp.75–92.
- Jarvis, C. (2016) *Pocket Companion for Physical Examination and Health Assessment*, 7th edn. St Louis, MO: Elsevier.
- Jensen, T.S., Wilson, P.R. & Rice, A.S. (2003) *Clinical Pain Management: Chronic Pain*. London: Arnold.
- Johnson, T. (2000) Functional health pattern assessment on-line: Lessons learned. *Computers in Nursing*, 18, 248–254.
- Kearney, N. (2001) Classifying nursing care to improve patient outcomes: The example of WISECARE. *Nursing Times Research*, 6, 747–756.
- Kozier, B. (2012) *Fundamentals of Nursing: Concepts, Process, and Practice*. Harlow, UK: Pearson.
- MacDonald, J. & RMH Pressure Ulcer MDT Collaborative (2019) *aSSKING Bundle Assessment Document NR592*. London: The Royal Marsden NHS Foundation Trust.
- Marek, C. (2003). Antiemetic therapy in patients receiving cancer chemotherapy. *Oncology Nursing Forum*, 30, 259–271.
- McCrae, N. (2012) Whither nursing models? The value of nursing theory in the context of evidence-based practice and multidisciplinary health care. *Journal of Advanced Nursing*, 68, 222–229.
- Mills, N.L., Japp, A.G. & Robson, J. (2018) The cardiovascular system. In: Innes, J.A., Dover, A.R. & Fairhurst, K. (eds) *Macleod's Clinical Examination*, 14th edn. London: Elsevier, pp.39–74.
- Moore, T. (2007) Respiratory assessment in adults. *Nursing Standard*, 21(49), 48–56.
- Murphy, E.K. (2003) Charting by exception. *AORN Journal*, 78, 821–823.
- Nair, P.A. & Singhal, R. (2018) Xanthelasma palpebrarum: A brief review. *Clinical, Cosmetic and Investigational Dermatology*, 11, 1–5.
- NHS England and NHSI (NHS Improvement) (2019) *Standard Infection Control Precautions: National Hand Hygiene and Personal Protective Equipment Policy*. Available at: https://improvement.nhs.uk/documents/4957/National_policy_on_hand_hygiene_and_PPE_2.pdf

- NMC (Nursing and Midwifery Council) (2018) *The Code: Professional Standards of Practice and Behaviour for Nurses, Midwives and Nursing Associates*. Available at: <https://www.nmc.org.uk/standards/code>
- O'Connor, F.W. & Eggert, L.L. (1994) Psychosocial assessment for treatment planning and evaluation. *Journal of Psychosocial Nursing and Mental Health Services*, 32, 31–42.
- Orem, D.E., Taylor, S.G. & Renpenning, K.M. (2001) *Nursing: Concepts of Practice*. St Louis, MO: Mosby.
- Paterson, R. & Dover, A.R. (2018) The deteriorating patient. In: Innes, J.A., Dover, A.R. & Fairhurst, K. (eds) *Macleod's Clinical Examination*, 14th edn. London: Elsevier, pp.339–346.
- Paul, R. (1988). What, then, is critical thinking? Paper presented at the Eighth Annual and Sixth International Conference on Critical Thinking and Educational Reform, Rohnert Park, CA.
- Peacock, S. (2004) Systematic health assessment: A case study. *Practice Nursing*, 15(6), 270–274.
- Peate, I., Nair, M. & Wild, K. (2014) *Nursing Practice: Knowledge and Care*. Chichester: Wiley Blackwell.
- Perdue, C. (2005) Understanding nausea and vomiting in advanced cancer. *Nursing Times*, 101, 32–35.
- Plevris, J. & Parks, R. (2018) The gastrointestinal system. In: Innes, J.A., Dover, A.R. & Fairhurst, K. (eds) *Macleod's Clinical Examination*, 14th edn. London: Elsevier, pp.93–118.
- Powell, A. (2006) The cardiovascular system. In: Walsh, M. (ed) *Nurse Practitioners: Clinical Skills and Professional Issues*, 2nd edn. Edinburgh: Butterworth-Heinemann, pp.98–119.
- Pratt, R.J. & Van Wijgerden, J. (2009) Nursing care of patients with tuberculosis. In: Schaaf, H.S. & Zumla, A.I. (eds) *Tuberculosis: A Comprehensive Clinical Reference*. London: Elsevier, pp.711–717.
- Price, C.I.M., Han, S.W. & Rutherford, I.A. (2000) Advanced nursing practice: An introduction to physical assessment. *British Journal of Nursing*, 9(22), 2292–2296.
- Putzier, D.J. & Padrick, K.P. (1984) Nursing diagnosis: A component of nursing process and decision making. *Topics in Clinical Nursing*, 5, 21–29.
- Rhodes, V.A., McDaniel, R.W., Homan, S.S., et al. (2000) An instrument to measure symptom experience: Symptom occurrence and symptom distress. *Cancer Nursing*, 23, 49–54.
- Rolfe, G. (1999) Insufficient evidence: The problems of evidence-based nursing. *Nurse Education Today*, 19, 433–442.
- Roper, N., Logan, W.W. & Tierney, A.J. (2000) *The Roper-Logan-Tierney Model of Nursing: Based on Activities of Living*. New York: Churchill Livingstone.
- Rowbotham, D.J. & MacIntyre, P.E. (2003) *Clinical Pain Management: Acute Pain*. London: Arnold.
- Royal College of Nursing (2017) *Principles of Consent: Guidance for Nursing Staff*. Available at: <https://www.rcn.org.uk/professional-development/publications/pub-006047>
- Rush, S., Fergy, S. & Weels, D. (1996) Professional development: Care planning – Knowledge for practice. *Nursing Times*, 92, 18–23.
- Rushforth, H. (2009) *Assessment Made Incredibly Easy!* London: Lippincott Williams & Wilkins.
- Saxon, A. & Lillyman, S. (eds) (2011) *Developing Advanced Assessment Skills: Patients with Long-Term Conditions*. Keswick, UK: M&K Publishing.
- Schug, S.A., Palmer, G.M., Scott, D.A., et al. (2015) *Acute Pain Management: Scientific Evidence*, 4th edn. Australian and New Zealand College of Anaesthetists and Faculty of Pain Medicine. Available at: http://fpm.anzca.edu.au/documents/apmse4_2015_final
- Seidel, H.M., Ball, J.W., Davis, J.E., et al. (2011) *Mosby's Guide to Physical Examination*, 7th edn. New York: Mosby Elsevier.
- Shaw, M. (1998) *Charting Made Incredibly Easy*. Springhouse, PA: Springhouse.
- Silverman, J., Kurtz, S.M. & Draper, J. (2013) *Skills for Communicating with Patients*. London: Radcliffe.
- Smith, J. & Rushton, M. (2015) How to perform respiratory assessment. *Nursing Standard*, 30(7), 34–36.
- Swartz, M.H. (2014) *Textbook of Physical Diagnosis: History and Examination*, 7th edn. Philadelphia: Elsevier Saunders.
- Talley, N.J. & O'Connor, S. (2006) *Clinical Examination: A Systematic Guide to Physical Diagnosis*. Sydney: Churchill Livingstone Australia.
- Teytelman, Y. (2002) Effective nursing documentation and communication. *Seminars in Oncology Nursing*, 18, 121–127.
- Tidman, M.J. (2018) The skin, hair and nails. In: Innes, J.A., Dover, A.R. & Fairhurst, K. (eds) *Macleod's Clinical Examination*, 14th edn. London: Elsevier, pp.283–293.
- Walsh, M. (2006a) Abdominal disorders. In: Walsh, M. (ed) *Nurse Practitioners: Clinical Skills and Professional Issues*, 2nd edn. Edinburgh: Butterworth-Heinemann, pp.139–157.
- Walsh, M. (2006b) *Nurse Practitioners: Clinical Skills and Professional Issues*, 2nd edn. Edinburgh: Butterworth-Heinemann.
- Walsh, M., Crumbie, A. & Watson, J.E. (2007) *Watson's Clinical Nursing and Related Sciences*. New York: Baillière Tindall / Elsevier.
- Weber, J.R. & Kelley, J.H. (2014) *Health Assessment in Nursing*, 5th edn. Philadelphia: Lippincott Williams & Wilkins.
- White, L. (2003) *Documentation and the Nursing Process*. Clifton Park, NY: Thomson / Delmar Learning.
- Wilkinson, J.M. (2007) *Nursing Process and Critical Thinking*. Upper Saddle River, NJ: Pearson Prentice Hall.

Answers

Answers to the learning and stretch activities are available on the companion site of this student edition: www.royalmarsdenmanual.com/student10e.



Discharge care and planning

Caroline Watts with Emma Collard and Connie Lewis

3

CO-ORDINATING
HOME
PRIMARY
ASSESSING
PERSON-CENTRED
DISCHARGE
TRANSITION
FAMILY
PLANNING
SECONDARY
CONTINUITY
SOCIAL
COMMUNITY
COMPLEX
MULTIDISCIPLINARY

After reading this chapter and undertaking the learning activities within it, you should:

- 1 Know the importance of proactively planning a patient's discharge within the context of a patient-centred, multidisciplinary team approach
- 2 Understand the processes required to safely discharge a patient from an acute hospital setting and your role in facilitating this
- 3 Appreciate the role of the discharge co-ordinator and the community and primary care teams in supporting a safe discharge, and know the information they require to ensure that patients experience a seamless transition in care
- 4 Know what constitutes a 'complex discharge' and the steps required to facilitate access to funding, placements and suitable packages of care
- 5 Understand how to facilitate a rapid discharge for patients at the end of life, to assist them to achieve their goal to be in their preferred place of care

Key terms are highlighted in the text in pink. Glossary definitions of these terms can be found on the companion site of this student edition: www.royalmarsdenmanual.com/student10e.



Overview

This chapter addresses the planning and process of discharging patients from hospital. Discharge planning is a routine feature of healthcare systems worldwide and is recognized as the foundation of patients' successful transitions from hospital to home (Pellett 2016). The aim of this multidisciplinary process of assessing, planning and co-ordinating patients' care needs prior to their leaving hospital is to ensure continuity of care with a safe and timely discharge. While discharge planning is a universal priority for all acute inpatient facilities (McNeil 2016), the process and pace of discharge planning have changed beyond all recognition (Lees-Deutsch 2017). The increasing pressure on inpatient beds has meant that despite the clear benefits of reducing the time a patient occupies a hospital bed, 'achieving it has proven difficult' (NHSI 2018, p.3) and effective discharge planning therefore remains one of the major challenges facing the NHS today (Winfield and Burns 2016).

Both internal and external planning processes are included in this chapter. External planning processes are those associated with the interface between primary and secondary care. They include processes related to complex discharges (including for patients with additional needs), discharge to a nursing home and discharge at the end of life.

Discharge care and planning

DEFINITION

Discharge planning is a complex process (Wallace et al. 2017) that is not a discrete event with one model of care but a transitional one with many factors involved (Chenoweth et al. 2015). The process should take into account a patient's physical, psychological, social, cultural, economic and environmental needs. It involves not only patients but also families, friends, informal carers, the hospital multidisciplinary team, and the community health and social services teams.

RELATED THEORY

The evidence suggests that a structured discharge plan tailored to the individual is best practice (McNeil 2016). Guidance from the National Institute for Health and Care Excellence (NICE) (2015) emphasizes this person-centred approach by highlighting the importance of information sharing between the patient, their family or carers, and all health and social care practitioners involved to ensure a safe and co-ordinated transition. Patients need to be considered as equal partners in the process where the foundations for decisions are based on what is important to the individual and their needs and preferences (Weiss et al. 2015). This approach also promotes the highest possible level of independence for the patient, their partner and their family by encouraging appropriate self-care activities and participation in the discharge planning process.

The roles of both family members and informal caregivers are crucial in supporting the discharge planning process, as Mabire et al. (2018) indicate. Therefore, providing the patient and their family with information, knowledge and confidence in their care before they leave hospital is an essential component of discharge preparation. Evidence suggests, however, that during a patient's hospitalization, family and carers often receive limited communication and education regarding the care of their loved ones after discharge (Cacchione 2018). This can leave patients unprepared for the transition home; they can feel a sense of abandonment (Wallace et al. 2017) and are rendered more likely to require a readmission. It is therefore vital that nurses and other members of the multidisciplinary team discuss with the patient and their family how they will manage their condition after their discharge and offer appropriate teaching and support to enable self-care. The use of patient information sheets to aid this process has

been found to be effective and may help both patients and their families feel more prepared for discharge from hospital (New et al. 2016).

Assessment of patients' individual needs for discharge is of particular importance when considering transfer from an acute care setting. The NICE (2015) guidance indicates that practitioners should work together 'to identify factors that could prevent a safe, timely transfer of care from hospital' (p.12). Assessing risk and the prompt sharing of pertinent concerns regarding a patient's physical, psychological or cognitive ability enables earlier intervention from the multidisciplinary team, thereby helping to ensure patient safety and wellbeing (Lees-Deutsch et al. 2016). Staff should have a clear understanding of their roles and responsibilities and work collaboratively (Elliott and DeAngelis 2017). The NICE (2015) guidance recommends that the multidisciplinary team should be identified as soon as a person is admitted and that there should be regular contact with the community team to provide co-ordinated and planned ongoing support.

To achieve the best continuity of care after discharge, there needs to be effective communication across all disciplines, and with the patient and their family (New et al. 2016, Mabire et al. 2018). This ensures that the patient's wishes are heard and acted upon appropriately (Winfield and Burns 2016).

Co-ordination of discharge care planning should be led by a 'single health or social care practitioner' (NICE 2015, p.10); this nominated person is often a key worker or discharge co-ordinator. A key worker is a single named person who has agreed with the patient to be their first point of contact for support, information and care planning. Discharge co-ordinators are, in general, health or social care professionals who have both hospital and community experience. Their role is to advise, help with planning and assist the co-ordination of the differing care providers that the patient may need when they leave hospital, particularly when their nursing and care needs are complex (Lees 2013).

CLINICAL GOVERNANCE

Legal, professional and safeguarding issues in discharge planning

There is a requirement in discharge planning for nurses to share information about patients with health and social care providers in the community. Nurses need to ensure they use safe communication procedures so that information is only shared with those who require it. Failing to apply good information governance processes could result in information being shared inappropriately and the breaching of a patient's right to confidentiality. Patients need to be supported and encouraged to make their own decisions; where a patient lacks capacity, the need to share information must be based on a consideration of risk and the person's best interests (this is discussed in more detail in Chapter 5: Communication, psychological wellbeing and safeguarding in the section about the Mental Capacity Act (2005)).

Risk management

Delays in discharge contribute substantially to the financial and capacity pressures facing the NHS, as do readmissions (Winfield and Burns 2016). The total number of NHS hospital beds in England has more than halved in the past 30 years while the number of patients has increased significantly (Ewbank et al. 2017). Anticipating and managing potential delays via proactive planning therefore helps the NHS and other healthcare providers to use their limited resources most effectively, and, more importantly, can improve a patient's quality of life (Alper et al. 2017). Planning care for discharge and involving patients and their families is therefore important in keeping disruption to a minimum to ensure inpatient facilities are maximized and patients move in a seamless fashion back into the community.

Delayed and/or ineffective discharge planning has been shown to have detrimental effects on patients' psychological and physical wellbeing and their illness experience (Lees 2013).

Figure 3.1 A patient leaving hospital. *Source: Reproduced with permission of Getty Images.*



Additionally, evidence suggests that inadequate discharge planning in older people leads not only to adverse health outcomes but also to an increased risk of hospital readmission (Chenoweth et al. 2015, Pellett 2016). Older people with dementia or other cognitive impairment are likely to experience an extended length of stay in hospital because of more complex organizational arrangements and an increase in the support needed on discharge (Challis et al. 2014). Elderly patients in acute care do not always get enough opportunity to mobilize and are highly likely to acquire ‘deconditioning syndrome’, where their bone mass and muscle strength are reduced. Up to 65% of older patients experience this type of decline during hospitalization (British Geriatrics Society 2017). This may result in increased risk of falls, constipation, incontinence, depression, swallowing problems and pneumonia (Arora 2017). Reducing this risk by implementing proactive planning to ensure timely and safe discharge is therefore paramount; nurses’ key role in achieving this is emphasized by The Queen’s Nursing Institute (QNI) (2016), which suggests that nurses are ‘at the heart of effective discharge planning’ (p.35).

Discharging patients from hospital: internal procedures

EVIDENCE-BASED APPROACHES

Despite the fact that improved discharge planning has been a consistent recommendation in health policy and research, there is no commonly agreed model for the process of discharge (Waring et al. 2014). The process for discharging patients at ward level should, however, be standard for all simple discharges across the hospital. NHS Improvement (NHSI) (2015) has developed a toolkit on discharge planning and highlighted key elements that are essential for both elective and emergency admissions:

- Specify a date and time of discharge as early as possible within the period of care.
- Identify whether a patient has simple or complex discharge planning needs.
- Identify what the patient’s individual discharge needs are and how these will be met.
- Define the specific clinical criteria that a patient must meet for discharge.

NHSI (2015) also says: ‘A specific targeted discharge date and time reduces a patient’s length of stay, emergency readmissions and pressure on hospital beds’ (p.2). Discharge dates in elective care can be planned prior to admission; if patients have attended a pre-assessment appointment, discharge needs should be identified at this point to allow effective planning and to enable clinical staff to notify appropriate services in advance of admission (NICE 2015). Advance planning is not possible in emergency or unscheduled care so in these circumstances robust systems of patient assessment are crucial to gather relevant patient information early (Lees-Deutsch et al. 2016). An estimated date of discharge can then be agreed for everyone to work towards. The date may change depending on clinical and individual patient needs since changes in patients’ medical conditions require ongoing reassessment and should be the foundation of decisions about timing (Weiss et al. 2015). The expected date of discharge should therefore be continually reviewed based on the consultant’s judgement as to when the patient is likely to have recovered sufficiently to go home. This is best done by establishing the clinical criteria for discharge, which are the functional and physiological parameters that the patient must achieve before discharge (NHSI 2018). These criteria enable everyone to focus on the same factors, which helps in communication and facilitates more effective discharge planning. Due to the rapidly aging population, the increasing number of people living with long-term conditions (such as dementia) and the decreasing number of hospital beds, the pressure to discharge patients quickly is a continuous challenge for the NHS (Ewbank et al. 2017). As a result, there have been many recent reports, recommendations and initiatives to improve discharge planning from statutory and voluntary bodies (e.g. Healthwatch England 2015, NHS England 2016, NICE 2015, QNI 2016, Royal Voluntary Service 2014).

The SAFER Patient Flow Bundle (NHSI 2017a) is a structured approach that uses five elements of best practice to improve discharge planning (Figure 3.2).

The Red to Green approach, which works in tandem with the SAFER Patient Flow Bundle, also highlights those days when a patient receives little or no intervention that progresses them towards discharge; these days progress them towards discharge (Figure 3.3). Green days are of value to a patient as they receive care that contributes towards them getting home. By using this approach, hospitals can see where there are blockages in their discharge processes and make changes for improvement. For example, a high number of patients may have red days because they are waiting for a scan before discharge. By reviewing the radiology scheduling, the hospital could implement changes to fast-track patients who are awaiting discharge, which could prevent discharge delays.

Nurse-led and criteria-led discharge have both been developed within the past decade as ways to expedite timely discharge for patients. Both require the clinical parameters for a patient’s discharge to be clearly defined; once these have been met, discharge can be facilitated by a competent member of staff (Lees-Deutsch and Robinson 2018). For nurse-led discharge to be undertaken, nurses require specific training to ensure competency in the continuing assessment of patients for discharge, whereas criteria-led discharge is an approach that can be used by a range of professionals. Criteria are often developed from clinical guidelines for specific conditions (Cundy et al. 2017) and their use can appropriately inform practitioners about the patient’s clinical readiness for discharge. However, effective discharge extends beyond the use of criteria in isolation (Lees-Deutsch and Gaillemain 2018) and nurses must focus on their accountability for delivering holistic care throughout the discharge planning process.

Introducing frameworks and approaches to discharge planning can support the process and improve efficiency, organization and overall satisfaction of patients and staff (Lees-Deutsch and Gaillemain 2018). Such methods help to reduce time lags in the traditional discharge process, thereby reducing length of stay and improving patient safety.

The SAFER Patient Flow Bundle

The SAFER bundle blends five elements of best practice. It's important to implement all five elements together to achieve cumulative benefits. It works particularly well when it is used in conjunction with the 'Red and Green Days' approach. When followed consistently, length of stay reduces and patient flow and safety improves.

- Use simple rules to standardise ward and board round processes.
- Minimise variation between individual clinicians and clinical teams to ensure all patients receive an effective daily senior review.
- Daily review undertaken by a senior clinician able to make management and discharge decisions is essential seven days a week.
- Effective ward and board rounds are crucial to decision making and care co-ordination.

Red and Green Bed Days

A GREEN day is a day of value for a patient

Principles of care

It is essential that nurses are aware of their organization's local discharge procedures, policies and protocols and are able to identify when a patient's discharge needs may be complex; the principles of addressing these are covered below in this chapter.

When planning a patient's discharge from hospital, it is important for nurses to consider that, however well it is structured, discharge can have complex emotional aspects for the patient and their family (Teodorczuk 2016). Engaging patients and their carers and families at all stages is therefore an essential part of any discharge planning system as it enables a focus on patients' individual holistic needs. This ultimately ensures not only patients' continued safety but also their general wellbeing (Elliott and DeAngelis 2017).

PRE-PROCEDURAL CONSIDERATIONS

There are certain issues that need to be addressed for all patients, such as transport to enable them to return home and timely prescribing of medications to take home so that they are ready for discharge. NHSI (2015) suggests that checks for all discharge issues should be finalized 48 hours prior to discharge. It is also important to ensure that follow-up arrangements have been made. These may include a clinic appointment or referral to a district nurse for a specific procedure.

Equipment

Patients will frequently require equipment to enable them to return home. Ensuring that all required equipment is available and in working order before discharge facilitates a smooth transition to home (Elliott and DeAngelis 2017). The equipment needs of each patient should be assessed at pre-admission and throughout their stay to ensure nothing is omitted.

Patients may require new additional services at home, such as oxygen, which should be prescribed using the appropriate national Home Oxygen Order Form (HOOF) and the Initial Home Oxygen Risk Mitigation Form (IHORM). In 2017, NHS England changed the process for ordering home oxygen to make it safer as it had been found that patients were not always being asked to sign consent forms when they were started on oxygen (NHS Sunderland Clinical Commissioning Group 2017). The IHORM was therefore introduced to reduce the risk of a serious incident occurring when medicinal oxygen is installed in a home environment. Before a patient is initiated on oxygen, the clinician must ask the patient some relevant questions in order to ensure they understand the risks and give informed consent.

The HOOF and IHORN forms need to be faxed to the local oxygen supplier but often the task of ordering oxygen is completed by the patient's local clinical commissioning group, which usually has details on its website along with the facility to download forms. It is useful to know how the local procedures work and to ensure consideration is given to the monitoring and reviewing of the patient on oxygen once at home.

Pharmacological support: medication on discharge

Before a patient is discharged, the nurse needs to ensure that the patient and, where appropriate, the carer are competent to self-administer medication at home. Evidence suggests that there are often limited resources in hospitals to ensure patients who are capable of self-care regarding medication maintain their independence (QNI 2016) so supportive measures must be considered. In some areas, tablet dispensers are provided, particularly for those who have difficulty opening containers or who lack competency in remembering which tablets to take when (Figure 3.4). If carers and/or community nurses are involved in giving a patient medication at home, a medicines administration record (MAR chart) should be given on discharge, clearly stating the name of the drug, the dose and frequency, and any special instructions (Figure 3.5). Special considerations are required for medications prescribed for pumps and drivers (e.g. for patients who require end-of-life care or symptom management), and in such circumstances local policies should be referred to.

Figure 3.4 An example of a tablet dispenser.



Figure 3.5 A sample medicines administration chart.

Name	Purpose of medication	Dose	Frequency	Special instructions
Metoclopramide	Anti-sickness	10 mg	Up to 3 times a day	Take if feeling nauseous
Amoxicillin	Antibiotic – to treat infection	500 mg	3 times a day	Do not miss a dose and ensure the course of treatment is completed (take all of the tablets prescribed)

Non-pharmacological support: nutrition

In some cases, patients may be receiving nutrition via feeding tubes, known as 'enteral feeding'. The common routes for enteral feeding in the community are:

- radiologically inserted gastrostomy (RIG)
- percutaneous endoscopically placed gastrostomy (PEG)
- jejunostomy
- nasogastric (NG).

Dietitians and/or nutrition nurses normally facilitate arrangements for these patients when they are going home. It is important that community teams including nurses and dietitians are contacted in advance of a patient being discharged with supportive feeding *in situ* to ascertain what information and support they need to facilitate the patient's safe and timely discharge home.

Specific patient needs on discharge

It is important to recognize that some patients will have additional needs due to their status or health condition – for example, a continuing disability, learning difficulties, a mental 'illness' or dementia. Patients who live alone or who have limited financial resources also need specific consideration to ensure their needs are met and that they are not vulnerable to further problems once discharged.

There may be practical issues about the transfer home that patients have not considered themselves while in hospital. If, for example, the patient lives alone or is very frail, simple tasks such as shopping may be very difficult. Some trusts have services to provide food packs for elderly patients (QNI 2016) but otherwise arrangements will need to be made prior to discharge to ensure the patient has adequate food provisions. Talking to the patient about what they will need and how they will manage is essential. Carers, family and neighbours should be involved and appropriate local agencies and services considered.

Age UK (www.ageuk.org.uk) provides information and support for older people. Its factsheet on hospital discharge gives useful advice for patients about practical issues to consider when leaving hospital (Box 3.1).

Each year, almost a third of people over the age of 65 fall (NICE 2018). Where patients are frail or at risk of falls, ensuring that they know that a community pendant alarm system or other personal alarm system can be installed may provide them and their family with some reassurance. Information regarding these alarms and local providers is usually held by the local authority (see Chapter 7: Moving and positioning for more information). For many dependent adults, adaptive technologies provide a means to independent living and a decrease in reliance on support from family members or more costly social services.

Accommodation considerations on discharge

On discharge, consideration may need to be given to patient accommodation, such as the suitability of the accommodation and alterations required. The hospital occupational therapy team usually leads on this and makes a domiciliary visit to ensure appropriate aids (e.g. hand rails) are put in place and changes are made to facilitate the safe transition of the patient home. A home visit may also be necessary to ensure the property is habitable – for example, if the patient's property is in a poor state or there are issues in relation to hoarding. This may need to be done by or with social services. Where the patient is a home-owner, however, the housing department may be less likely to intervene, in which case it is up to the patient and their family to address such issues.

It is also possible that prior to admission a patient will have been homeless, or they may become homeless during their hospital stay. The patient may need to be supported to access accommodation through the local authority homelessness team. As part of the process, the patient will need to provide evidence of eligibility for social housing, which will require specific supporting documentation. It is worth noting that all housing assessments are carried out online, which can be difficult for patients who have

**Box 3.1 Practical issues for older people when leaving hospital**

Attention to practical issues is vital for a safe and smooth discharge:

- Has your carer been given sufficient notice for your discharge date/time?
- Do you have, and are you wearing, suitable clothes for the journey home?
- Is a relative collecting you or is hospital transport required?
- Do you have house keys and money if travelling home alone?
- Will medication be ready on time? This is usually enough for the next seven days. Has your medication changed since admission? Have changes been explained to you and your carer? Do you know whether some prescribed items are only to be taken in the short term?
- Have you and your carer received training to use new aids or equipment safely and effectively? Will they be there when you get home?
- Do you have a supply of continence products to take home as agreed, know when to expect the next delivery and how to order supplies?
- Is your GP and other community health staff aware of your discharge date and support your need from them? Has a discharge summary with details of any medication changes been forwarded to the practice?
- If returning to your care home, has the manager been informed of the date and likely time of your arrival? Are you to take a copy with you or will staff forward copies of your care plan and medication needs to them promptly?

Source: Age UK (2019). Reproduced with permission of Age UK.

little or no knowledge of computers, so extra support is needed for such patients to prevent delay in discharge.

Assessment and recording tools

The use of a discharge checklist or centralized discharge planning record that can be accessed by all hospital staff can aid the process and facilitate rapid transfer of information between teams (Lees 2013, Winfield and Burns 2016). The same checklist can be used for all patients whether they have simple or complex discharge needs, as it minimizes omissions or duplication in discharge actions and ensures a good record of the planning process. An example of a discharge checklist is given in Figure 3.6.

POST-PROCEDURAL CONSIDERATIONS

Every patient leaving hospital should receive a **discharge summary** that is completed by their clinical team, and a copy should be sent to their GP within 24 hours of the patient being discharged (NHS England 2018). This facilitates improved continuity of care as it is the primary mode of communication between the hospital care team and those who will be providing the after-care once the patient is at home (Alper et al. 2017). The plan should include an update about the patient's clinical condition and treatment, information about medications and arrangements for follow-up care.

COMPLICATIONS**Delayed discharges**

A discharge delay is when a patient remains in hospital beyond the date agreed by the multidisciplinary team and beyond the time when they are medically fit to be discharged. Occasionally the discharge process may not proceed as planned; a discharge may be delayed for a number of reasons and a system should be in place to record this. For every patient who is 'delayed', NHS

Figure 3.6 Example of a discharge checklist.

Discharge checklist

Discharge Criteria	Yes	No	N/A	Comments
1. Cognitive and Perceptual Status				
Patient is alert and orientated/within patient's 'normal status'	Yes	No		
Patient/carer demonstrates understanding of treatment and care needs and their concerns have been discussed	Yes	No		
Patient/carer is aware of warning signs and when to contact hospital	Yes	No		
2. Pain				
Patient reports pain free/pain is controlled at an acceptable level	Yes	No		
3. Respiratory status				
O ₂ sats above 95% on air; respiratory rate between 12–20 bpm or within patient's normal range if pre-existing respiratory disease	Yes	No		
4. Cardiovascular status				
Pulse within patient's normal range (rate/rhythm/volume)	Yes	No		
Blood pressure within patient's normal range	Yes	No		
5. Mobility/Activities of Daily Living				
Patient's usual level of independence attained or suitable for discharge	Yes	No		
6. Elimination				
Patient is voiding urine without difficulty and within expected pattern and urine output satisfactory	Yes	No		
Patient's bowel movements are within patient's expected pattern	Yes	No		
7. Nutrition				
Patient is eating and drinking	Yes	No	N/A	
Nutritional supplements supplied and explained to patient	Yes	No	N/A	
Enteral feeding tube e.g. PEG in situ with no signs of complications	Yes	No	N/A	
8. Nausea and Vomiting				
Patient reports no nausea or vomiting, or controlled to acceptable level	Yes	No		
9. Wound and/or Potential Infection				
Temperature between 36.0°C and 37.5°C	Yes	No		
Surgical wound(s): signs of wound infection absent (no erythema, swelling or discharge)	Yes	No	N/A	
Surgical wound(s): Patient is aware of type of sutures/clips and arrangements for removal if required	Yes	No	N/A	
Patient aware of arrangements for wound care/dressing and has been given any dressing required	Yes	No	N/A	

Figure 3.6 (continued)

10.	Clinically Fit for discharge			
	Clinical discharge parameters met OR Patient deemed medically fit by clinical team	Yes	No	
	Patient's side effects/complications are managed and the patient's condition is stable for discharge	Yes	No	
	CVADs patent with no signs of complications and/or peripheral cannula removed	Yes	No	N/A
11.	Medication			
	TTOs (including nutritional supps./ dressings/CDs and fridge items) given to patient with prescription sheet signed by nurse and patient with copy for GP	Yes	No	N/A
	Patient/carer demonstrates understanding of purpose of medications and how to administer	Yes	No	N/A
	If required, patient has medicine administration card to facilitate self-medication at home	Yes	No	N/A
	Patient has equipment for injections e.g. sharps box if required	Yes	No	N/A
	Patient has been returned their own medication (including CDs)	Yes	No	N/A
12.	Property and Equipment			
	All required equipment in place/ arranged for discharge and patient/carer aware e.g. home oxygen, appliances, nebulisers	Yes	No	N/A
	Patient has had their property and valuables returned	Yes	No	N/A
13.	Information Provision			
	Patient has been given Discharge summary	Yes	No	
	Patient has been given written information regarding their condition, treatment and/or equipment	Yes	No	N/A
	Patient knows contact details of Key Worker/RMMH/Ward	Yes	No	
14.	Follow up and community support			
	Patient has date and time of next appointment or treatment booked	Yes	No	N/A
	Referrals made and activated for appropriate community support (e.g. social services, district nurse) if required	Yes	No	N/A
	Letters/information as required for GP, district nurse, practice nurse given to patient	Yes	No	N/A
15.	Transport			
	Suitable transport agreed and arranged	Yes	No	
16.	Specific discharge requirements			
	Specific checklists completed if required e.g. for palliative care patient			
Additional comments				
Date:		Signature:		Designation:



Box 3.2 Example of a form documenting discharge against medical advice

Name:

Hospital No:

Address:

I wish to discharge myself against medical advice and accept full responsibility for my actions.

Signed:

Date:

Time:

Statement to be signed by the Doctor

I have discussed with the patient the medical reasons why he/she should remain in the hospital.

Signed:

This form should be filed with the patient's medical records

trusts are required to report the delay to their commissioners. It is the responsibility of the health authorities, in collaboration with local authorities, to monitor and address any issues that result in delays in the transfer of patients from an acute bed to their home or a community bed, such as a care home bed or rehabilitation bed. Trusts closely monitor bed activity and reporting varies from weekly to daily in the winter months.

Discharge against medical advice

Patients may take their own discharge against medical advice and this should be documented accordingly using the hospital's appropriate form (Box 3.2). When patients are assessed as requiring care or equipment but decline these, this does not negate the nurse's duty to ensure a discharge is safe. A discussion should take place with the patient, and their carer if applicable, to assess how they intend to manage without the required care and/or equipment in place. It is crucial that the appropriate community services are made aware of assessed needs that are not being met through patient choice or lack of resources. It is critical that the community teams who will be supporting the patient when they return home are notified; where possible, this should be in writing, enclosing a copy of any form documenting discharge against medical advice.

Readmission following discharge

Premature discharge or discharging the patient to an environment that does not meet their needs may result in them being readmitted to hospital (Alper et al. 2017). Evidence demonstrates that tailored discharge planning can reduce readmission rates and length of stay but that a significant proportion of patients return to hospital within a month due to complications or unplanned care (Teodorczuk 2016). Readmissions are costly and put patients at a higher risk of acquiring infections, of medication errors and of deconditioning, and their impact is therefore negative for both patients' quality of life and the healthcare system (Sheridan et al. 2017). Addressing readmissions by ensuring patients have well-planned and co-ordinated discharge is therefore essential.

The elderly are particularly at risk of readmission following discharge (Lees-Deutsch 2016). Research commissioned by the

Learning Activity 3.1 Case study

Mrs Margaret Sharpe, aged 87, has been admitted to an acute medical ward with drowsiness. She is undergoing investigations, but all the results so far suggest the problem is caused by side-effects of prescribed medication and mild dehydration.

She is married to George, aged 92, and they live in a two-bedroomed fourth-floor flat with a lift. Margaret and George have three adult married children and eight grandchildren. The family live within five miles of Margaret and George and keep a fairly close eye on their parents. George has moderately severe vascular dementia, and Margaret is usually his main carer.

Margaret has three long-standing medical problems that she has learned to live with: urinary stress incontinence and urgency, mild cardiac failure resulting in breathlessness and a chronic right-leg ulcer. Currently Margaret and George do not receive any regular care from social services. A community nurse visits twice a week to dress Margaret's leg ulcer.

- 1 Who is responsible for planning Margaret's discharge?
- 2 What potential problems may develop during Margaret's admission, and how could these be avoided?
- 3 Apart from Margaret, who should be involved in discharge planning?

The test results confirm that Margaret's drowsiness was the result of mistakenly using George's diuretics (double Margaret's own prescribed dose), with resulting dehydration and electrolyte imbalance. These effects have now been corrected, and the medical staff confirms that Margaret can be discharged home in two days' time, after an echocardiogram has been carried out.

- 4 Suggest at least two interventions which could enhance Margaret's and George's safety at home, the need for which should be assessed before discharge.
- 5 What is one of the biggest risks to Margaret's discharge date being deferred?
- 6 Margaret's discharge will be tomorrow. She has some visitors by her bed. What final checks are required before the end of the evening shift?

See the answers on the companion site of this student edition: www.royalmarsdenmanual.com/student10e.

Royal Voluntary Service (2014) estimated that people aged 75 and older are more than twice as likely as those younger to be readmitted to hospital, if they are not given enough support on discharge. This is particularly true for those who live alone or have long-term healthcare needs. Patients with dementia similarly have higher readmission rates possibly due to the fact that they are less likely to benefit from discharge education, self-care instructions or to report symptoms (Teodorczuk 2016). NICE (2015) guidelines consider referral back to relevant community-based care practitioners and a call or visit from a community-based nurse or GP within 72 hours of discharge to mitigate the possibility of readmission for those at high risk. It is essential that nurses understand the negative impact of readmission in order to ensure timely and safe discharge with maximum continuity of care.



Interface between primary and secondary care: external processes

RELATED THEORY

56

NHS Continuing Healthcare

When a patient with complex and ongoing health or social care needs is ready to be safely discharged from acute care, it is very important that this should happen in a timely manner. It is therefore helpful for nurses to have an understanding of the processes involved in determining the funding for healthcare services and the options available for patients once they have been discharged back into the community.

NHS Continuing Healthcare funding exists to provide a package of ongoing care that is arranged and funded solely by the NHS. It should be awarded only when an individual has been assessed as having a primary health need and it is provided to support the care that people need over an extended period of time as a result of disability, accident or illness, to address both physical and mental health needs (DH 2018). The National Framework for NHS Continuing Healthcare and NHS-Funded Nursing Care (DH 2018) provides guidance and structure on the principles and processes of funding. To be eligible, patients must be assessed by a multidisciplinary team to determine the complexity and intensity of their need and the help they require.

The assessment process for NHS Continuing Healthcare should not be allowed to delay hospital discharge (DH 2018) but it is essential for patients' holistic needs to be placed at the heart of the assessment process as they are frequently facing significant changes in their life and a positive experience of the assessment process is therefore crucial. There is also a legal obligation to inform patients of their right to be assessed for NHS Continuing Healthcare funding, and this can best be done by referring them to an online resource booklet on the Department of Health and Social Care's website (<https://www.gov.uk/government/organisations/department-of-health-and-social-care>).

Intermediate care and re-ablement services

It is recognized that older inpatients have longer lengths of stay despite proactive discharge planning due to their complex needs (Mabire et al. 2018). This increases the risk of adverse events following their discharge, and initiatives to aid the transition period from hospital to home are therefore important elements in discharge preparation. Following a hospital stay, intermediate-care teams may provide a period of intensive care and/or rehabilitation, which may take place in a care home or in the individual's own home. **Intermediate care** aims to prevent hospital admissions, support faster recovery from illness or injury, support timely discharge from hospital, and maximize independent living (NICE 2017). Unlike NHS Continuing Healthcare, it is likely to be limited to a maximum of 6 weeks but there are local variations in practice. Intermediate care requires a person-centred approach, involving patients and carers in all aspects of assessment, goal setting and discharge planning.

Re-ablement is a similar service that aims to help people regain their independence following an illness or injury. It is a community-based service that provides assessment and interventions to people in a residential setting such as a care home or a rehabilitation unit. The aim is to optimize individuals' wellbeing by working in partnership with them to enable confidence and independence in activities of daily living and other practical tasks (NICE 2017). Services are delivered by a multidisciplinary team but most commonly by healthcare professionals or care staff if the service is within a care home.

Re-ablement teams are usually made up of the following disciplines:

- social workers
- occupational therapists

- physiotherapists
- rehabilitation support workers
- community nurses.

For patients requiring a long-term package of care, it must be made clear to the patient and/or their family that they will be financially assessed and as a result may be charged for the service. In some local authorities, if the patient is assessed as 'self-funding', social services may only then offer a signposting service to private care providers.

EVIDENCE-BASED APPROACHES

If a patient does not meet the criteria for NHS Continuing Healthcare, they may still receive assistance with personal care and domestic tasks through social services. This can be through a re-ablement service or a long-term package of care. Where a patient is assessed as requiring care from social services to enable them to return home, the trust should notify the local authority (social services) using the **Assessment Notification** form and the **Discharge Notification** form (these forms will be available from the discharge team or social services).

Assessment and recording tools

The local authority will require an Assessment Notification (formerly known as Section 2) no later than 72 hours prior to discharge, but this should be done at the earliest opportunity (see Figure 3.7 for an example). (Again, contact the discharge team or social services for this form.)

How the local authority responds to the Assessment Notification may depend on what local arrangements are in place. Many local authorities have a social worker or social work department within the hospital trust, and this person or team is usually part of the discharge team. Their role is to facilitate the setting up of care packages for discharge. Other authorities may require additional assessments, such as occupational therapy or medical reports, to enable them to set up the care. It is not uncommon for local authorities to request an NHS Continuing Healthcare checklist to be completed as part of the process to assess whether the patient might be entitled to NHS Continuing Healthcare funding.

When the patient has been assessed and is ready for discharge, a Discharge Notification (formerly known as a Section 5) should be sent to the local authority at least 24 hours before the patient leaves hospital (see Figure 3.8 for an example). Nurses need to be aware of the importance of the timeliness of completing this social services documentation and facilitate this being done as soon as possible to avoid discharge delays.

COMPLICATIONS

If the patient becomes unwell or their care needs change significantly prior to discharge, it is the responsibility of the discharge co-ordinator to inform the local authority to put on hold any arranged social services by sending a Withdrawal Notification form (again, contact the discharge team or social services for this form). Once a revised discharge date is confirmed, new Assessment Notification and Discharge Notification forms must be sent to re-establish the services to prevent discharge delay. If a patient is already in receipt of an existing care package and it needs to be re-started without any changes on discharge, Social Services must be informed at least 24 hours prior to discharge to facilitate restarting the existing care package.

Complex discharges

DEFINITION

For patients requiring specific support on discharge, proactive and systematic planning is essential (Winfield and Burns 2016). A complex discharge may be considered when:

- a large package of care involving various agencies is required
- the patient's needs have changed since admission, with different services requiring co-ordination

Figure 3.7 Example of a Social Services Assessment Notification form.

ASSESSMENT NOTICE TO LOCAL AUTHORITY

To be completed no later than 2 days before discharge

It is best practice to send this assessment notice as soon as social care requirement is identified

(As required under the Care Act 2014, schedule 3, para (1) (1))

NHS No:		Hospital No:	
Part A: Patient Details			
Title:	Given Name:	Family Name:	Preferred Name:
			DOB:
			Sex:
Address:	House Name/No.:	Patient Email:	
	Address Line 1:	Patient Land Line No:	
	Address Line 2:	Patient Mobile No:	
	City/Town:	Other Nos:	
	Postcode:		
Local Authority:			
Does the patient live alone?		If No, who do they live with?	Dependants:
Immigration Status:		Ethnicity:	
Religion:		Other:	First Language: (if not English)
			Interpreter needed?
Part B: Carer or Key Contact Details (may be next of kin, carer, family member, friend, etc - as appropriate)			
Name:		Tel/Mob:	Relationship to Patient:
Who is the main carer for the patient?		If other, please specify:	
Part C: General Practitioner Details			
GP Name:		Practice Name:	
GP Address:		Tel:	
Part D: Hospital Details and Patient's Proposed Discharge Date			
Anticipated Discharge Date:		Date of Admission:	
Hospital:	The Royal Marsden	Ward Name:	Ward Tel No:
	Chelsea site		
	Sutton site		
Lead Clinician		Reason for Admission:	Planned Admission?
Part E: Patient Consent for Referral/Information Sharing			
What is patient's capacity to give consent to this referral?			
Additional information regarding capacity to consent:			
Has patient consented to this referral?			
Additional Information regarding consent:			
Can Carer or Key Contact be contacted for discussion regarding the patient?			
Part F: Referral Information			
Have you considered whether or not to provide NHS Continuing Health Care (CHC), if so, what was the result of your consideration?			
Reason for referral:			
Accommodation:			
Relevant Medical Information:			
Details of existing support:			
Has the occupational therapy report been completed?			
Part G: Patient's View (e.g. What support do you think you will need when you leave hospital?)			
Part H: Carer or Key Contact's View (e.g. What support do they think the patient/carer will need when they leave hospital?)			
Part I: Risk Factors			
Are there any safety issues for workers visiting on the ward or at home?			
If yes what are they?			
Part J: Referrer			
Referrer's name:		Job Role:	Fax:
Date & Time:		Email:	Tel:

Figure 3.8 Example of a Social Services Discharge Notification form.

DISCHARGE NOTICE TO LOCAL AUTHORITY

To be issued to Social Care at least **one day** in advance of the confirmed hospital discharge date

It is best practice to send this discharge notice as soon as the discharge date has been agreed

(As required under the Care Act 2014 schedule 3, para 2 (1) (b))

Confirmation of Discharge Date (as agreed by MDT)					
Has Patient been informed of discharge date?			If no, please explain why?		
Has Carer/Key Contact been informed of discharge date?			If no, please explain why?		
NHS No:			Hospital No:		
Part A: Patient Details					
Title:	Given Name:	Family Name:	Preferred Name:	DOB:	Sex:
Address:					
House Name/No.:					
Address Line 1:					
Address Line 2:					
City/Town:					
Postcode: London					
Local Authority:					
Part B: Confirmation of Referring Hospital/Ward Details					
Hospital:	The Royal Marsden	Chelsea Site	Ward Name:	Ward Tel:	
Lead Clinician:			Admitted on:		
Diagnosis on Discharge:					
Part C: Confirmation of Health and/ or Social Care Requested for Discharge					
The following health and/or Social Care required will be available on the expected date of discharge:					
Equipment to be provided at home:					
Part D: Notice Status					
Assessment Notice sent to Social Care with admission details confirmed?					
Social Care assessment completed?					
Date Discharge Notice completed					
Has the occupational therapy report been sent to Social Care?					
Part E: Patient Consent for Information Sharing/Referral					
What is patient's capacity to give consent to this referral?					
Additional information regarding capacity to consent:					
Has patient consented to this referral?					
Additional Information regarding consent:					
Can Carer or Key Contact be contacted for discussion regarding the patient?					
Part F: Referrer					
Referrer's name:	Job Role:	Fax:			
Date & Time:	Email:	Tel:			

- the family and/or carer require intensive input into discharge planning considerations (e.g. psychological interventions)
- the patient is entitled to **NHS Continuing Healthcare** and requires a package of care on discharge
- the patient requires repatriation
- there is dispute among the family about where the patient should be discharged to or what their care needs are
- the patient is homeless.

RELATED THEORY

Patients who have specific social or specialized care needs, who have funding issues or who require a change of residence may

have a complex discharge need (Lees-Deutsch et al. 2016) and may require referral to the hospital's discharge team. Hospital trusts may have different titles for staff within the discharge team, but essentially their role is to co-ordinate plans among all involved by liaising with the multidisciplinary team both within the hospital and in the community. In this way they act as 'knowledge brokers' to facilitate sharing and co-ordination (Waring et al. 2014).

If a patient has dementia or a learning disability, the approach to their discharge needs to be carefully planned and tailored to meet their specific additional needs (Poole et al. 2014). If, for example, the patient has been assessed as lacking capacity to make a decision under the Mental Capacity Act (2005) about

where they should live, then a 'best interest' decision must be made, ensuring that family and carers are involved. Where the patient is assessed as lacking capacity and has no relatives or friends and so is 'un-befriended' (as defined by the Mental Capacity Act 2005), a referral should be made to a local independent mental capacity advocacy service to ensure the patient gets the required support (Mental Capacity Act 2005). Where there is a concern that a person has a degree of cognitive impairment, it can easily be assumed that they cannot return home or that they need care. These assumptions should be challenged and decisions made on the basis of a needs assessment, which should include a mental capacity assessment. The assessment should evidence that the principles of the Mental Capacity Act (2005) have been applied and that any decisions have been made in the person's best interests. For more detailed information on the principles of capacity and safeguarding, see Chapter 5: Communication, psychological wellbeing and safeguarding.

EVIDENCE-BASED APPROACHES

NICE (2015) recommend several key principles of care and support that should be considered for more complex patients during the transition from a healthcare facility to home:

- **Person-centred care:** see everyone as an individual, involve families and carers, and identify those at risk.
- **Communication and information sharing:** provide appropriate information in the right format at the right time and ensure discussions take place with all involved.
- **Discharge co-ordinator:** a dedicated individual who works with the multidisciplinary team and involves carers and families in discussions about the care being proposed.
- **Develop a discharge plan:** this should include details about the person's condition, medicines and practicalities of daily living, and should detail which services and sources of support are involved.
- **Plan for care following discharge:** ensure follow-up arrangements are made and communicated effectively.
- **Readmission risk:** ensure those at risk of readmission are referred to appropriate community-based health and social care teams prior to discharge.

For patients who may have additional needs on discharge, it is worth exploring what support services may be available and identifying what services were in place prior to admission. For example, if the person has a learning disability, they may have a learning disability nurse in the community. If so, involving the nurse in the patient's discharge will ensure a safer transition for the patient by enabling access to a professional who has knowledge and expertise in the field of learning disabilities but also in the needs of the patient.

Principles of care

A comprehensive assessment is initially required to ascertain a patient's discharge needs. Joined-up inter-professional care and good carer partnerships can then be established to facilitate safe and seamless transfer of care of the patient from the hospital back to the community (Teodorczuk et al. 2015) (Table 3.1).

Discharge to a nursing home

RELATED THEORY

Despite the ageing population and pressure on acute hospital beds, care home admission from hospital is a transition pathway that is poorly understood and little researched (Harrison et al. 2017). Discharging a patient to a care or nursing home requires careful thought as the decision to move into a care home is complex and often difficult and traumatic for individuals and their families (Lord et al. 2016). The impact on a patient and their family or carer may be significant, particularly where the person lives with a partner or family member and the move would be a loss for both of them. A thorough multidisciplinary assessment is

essential, taking into account the individual needs of the patient and their family or carer and exploring all the options before deciding on a care or nursing home. Harrison et al. (2017) suggest that it is important in aiding the process to ensure that significant discussions are documented, to include opportunistic conversations that nurses and others have with patients and their families. This ensures decisions and actions are recorded and it also facilitates better continuity of care.

In most cases, the family or carer will look for a care home placement. This can be quite a daunting process and it is worth providing a list of questions and things to look for when assessing a care or nursing home (Table 3.2). Additionally, the local clinical commissioning group will be able to provide the family with a list of registered nursing homes for them to view.

COMPLICATIONS

Nursing and care home placements can be delayed while waiting for funding to be approved or waiting for a suitable bed to become available and it may therefore be necessary to consider an interim placement. It is important that the patient and their carers are aware that there may be time limits on the stay in hospital so they will be required to find a suitable placement within an agreed timescale. Many hospitals have a policy to support staff where patients and their carers are delaying the process of arranging a nursing home placement.

Discharge planning at the end of life

EVIDENCE-BASED APPROACHES

The National Palliative and End of Life Care Partnership (2015) has set out a framework for end-of-life and palliative care based on key ambitions for the dying person which also relate to carers, families and those important to them. This extends to all aspects of care, including care planning, and is very important when a patient is being discharged for end-of-life care. The condition of a patient nearing the end of life may change rapidly, so it is essential that choices are made, decisions are reached and community services are accessed without delay to ensure a timely and smooth transition of care from hospital to home or hospice. Discharging a patient at the end of life is often complex and multifactorial and requires a multidisciplinary team approach allowing flexibility and responsiveness to the situation. Figure 3.9 shows an example of a checklist that can be used to help structure the process.

PRE-PROCEDURAL CONSIDERATIONS

It is important in the first instance to contact relevant community teams to highlight the need for a rapid response to any referrals being made. Community nursing, the community palliative care team and, where appropriate, the community matron should be notified at the earliest opportunity. A **fast-track NHS Continuing Healthcare** funding application may need to be submitted to access funding for care provision. This process is used to gain immediate access to funding to allow healthcare professionals to arrange urgent care packages, enabling patients to be cared for and to die in their preferred place, whether it is at home, in a nursing home or in a hospice (Thomas 2017).

Equipment

The patient may also require essential equipment to enable them to return home, such as a profiling bed, commode or hoist. These can often be accessed via the local community nursing team and should be ordered at the first available opportunity. Thomas (2017) found that 25% of discharges were delayed due to problems with the delivery of equipment to patients' homes. Once care and equipment are in place and discharge is proceeding, a medical review should take place and a **discharge summary** should be written with a copy provided to the patient, their GP, community nurses and the community palliative care team. Telephone contact with all of the above is essential to ensure they are in receipt

Table 3.1 Procedure for the assessment process for complex discharges

1 Nurse conducts a comprehensive assessment on admission	
(a) Identify whether the patient has simple or complex needs.	
(b) Refer to relevant members of the hospital multidisciplinary team.	For example, occupational therapist, physiotherapist, social services or discharge co-ordinator
(c) Liaise with current community services to ascertain current support (if any).	For example, district nurse or community palliative care team.
2 Multidisciplinary team discuss the case at the ward multidisciplinary meeting	
(a) Appoint a discharge co-ordinator.	<ul style="list-style-type: none"> • To act as discharge planning lead for all social services and NHS Continuing Healthcare referrals. • To act as a point of contact for discharge concerns. • To plan and prepare the family meeting or case conference and to arrange a chairperson and minute-taker for the meeting. • To meet the patient, their carers and their family. • To work in conjunction with multidisciplinary team. • To liaise with the patient's named nurse.
(b) Formulate a discharge plan.	<ul style="list-style-type: none"> • Formulate a discharge plan based on the patient's assessed needs. • Agree assessments required by the multidisciplinary team. • Agree home visits required (e.g. occupational therapist home visit and functional report).
(c) Set a provisional discharge date.	<ul style="list-style-type: none"> • Agree a provisional discharge date and time frames. This will only be an approximate date, depending on care needs, equipment, etc. It should be reviewed regularly with the multidisciplinary team. • Discharges should not be arranged for a Friday or a weekend, when skeleton social and care services are in place.
3 Discharge co-ordinator arranges family meeting or case conference	
(a) Invite the patient, their family, their carers and all appropriate healthcare professionals, including community staff where possible.	<ul style="list-style-type: none"> • Discuss the patient's needs and the services and equipment required, and agree preferred and appropriate place of discharge. • If the patient is not returning to their own neighbourhood, a GP will be required to take the patient on as a temporary resident so this must be arranged. • Agree all relevant social services and NHS Continuing Healthcare referrals required. • Discuss any specific and special issues (e.g. infection status, IV therapy, need for syringe pump) to establish an appropriate plan. Notify community services.
4 Ward staff or discharge team make referrals to appropriate community services	
<ul style="list-style-type: none"> • Refer to community health services. 	<p>To include district nurses, community palliative care team, community physiotherapists etc.</p> <ul style="list-style-type: none"> • Ascertain whether the district nurse is able to undertake any necessary clinical procedures in accordance with their local trust policy (e.g. on care of skin-tunnelled catheters) and make alternative arrangements if not. • Arrange for night sitters via the district nurse if required.
<ul style="list-style-type: none"> • Refer to Social Services. 	The Social Services Assessment Notification (see Figure 3.7 for an example) must be sent at the earliest opportunity and no later than 72 hours prior to discharge.
<ul style="list-style-type: none"> • Request equipment from community nurse after discussion with patient and family. 	<p>For example, hoist, hospital bed, pressure-relieving mattress or cushion, commode or nebulizer. Additionally:</p> <ul style="list-style-type: none"> • Ascertain the type of accommodation the patient lives in so that the equipment ordered will fit appropriately. • It is important to specify where the patient will be cared for – for example, ground or first floor.
<ul style="list-style-type: none"> • Request home oxygen if required. 	Medical team to complete Home Oxygen Ordering Form (HOOF) and Initial Home Oxygen Risk Mitigation Form (IHORM) for oxygen cylinders and concentrators at home. Fax or email to relevant oxygen supplier.

5 Ward staff or discharge team confirms the discharge date and finalizes the community arrangements	
(a) Confirm <i>provisional</i> discharge date.	<p>The provisional date is agreed with the patient and their family and/or informal carer(s). The actual date will then depend on when the following community services can be arranged:</p> <ul style="list-style-type: none"> • social services package of care • district nurse • re-ablement service • nursing home or residential home placement • hospice bed • rapid response • equipment and home oxygen.
(b) Confirm equipment agreed and delivery date.	Ensure the family is informed of the delivery date and knows to contact the ward to confirm receipt of the equipment in the patient's home.
(c) Confirm start date for care and fax or email details.	<p>For example, Social Services, community nurse or community palliative care.</p> <ul style="list-style-type: none"> • Community care referral forms need to be faxed or emailed to district nurses at least 48 hours prior to discharge. • The Discharge Notification (see Figure 3.8 for an example) must be sent at least 48 hours prior to discharge. • In some situations, family members are able to bridge the gap before a package of care starts to enable the patient to be discharged sooner. This action should be talked through with the patient and the family to ensure they are able to provide the care needed and that they will not be putting themselves or the patient at risk. • Confirm the agreed discharge date with the patient and their family.
6 Ward staff or discharge team co-ordinates the hospital discharge processes	
(a) Arrange transport and assess need for escort and/or oxygen during transport.	<ul style="list-style-type: none"> • Assess specific needs for transport – i.e. specify whether the patient needs a walker, chair or stretcher, and/or oxygen or an escort. • Arrange for a do not resuscitate (DNR) form if required for ambulance crew.
(b) Arrange discharge medication.	<ul style="list-style-type: none"> • Determine whether the patient will self-medicate and requires a self-medication chart or dosette box. • Confirm the name of the person who will provide the prompt or give the medication to the patient at home. • Ensure take-home medication is prescribed and given to the patient or carer with explanations. • Ensure nutrition supplements, dressings and medical appliances are prescribed, ordered and given to the patient or carer with explanations. • If the patient has hospital equipment (e.g. a syringe pump) ensure it is clearly marked for return to the hospital with written instructions for the patient, carer or district nurse.
(c) Make arrangements for suitable access and provision for patient on arrival home.	<ul style="list-style-type: none"> • Check access issues (e.g. front door keys and steps) and ensure heating has been organized and food will be provided.
(d) Ensure patient has follow-up arrangements made.	<ul style="list-style-type: none"> • Next inpatient or outpatient appointment.
7 Confirm arrangements 24 hours prior to discharge	
(a) Telephone community services and confirm any special needs of the patient.	For example, infection status update or confirmation of hospital equipment required by patient.
8 After discharge, ward nurse or discharge co-ordinator makes a follow-up phone call to the patient (as agreed)	

of all the information they require to take over the care of the patient in the community and to make sure that home visits are requested.

Assessment and recording tools

The introduction of Electronic Palliative Care Co-ordination Systems (EPaCCS) has enabled the recording and sharing of people's care preferences and key details about their care at the end of life. A national initiative is the ReSPECT plan

(<https://www.resus.org.uk/respect>), which is designed to try to ensure that people get the right care and treatment in an anticipated future emergency in which they no longer have the capacity to make or express choices. It incorporates both patient preferences and clinical judgement, and provides health and care professionals responding to an emergency with a summary of recommendations to help them make immediate decisions about the person's care and treatment. The ReSPECT plan is created through conversations between

Table 3.2 Questions and things to look for when assessing a care or nursing home

First impressions	<ul style="list-style-type: none"> • Is the home easy for family and friends to visit, particularly those who have to rely on public transport? • Does the home have its own transport? • Is the main area accessible for people with disabilities, e.g. those with wheelchairs or who are poor sighted or hard of hearing? • Do the staff answer the door promptly? • Do the staff appear friendly and welcoming? • Do there appear to be several members of staff on duty? • Do the residents look well cared for and clean? • Is there an up-to-date registration certificate on display? <p>Note: it is usual to sign a visitors' book on arrival.</p>
The accommodation	<ul style="list-style-type: none"> • Are the home and the rooms clean and fresh? • Are the rooms single or shared? • Do the rooms have en suite facilities? • Can you bring your own furniture and personal belongings? • Where are the nearest toilets and are they accessible? • Is there a telephone in the room and/or mobile phone reception? • Is there a Wi-Fi connection? And is there a fee for this? • Are there quiet areas to sit in? • What are the mealtimes? • Is there a choice of meals and diets? • Is there a laundry service on site?
Personal needs	<ul style="list-style-type: none"> • How often do the hairdresser, dentist, chiropodist, religious support and GP visit? • Does a resident change GP if they move from the local area? • Where are medications stored? • Are there newspapers easily available? • What activities are available to facilitate continuation of hobbies? • Does the home arrange outings? • Are there quiet areas for family and friends to visit? • Can they stay for meals? • Is there an overnight room where they can stay?
Finances and contracts	<ul style="list-style-type: none"> • What are the fees? • What services do the fees include, e.g. chiropody, hairdresser? • What are the terms and conditions? • Is there a reduction if the patient is admitted to hospital or goes on holiday? • What is the notice period or procedure for terminating a contract? • When is the room available from?
Nursing needs	<ul style="list-style-type: none"> • How many qualified nursing staff are on duty day and night (in a nursing home)? • How often do qualified nursing staff review a resident (in a nursing home)? • How often does the community nursing team visit and review residents (in a care home)? • What is the daily care routine? • If the patient has very specific nursing needs, how will they be managed? Refer to the list given by the ward staff on the patient's specific healthcare needs. • How often does the community palliative care team visit? • How often is the GP or doctor in the home? • Although a difficult thing to consider, is the home able to support patients to remain in the home for end-of-life care?

a person and their health professionals, and decisions are recorded on a form. The information includes patients' personal priorities for care and agreed clinical recommendations about care and treatment that could help to achieve the outcome that they would want, that would not help or that they would not want. A regional version for London is Coordinate My Care (<https://www.coordinatemycare.co.uk>). Both initiatives allow healthcare professionals to record patients' wishes within an electronic personalized urgent care plan that can be seen by GPs, community teams, emergency and ambulance services; the plan can then guide the care they provide. These care plans can be accessed by the out-of-hours and emergency services, which helps to reduce the number of inappropriate hospital admissions in the last year of life.

Informal carers

DEFINITION

An informal carer can be defined as someone who helps another person, usually a relative or friend, in their day-to-day life. This is not the same as someone who provides care professionally or through a voluntary organization (NICE 2016).

RELATED THEORY

It is important to recognize that patients do not usually manage their condition in isolation but in the context of their daily lives with people who provide their support network at home, such as family, friends, colleagues and neighbours (Wallace et al. 2017).

Figure 3.9 Checklist for patients being discharged home for urgent palliative care.

The ROYAL MARSDEN

NHS Foundation Trust

Name:

Hospital No:

Patients Being Discharged Home for Complex/urgent Palliative Care- Checklist for Discharge

This form should be used to assist with planning an urgent/complex discharge home for a patient with terminal care needs. It should be used in conjunction with the Discharge Policy.

Sign and date to confirm when arranged and equipment given. Document relevant information in the discharge planning section of the nursing documentation. Document if item or care is not applicable.

Appoint a designated discharge lead:

Name: Designation: Contact No:.....

	Date & Time	Signature & print name
Patient / Family Issues		
Meeting with patient/family to discuss plans for discharge		
Continuing Healthcare funding discussed and information leaflet given.		
Level of care required has been discussed and agreed.		
Role of community services (district nurses and community palliative care team) has been discussed and consent obtained for referral if needed.		
Consent obtained if in area & Coordinate My Care record created or updated. Upload DNaCPR form onto CMC record if this has been discussed with patient & there is a DNaCPR form on EPR.		
Continuing Healthcare application/Fast Track form commenced by Discharge Team & completed by MDT. Fast Track form can be found on the intranet under Discharge support/NHS continuing healthcare & can be accessed on T-drive under each ward/Dept. Contact Discharge team when complete for form to be sent to relevant CCG.		
Communication with District Nurse		
Referral made to District Nurses using the Community Services Referral Form.		
Equipment has been requested (delete as appropriate): <ul style="list-style-type: none"> - Electric, profiling hospital bed - Pressure relieving mattress - Pressure relieving seat cushion - Commode/urinal/bed pan - Hoist/sling/sliding sheets - Other 		
Communication with Community Palliative Care Team		
Referral made to Community Palliative Care Team		
Communication with GP and Community Palliative Care Medical Team-Medical Responsibilities (Hospital medical team to organise -the nurse to confirm when arranged)		
Registrar to discuss patient's condition with GP and request home visit for as soon as possible after discharge.		
Oxygen: HOOFF & IHORM (Consent) forms to be completed by the medical team & faxed to relevant company. Please access website below for a list of the oxygen companies & their geographical area. https://www.pcc-cic.org.uk/article/home-oxygen-order-form		
Registrar or Specialist Nurse to discuss with the Community Palliative Care team the patient's needs and proposed plan of care.		

Figure 3.9 (continued)

The ROYAL MARSDEN

NHS Foundation Trust

64

	Date & Time	Signature & print name
Adequate supply of drugs prescribed for discharge (TTOs) including crisis drugs e.g. s/c morphine, midazolam.		
Authorisation for drugs to be administered by community nurses. Please refer to Subcutaneous Drugs policy and complete the discharge checklist for the McKinley T34 syringe pump.		
'Ambulance transfer of palliative care patients' document completed for Ambulance Crew.		

Equipment-

Has confirmation been received from a family member or the community equipment service provider that the equipment has been delivered to the discharge address?		
Provide an adequate supply of:		
- dressings		
- water/sodium chloride for injection (if going home with end of life care medications for subcutaneous use)		
- sharps bin		
- continence aids		
- supply of needles and syringes		

Transport (confirm by ticking appropriate boxes)

CHECK OTHER DISCHARGE DOCUMENTATION

Escort (family/nurse)		
Discussed with family that if the patient dies during the journey, the ambulance crew will not attempt resuscitation. Discharge destination in this event has been agreed. DNaCPR form provided?		

Written Information and Documentation

A discharge summary will need to be completed prior to discharge. The discharge letter must be printed & given to a pharmacist to check the medication list is complete & accurate. Medical summary given to patient or relative.		
Medical discharge summary sent to GP, Community Palliative Care Team and District Nursing Team.		
Prescription sheet of authorisation for drugs to be administered by community nurses. Faxed to District Nurse, GP and Community Palliative Care Team.		
Copies of HOOF & IHORM faxed to GP for information only.		
Patient/carer given list of contact numbers of community services (including night service)-Discharge information sheet.		
Medication list, stating reasons for drugs, given and explained to patient/ relative.		
All documentation sent to community services is scanned onto EPR and filed in patient's medical records.		

Signature/print name of designated ward based discharge lead:

Date/Time.....

File this form in the patient's records on discharge.

Engaging and involving both patients and those who support them in an unpaid capacity as equal partners is central to successful discharge planning, and this is clearly recognized in the NICE (2015) guideline on discharge from hospital to the community for adults with identified social care needs.

The hospital discharge process can be a critical time for informal carers, placing an increasing burden of care on them, particularly if they do not feel involved in the discharge process (Harrison et al. 2016). It may be the first time they have been confronted with the reality of their role and the effect it may have on their relationship with the person needing care, their family and their employment. The emotional toll on carers may result in early readmission of the patient and it is therefore vital to involve carers as partners in the discharge planning process.

Carers may have different needs from patients and there may be conflicting opinions about how the patient's care needs can be met. It is not uncommon for patients to report that their informal carer is willing to provide all care whereas the carer is not in agreement with this. Healthcare professionals should allow carers sufficient time and provide appropriate information to enable them to make decisions to promote a successful and seamless transfer from hospital to home (Cacchione 2018). If carers are involved as equal partners throughout the process, they can provide valuable information about the person's needs and circumstances beyond medical conditions or physical needs. This means discharge planning can be more comprehensive and may reduce the likelihood of the person being readmitted to hospital (NICE 2016).

Learning Activity 3.2 Case study

Mr Michael Pearson is 67 years old and has widespread bowel cancer. He is married to Sophie and they have no children. Michael's prognosis is very short – probably a matter of days to, at most, a couple of weeks. He has been in hospital for the past fortnight. Initially he was admitted for symptom relief and for assessment for further palliative treatment, but it is now clear and agreed that his condition is rapidly worsening and that further anti-cancer treatment would be futile. The medical team has held an honest discussion with Michael and Sophie to explain the situation. Following the conversation, Michael has asked whether he may go home to die.

Michael and Sophie live in a semi-detached house with a downstairs cloakroom, including a toilet and small wash handbasin. There is a double bed upstairs.

Michael's main problem is pain in his abdomen, which is being controlled by morphine infusion via a 24-hour syringe pump. He is feeling very tired and becomes short of breath if he tries to exert himself. He is passing urine into a bottle when in bed; he is now too weak to walk to the bathroom, but for the past couple of days he has been helped to the bathroom in a wheelchair for his hygiene needs.

A rapid discharge is required. Identify what should be addressed in order to facilitate Michael to achieve his goal to be at home. To help you organize your thoughts, you might like to create a mind-map or use the five priorities for care of the dying (see Leadership Alliance for the Care of Dying People 2014).

See the answers on the companion site of this student edition: www.royalmarsdenmanual.com/student10e.

EVIDENCE-BASED APPROACHES

Under the Care Act (2014), carers are entitled to their own assessment and many support services can be provided, including respite, at no charge. The Act represents the most significant reform of care in many years by putting people and their carers in control of their own support (People First 2018). The aim is to ensure that people and their carers are supported in a practical way by providing information, financial and other support, helping carers to remain at work and to care for themselves. It is particularly important that carers who will be taking on the role for the first time when their family member leaves hospital are made aware of the benefits and support available to them from their local authority, since 'deciding to care or continue caring for someone who is coming out of hospital . . . can be very difficult' (Carers UK 2018, p.1). Often the first step in raising their awareness might be as simple as letting them know that the role they play with their family member is that of a carer: many people would see themselves as a spouse, child or grandchild rather than a carer.

In addition to understanding that adult carers may be unaware of the support available, it is important to recognize that in some families children take on a caring role, and their needs may go unrecognized. Young carers may struggle with the responsibilities of providing care to parents, and without appropriate support they may feel isolated and distressed (Carers UK 2018). Support for young carers has increased under the Children and Families Act (2014), which aims to ensure that all children and young people are able to access the right support and provision to meet their needs. When a patient is discharged, provided consent is gained from the parents, it is important to inform community health and social care providers that young carers are involved. This will enable young carers to access additional support services so they can continue in their vital role.

The role of voluntary services

RELATED THEORY

In many areas, voluntary sector providers have begun to forge ways to deliver efficient, high-quality, patient-centred care. Partnerships between the NHS and the voluntary sector help to facilitate a smooth transition from hospital to the community by providing ongoing support for patients in their own homes (Rivers 2015). When planning discharge for a patient who is elderly or has special needs, it is worth exploring what voluntary services are available locally that could provide support to enable timely discharge and help to prevent a hospital readmission. Examples of services provided by the voluntary sector are shown in Box 3.3, but it is important to consider what is available locally. The provision of practical help, either with personal care or with functional tasks around the home, can give the patient confidence that they will be able to cope and can provide ongoing emotional support once the patient is at home.



Box 3.3 Examples of services provided by the voluntary sector in the community

- Personal care – e.g. bathing and dressing
- Practical help at home e.g. gardening and cleaning
- Daily help – e.g. cooking a meal or shopping
- Independent living services – these provide functional support, e.g. transport to enable people to attend hospital appointments, and mobility aids such as wheelchairs
- Short-term support-at-home services – these provide a range of short-term support once a patient has been discharged from hospital to help them regain their confidence, e.g. collecting prescriptions and shopping



Stretch Activity

Further your thinking and learning about clinical practice

- Identify five key points that you have learned from this chapter that you will apply to your clinical practice.
- Consider what steps could be taken in your clinical area to help prevent deconditioning syndrome, especially in the elderly. Discuss your ideas with your supervising nurse.
- Ask whether you may assist in the discharge planning activities associated with a patient in your clinical area. Depending on your seniority, you may wish to focus on a complex discharge.
- Ask whether it would be possible to spend a day with the discharge co-ordinator to learn more about their role.
- Ask whether you may attend a multidisciplinary meeting where patients' discharges are discussed. Note the role of each member of the team.
- Observe an occupational therapist carrying out an assessment of a patient prior to discharge (e.g. an assessment of their home situation).
- Observe the rapid discharge process for a patient at the end of life.
- Write a critical reflection about the discharge of a patient that you have observed or been involved in. Do some further reading relevant to the patient's medical condition, the treatment they have received and any co-morbidities that are affecting their circumstances. Draw out from the reflection and your reading any key points to learn, in order to improve the care of future patients.

Now Test Yourself



If you would like to test your learning further, there are additional questions on the companion site of this student edition: www.royalmarsdenmanual.com/student10e.

REFERENCES

- Age UK (2019) *Factsheet 37: Hospital Discharge*. Available at: https://www.ageuk.org.uk/globalassets/age-uk/documents/factsheets/fs37_hospital_discharge_fcs.pdf
- Alper, E., O'Malley, T. & Greenwald, J. (2017) *Hospital Discharge and Readmission*. UpToDate. Available at: <https://www.uptodate.com/contents/hospital-discharge-and-readmission>
- Arora, A. (2017) Time to move: Get up, get dressed, keep moving. *NHS England*, 24 January. Available at: <https://www.england.nhs.uk/blog/amit-arora>
- British Geriatrics Society (2017) *Deconditioning Awareness*. Available at: <https://www.bgs.org.uk/resources/deconditioning-awareness>
- Cacchione, P. (2018) Engaging caregivers during hospitalizations to improve hospital transitions: The CARE Act. *Clinical Nursing Research*, 27(3), 255–257.
- Care Act (2014) Available at: www.legislation.gov.uk/ukpga/2014/23/contents/enacted
- Carers UK (2018) *Coming Out of Hospital*. Available at: https://www.carersuk.org/images/Factsheets/Coming_out_of_hospital_-_England_April_2019.pdf
- Challis, D., Hughes, J., Xie, C. & Jolley, D. (2014) An examination of factors influencing delayed discharge of older people from hospital. *International Journal of Psychiatry*, 29, 160–168.
- Chenoweth, L., Kable, A. & Pond, D. (2015) Research in hospital discharge procedures addresses gaps in care continuity in the community, but leaves gaping holes for people with dementia: A review of the literature. *Australasian Journal on Ageing*, 34(1), 9–14.
- Children and Families Act (2014) Available at: www.legislation.gov.uk/ukpga/2014/6/contents/enacted
- Cundy, T., Sierakowski, K., Manna, A., et al. (2017) Fast-track surgery for uncomplicated appendicitis in children: A matched case control study. *ANZ Journal of Surgery*, 87(4), 271–276.
- DH (Department of Health and Social Care) (2018) *National Framework for NHS Continuing Healthcare and NHS-Funded Nursing Care*. Available at: <https://www.gov.uk/government/publications/national-framework-for-nhs-continuing-healthcare-and-nhs-funded-nursing-care>
- Elliott, B. & DeAngelis, M. (2017) Improving patient transitions from hospital to home: Practical advice from nurses. *Nursing*, 47(11), 58–62.
- Ewbank, L., Thompson, J. & McKenna, H. (2017) *NHS Hospital Bed Numbers: Past, Present and Future*. King's Fund. Available at: <https://www.kingsfund.org.uk/publications/nhs-hospital-bed-numbers>
- Harrison, J.D., Greysen, R.S., Jacobia, R., et al. (2016) Not ready, not set . . . discharge: Patient-reported barriers to discharge readiness at an academic medical center. *Journal of Hospital Medicine*, 11(9), 610–614.
- Harrison, K., MacArthur, J., Garcia Garrido, A., et al. (2017) Decisions affecting discharge from hospitals directly to care homes. *Nursing Times*, 113(6), 29–32.
- Healthwatch England (2015) *Safely Home: What Happens when People Leave Hospitals and Care Settings?* Available at: <https://www.healthwatch.co.uk/report/2015-07-21/safely-home-what-happens-when-people-leave-hospital-and-care-settings>
- Leadership Alliance for the Care of Dying People (2014) *One Chance to Get it Right*. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/323188/One_chance_to_get_it_right.pdf
- Lees, L. (2013) The key principles of effective discharge planning. *Nursing Times*, 109(3), 18–19.
- Lees-Deutsch, L. (2016) A framework to discharge frail older people. *Nursing Times*, 112(37/38), 13–15.
- Lees-Deutsch, L. (2017) *Principles for Discharge from Acute Medicine Units*. Society for Acute Medicine. Available at: <https://www.acutemedicine.org.uk/wp-content/uploads/2010/06/Principles-for-discharge-from-ACute-Medicine-Units.pdf>
- Lees-Deutsch, L. & Gaillemine, O. (2018) Dispelling myths around nurse-led and criteria-led discharge. *Nursing Times*, 114(4). Available at: <https://www.nursingtimes.net/clinical-archive/patient-safety/dispelling-myths-around-nurse-led-and-criteria-led-discharge/7023726.article>
- Lees-Deutsch, L. & Robinson, J. (2018) A systematic review of criteria-led patient discharge. *Journal of Nursing Care Quality*, 34(2), 121–126.
- Lees-Deutsch, L., Yorke, J. & Caress, A. (2016) Principles for discharging patients from acute care: A scoping review of policy. *British Journal of Nursing*, 25(20), 1135–1143.
- Lord, K., Livingston, G., Robertson, S. & Cooper C. (2016) How people with dementia and their families decide about moving to a care home

- and support their needs: Development of a decision aid, a qualitative study. *BMC Geriatrics*, 16(1), 68.
- Mabire, C., Dwyer, A., Garnier, A. & Pellet, J. (2018) Meta-analysis of the effectiveness of nursing discharge planning interventions for older inpatients discharged home. *Journal of Advanced Nursing*, 74, 788–799.
- McNeil, A. (2016) Using evidence to structure discharge planning. *Nursing Management (Springhouse)*, 47(5), 22–23.
- Mental Capacity Act (2005) Available at: <https://www.legislation.gov.uk/ukpga/2005/9/contents>
- National Palliative and End of Life Care Partnership (2015) *Ambitions for Palliative and End of Life Care: A National Framework for Local Action 2015–2020*. Available at: <http://endoflifecareambitions.org.uk/wp-content/uploads/2015/09/Ambitions-for-Palliative-and-End-of-Life-Care.pdf>
- New, P., McDougall, K.E. & Scroggie, C.P. (2016) Improving discharge planning communication between hospitals and patients. *Internal Medicine Journal*, 46(1), 57–62.
- NHS England (2016) *Monthly Delayed Transfers of Care Data, England, March 2016*. Available at: <https://www.england.nhs.uk/statistics/wp-content/uploads/sites/2/2016/05/March-16-DTOC-SPN.pdf>
- NHS England (2018) *NHS Standard Contract 2017/18 and 2018/19 Service Conditions* [January 2018 edition]. Available at: <https://www.england.nhs.uk/publication/nhs-standard-contract-201718-and-201819-service-conditions-full-length>
- NHSI (NHS Improvement) (2015) *Quality, Service Improvement and Redesign Tools: Discharge Planning*. Available at: <https://improvement.nhs.uk/documents/2100/discharge-planning.pdf>
- NHSI (2017a) *SAFER Patient Flow Bundle*. Available at: <https://improvement.nhs.uk/resources/safer-patient-flow-bundle-implement>
- NHSI (2017b) *Red2Green Campaign*. Available at: <https://improvement.nhs.uk/improvement-offers/red2green-campaign>
- NHSI (2018) *Guide to Reducing Long Hospital Stays*. Available at: https://improvement.nhs.uk/documents/2898/Guide_to_reducing_long_hospital_stays_FINAL_v2.pdf
- NHS Sunderland Clinical Commissioning Group (2017) *Updated Home Oxygen Order Forms & Consent/ Initial Home Oxygen Mitigation Form IHORM*. Available at: <https://www.sunderlandccg.nhs.uk/about-us/prescribing/home-oxygen>
- NICE (National Institute for Health and Care Excellence) (2015) *Transition between Inpatient Hospital Settings and Community or Care Home Settings for Adults with Social Care Needs* [NICE Guideline NG27]. Available at: <https://www.nice.org.uk/guidance/ng27/resources/transition-between-inpatient-hospital-settings-and-community-or-care-home-settings-for-adults-with-social-care-needs-pdf-1837336935877>
- NICE (2016) *Transition between Inpatient Hospital Settings and Community or Care Home Settings for Adults with Social Care Needs* [NICE Quality Standard QS136]. London: National Institute for Health and Care Excellence.
- NICE (2017) *Intermediate Care including Reablement* [NICE Guideline NG74]. London: National Institute for Health and Care Excellence.
- NICE (2018) *NICE Impact: Falls and Fragility Fractures*. London: National Institute for Health and Care Excellence.
- Pellett, C. (2016) Discharge planning: Best practice in transitions of care. *British Journal of Community Nursing*, 21(11), 542–548.
- People First (2018) *Care Act 2014*. Available at: <https://www.peoplefirstinfo.org.uk/money-and-legal/care-act-2014>
- Poole, M., Bond, J., Emmett, C., et al. (2014) Going home? An ethnographic study of assessment capacity and best interests in people with dementia being discharged from hospital. *BMC Geriatrics*, 14(56), 14.
- QNI (The Queen's Nursing Institute) (2016) *Discharge Planning: Best Practice in Transitions of Care*. Available at: https://www.qni.org.uk/wp-content/uploads/2016/09/discharge_planning_report_2015.pdf
- Rivers, S. (2015) Supporting discharge using a volunteer scheme. *Nursing Times*, 111(23/24). Available at: <https://www.nursingtimes.net/roles/older-people-nurses/supporting-discharge-using-a-volunteer-scheme/5085417.article>
- Royal Voluntary Service (2014) *Going Home Alone: Counting the Cost to Older People and the NHS*. Available at: https://www.royalvoluntaryservice.org.uk/Uploads/Documents/Reports%20and%20Reviews/Going_home_alone.pdf
- Sheridan, E., Thompson, C., Pinheiro, T., et al. (2017) Optimizing transitions of care: Hospital to community. *Healthcare Quarterly*, 20(1), 45–49.
- Teodorczuk, A. (2016) Understanding safe discharge of patients with dementia from acute hospital. *British Journal of Hospital Medicine*, 77(3), 126–127.
- Teodorczuk, A., Mukaetova-Ladinska, E., Corbett, S. & Welfare, M. (2015) Deconstructing dementia and delirium hospital practice: Using cultural historical activity theory to inform education approaches. *Advanced Health Science Theory Practice*, 20, 745–764.
- Thomas, C. (2017) Improving hospital discharge for patients at the end of life. *Nursing Times*, 113(11). Available at: <https://www.nursingtimes.net/clinical-archive/end-of-life-and-palliative-care/improving-hospital-discharge-for-patients-at-the-end-of-life/7021751.article>
- Wallace, A., Papke, T., Devissou, E., et al. (2017) Provider opinions and experiences regarding development of a social support assessment to inform hospital discharge: The going home toolkit. *Professional Case Management*, 22(5), 214–226.
- Waring, J., Marshall, F., Bishop, S., et al. (2014) An ethnographic study of knowledge sharing across the boundaries between care processes, services and organisations: The contributions to 'safe' hospital discharge. *Health Services and Delivery Research*, 2(29), 1–160.
- Weiss, M., Bobay, K., Bahr, S., et al. (2015) A model for hospital discharge preparation: From case management to care transition. *Journal of Nursing Administration*, 45(12), 606–614.
- Winfield, A. & Burns, E. (2016) Let's all get home safely: A commentary on NICE and SCIE guidelines (NG27) transition between inpatient hospital settings and community or care home settings. *Age and Ageing*, 45, 757–760.

Answers

Answers to the learning and stretch activities are available on the companion site of this student edition: www.royalmarsdenmanual.com/student10e.



Infection prevention and control

Pat Cattini with Martin Kiernan

4

STERILE
HAND WASHING
C. DIFFICILE
DECONTAMINATION
INFECTION
MICROBIOLOGY
CLEANLINESS
ISOLATION
E. COLI
VIRUS
PATHOGENS
HCAI
SCRUB

After reading this chapter and undertaking the learning activities within it, you should:

- 1 Understand how pathogens cause infection and how particular infections are spread
- 2 Know the importance of hand hygiene and other precautions to minimize the risk of patients acquiring healthcare-associated infections
- 3 Be able to describe the precautions that may need to be taken to minimize the risk of infection transmission when a patient is colonized or infected with micro-organisms that may pose a risk to others
- 4 Understand how to support and care for patients who have an infection or who need protective isolation
- 5 Know the actions to take in the event of a sharps injury

Key terms are highlighted in the text in pink. Glossary definitions of these terms can be found on the companion site of this student edition: www.royalmarsdenmanual.com/student10e.



Procedure guidelines

- | | |
|---|---|
| 4.1 Hand washing | 4.11 Aseptic technique example: changing a wound dressing |
| 4.2 Hand decontamination using an alcohol-based handrub | 4.12 Source isolation: preparing an isolation room |
| 4.3 Surgical scrub technique using soap and water | 4.13 Source isolation: entering an isolation room |
| 4.4 Surgical scrub technique using an alcohol-based handrub | 4.14 Source isolation: leaving an isolation room |
| 4.5 Putting on and removing non-sterile gloves | 4.15 Source isolation: transporting infected patients outside a source isolation area |
| 4.6 Applying and removing a disposable apron | 4.16 Protective isolation: preparing an isolation room |
| 4.7 Putting on and removing a disposable mask or respirator | 4.17 Protective isolation: entering an isolation room |
| 4.8 Putting on or removing goggles or a face-shield | 4.18 Cleaning a hard surface without recontamination |
| 4.9 Donning sterile gloves: open technique | 4.19 Safe disposal of foul, infected or infested linen |
| 4.10 Donning a sterile gown and gloves: closed technique | |

Being an accountable professional

At the point of registration, the nurse will:

9. Use evidence-based, best practice approaches for meeting needs for care and support with the prevention and management of infection, accurately assessing the person's capacity

for independence and self-care and initiating appropriate interventions

Future Nurse: Standards of Proficiency for Registered Nurses (NMC 2018)

70

Overview

This chapter begins with an explanation of the causes of infection and then focuses on **healthcare-associated infections (HCAIs)**, specifically describing the steps to be taken to minimize the risk of individuals acquiring infections while receiving healthcare. The chapter gives an overview of key principles, terminology and definitions, and describes the **standard precautions** that must be taken with patients at all times regardless of their known infection status. It also covers additional precautions that may be required because the patient is **colonized** or infected with micro-organisms that may pose a particular risk to others, or because they are particularly vulnerable to infection themselves. The chapter additionally describes the specific precautions that must be taken during invasive procedures, in particular aseptic technique.

Infection prevention and control

DEFINITIONS

Infection prevention and control

'**Infection prevention and control**' has been defined as the clinical application of microbiology in practice (RCN 2017); it is a collective term for activities intended to protect people from infection. Such activities may form part of everyday life, such as washing hands after using the toilet or before preparing food. However, the term is most often used in relation to healthcare, with reference in particular to avoiding patients acquiring preventable infections.

Healthcare-associated infection

A **healthcare-associated infection (HCAI)** is any infection acquired as a result of healthcare contact. It has replaced the term 'hospital-acquired infection' to recognize that not all healthcare is given in a hospital. Such infections are also known as 'nosocomial' infections.

ANATOMY AND PHYSIOLOGY

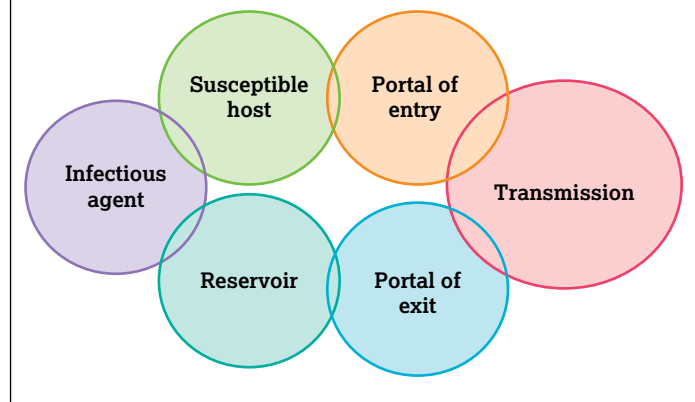
Pathogens are what cause infection. It is important to understand types of pathogen, how they spread and what kinds of environment are favourable for their growth so that effective infection prevention and control measures can be put in place.

Causes of infection

The term '**infectious agent**' is often used to describe anything that may be transmitted from one person to another, or from the environment to a person, and subsequently cause an infection or parasitic infestation.

Distinct types of infectious agent act differently and have different impacts on the infected individual. For example, whether a particular infectious agent will cause an infection in any given circumstance is dependent on many factors, including how *easily* that agent can be transmitted, its *pathogenicity* (its ability to cause disease) and its *virulence* (the severity of the infection produced) (Gillespie and Bamford 2012). The *susceptibility* of the patient to infection is also a significant influence.

Figure 4.1 The chain of infection: a useful tool for seeing how to prevent transmission.



To practice effective infection prevention and control, it is helpful to understand the 'chain of infection' (Damani 2011). This is a helpful model to use when considering how infection can be prevented, as it shows how it is possible to break the 'links' in the chain. For an infection to exist, there must be an organism (pathogen) and it must be able to get into a susceptible host, multiply and exit. It may need a place to hide (reservoir) while waiting for the next susceptible host. Figure 4.1 illustrates the chain of infection and Table 4.1 lists the links with examples of how infection can be prevented at each link. The major groups of micro-organisms are described below.

Types and classification of micro-organisms

Historically, the classification of micro-organisms was based on physical characteristics such as their size, shape or ability to retain a particular stain to make them visible under the microscope. Some of these distinctions are still useful, but classification is increasingly based on genetic characteristics, as increasingly sophisticated analysis techniques (such as genomic sequencing) reveal the actual relationships between organisms. This can lead to confusion as new discoveries lead to species being reclassified and renamed. For example, 'methicillin-resistant' *Staphylococcus aureus* is now 'meticillin-resistant' and *Clostridium difficile* is now termed *Clostridioides difficile*.

It should also be noted that there can be a wide variety of characteristics within each species, leading to significant variations in the severity of infection caused by different strains of the same organism. An example of this is Group A *Streptococcus pyogenes*, which is a common cause of sore throat but can also cause skin conditions such as erysipelas, scarlet fever, toxic shock syndrome and necrotizing fasciitis. Another is *Escherichia coli*, which is carried in the gut of all mammals with no ill effects but whose toxin-producing O157:H7 strain can cause serious illness.

In printed text, the names of bacteria are written in italics, with the name of the genus capitalized and the species in lower case, for example *Staphylococcus aureus*. The abbreviation 'spp.' is used to refer to all of the species of a genus, for example *Klebsiella*

Table 4.1 Links in the chain of infection

Link	Definition	Example	Examples of breaking the chain
Infectious agent	A potentially pathogenic micro-organism or other agent	<ul style="list-style-type: none"> • Smallpox • <i>Staphylococcus aureus</i> or any other bacteria 	<ul style="list-style-type: none"> • Vaccination – for example, we no longer need to worry about the virus that causes smallpox or how it is transmitted as it does not exist (except in some top-secret laboratories) • Removal of infectious agents through cleaning • Destruction of micro-organisms through sterilization of equipment • Using antibiotics to treat patients with bacterial infections
Reservoir	Any location where micro-organisms hide, exist or reproduce	<ul style="list-style-type: none"> • Humans • Dust in the healthcare environment • Sink drains 	<ul style="list-style-type: none"> • Cleaning/decontamination of equipment and the environment • Use of handwash basins for hand washing only • Flushing low-use taps and showers • Minimizing the number of people present in high-risk situations such as surgery
Portal of exit	The route by which the infectious agent leaves the reservoir	<ul style="list-style-type: none"> • Diarrhoea and vomit may carry norovirus • Droplets expelled during coughing or sneezing may contain flu 	<ul style="list-style-type: none"> • Asking a patient with active tuberculosis infection to wear a mask in communal areas of the hospital
Mode of transmission	The way the infectious agent is spread (see definitions section above)	<ul style="list-style-type: none"> • Contact • Enteric • Droplet • Airborne • Parenteral 	<ul style="list-style-type: none"> • Hands • Diarrhoea • Sneezing • Nebulizer or intubation • Needle stick injury
Portal of entry	The route by which the infectious agent enters a new host	<ul style="list-style-type: none"> • Organisms introduced into a normally sterile part of the body through use of an invasive device • Intravenous line into the bloodstream • Urinary catheter breaching the bladder • Inhalation of airborne pathogens into the lungs 	<ul style="list-style-type: none"> • Avoiding unnecessary invasive devices • Using strict aseptic technique • Staff members wearing masks when dealing with infectious agents that may be inhaled
Susceptible host	The person that the infectious agent enters has to be susceptible to infection	<ul style="list-style-type: none"> • The very old and very young are more susceptible • Underlying chronic illnesses 	<ul style="list-style-type: none"> • Ensuring adequate nutrition and personal hygiene • Vaccination – this will often completely prevent or significantly reduce the likelihood of an infection developing

spp. This section gives an overview of the different types of organism that may be encountered in a healthcare environment as well as the differences between and within the types.

Bacteria

Bacteria are probably the most important group of micro-organisms in terms of infection prevention and control because they are responsible for the majority of opportunistic infections in healthcare. A healthy human being will typically be host to a quadrillion (1000 trillion or 10^{15}) bacteria – around ten times as many organisms as there are cells in the human body – and we need most of these to survive.

The so-called human microbiome is increasingly being recognized as an essential part of human health (Bhalodi et al. 2019, Young 2017) and a variety of conditions – such as Crohn's disease, ulcerative colitis, irritable bowel syndrome, obesity, type 2 diabetes, Parkinson's disease, chronic fatigue syndrome, arthritis and even asthma – may all be related to disturbance of the balance of micro-organisms in the gut, although the question remains as to whether this is a cause or effect (Otter 2014, Tosh and McDonald 2012, Wang et al. 2017). See Table 4.2 for examples of how the human microbiome can be protective.

In normal circumstances, the relationship between bacteria and their host is symbiotic and the organisms are considered to be

Table 4.2 Examples of how the human microbiome can be protective

Bacteria	Comments
Gut flora including <i>Bacteroides</i> spp., <i>Bifidobacterium</i> spp., <i>Enterobacter</i> spp., <i>Klebsiella</i> spp., <i>Enterococcus</i> spp. and <i>Escherichia coli</i>	Disturbance through antibiotics, surgery or chemotherapy may have far-ranging effects on the human body, including obesity, inflammatory bowel diseases, antibiotic-associated diarrhoea and cancer.
Skin flora including <i>Staphylococcus epidermidis</i> , <i>Staphylococcus aureus</i> , diphtheroids and <i>Candida</i> spp.	A healthy, intact, normal resident skin flora means that pathogenic organisms are less likely to settle on the skin and cause infection.
Vaginal flora including <i>Lactobacillus</i> spp. and diphtheroids	Babies born per vagina are more likely to have their skin colonized with the 'right' organisms, which reduces problems with skin and allergies.

commensal (i.e. their presence does not cause the host any problems) and mutually beneficial; however, if the host has lowered resistance or a bacteria gains access to a different site, it can become an **opportunistic pathogen**. For example, *E. coli* from the gut may cause a urinary tract infection (with associated symptoms) if it enters the urethra and ascends the urinary tract.

Despite the fact that we are surrounded by unquantifiable numbers of bacteria in our world, relatively few are pathogenic to us. There is an important balance to be struck in our home lives; we should not try to disinfect everything we come into contact with, and indeed many things around us are going to be contaminated (money, cash point buttons, our mobile phones and the handles on public transport, to name a few). If we are healthy and have good immunity and intact skin, this will often be of little consequence to us as long as we follow simple precautions such as practising **hand hygiene**, **environmental hygiene** (cleaning) and food hygiene.

For a patient receiving interventional healthcare, however, things can be very different and we need to do as much as possible to ensure items introduced into the care environment are free of pathogens. Our increasing understanding of the normal commensal micro-organisms in humans suggests that restoring and maintaining the microbiome may provide a key to preventing **colonization** and infection, including with multi-drug-resistant organisms (Otter 2014, Tosh and McDonald 2012), which can be 'selected out' when exposed to antibiotics. This means that bacteria that are sensitive to the antibiotics are killed but any resistant ones are left to replicate and become the dominant type. A developing form of treatment is the 'faecal microbiota transplant', or stool transplant, which involves replacing the stool in an affected gut with stool from a healthy donor. This has been shown to be very effective for treatment of intractable *C. difficile* (van Nood et al. 2013) and may be helpful in other conditions.

Sometimes a patient will be 'colonized' with a species of bacteria, which means it is present but not causing them harm. However, if the bacteria are transferred to another patient and gain access to a portal of entry, that person may suffer harm, so there is a need for effective precautions. Whether or not any particular situation will result in an infection depends on a wide range of factors and these are not always predictable. What is certain is that bacterial infections cannot occur when bacteria are not present, hence the importance of measures designed to minimize the risk of transmission.

The presence of an organism in a specimen result does not on its own imply that an infection has occurred. Any laboratory results must always be interpreted in association with an assessment of the patient's condition and symptoms, which will guide the need for treatment.

Morphology

Bacterial cells are much smaller and simpler than human cells; this small size means that bacteria do not have separate structures (such as a nucleus) within their cells. The structure of the cell wall determines another important distinction in medically significant bacteria: whether they are gram positive or gram negative. The 'gram' in these terms refers to Gram staining, named after its Dutch inventor, Hans Christian Gram (1853–1938), who devised the stain in 1884. The structure of the cell wall determines whether or not the bacteria are able to retain a particular stain in the presence of an organic solvent such as acetone. This structure also determines other characteristics of the bacteria, including their susceptibility to particular antibiotics, so knowing whether the cause of a bacterial infection is 'gram positive' or 'gram negative' can help to determine appropriate treatment (Goering et al. 2012). The structures of the two different types of cell wall are shown in Figure 4.2.

Other structures visible outside the cell wall may include pili, which are rigid tubes that help the bacteria attach to host cells (or, in some cases, other bacteria for the exchange of genetic material); flagellae, which are longer, mobile projections that can help bacteria to move around; and capsules, which can provide protection or help the bacteria to adhere to surfaces. These are illustrated in Figure 4.3. The presence or absence of different structures plays a part in determining an organism's pathogenicity – that is, its ability to cause an infection and the severity of that infection (Goering et al. 2012).

A final bacterial structure to consider is the spore. Bacteria reproduce via a process called 'binary fission' – they create a copy of their genetic material and split themselves in two, with each 'daughter' cell being an almost exact copy of the 'parent' (there are mechanisms by which bacteria can transfer genetic material between cells and so acquire characteristics such as antibiotic resistance, but they are beyond the scope of this chapter). Some bacteria, notably the Clostridia, have the capacity, in adverse conditions, to surround a copy of their genetic material with a tough coat called a 'spore'. Once the spore has been formed, the parent

Figure 4.2 (a) Gram-positive and (b) gram-negative bacterial cell walls. Source: Adapted from Elliot et al. (2007) with permission of John Wiley & Sons.

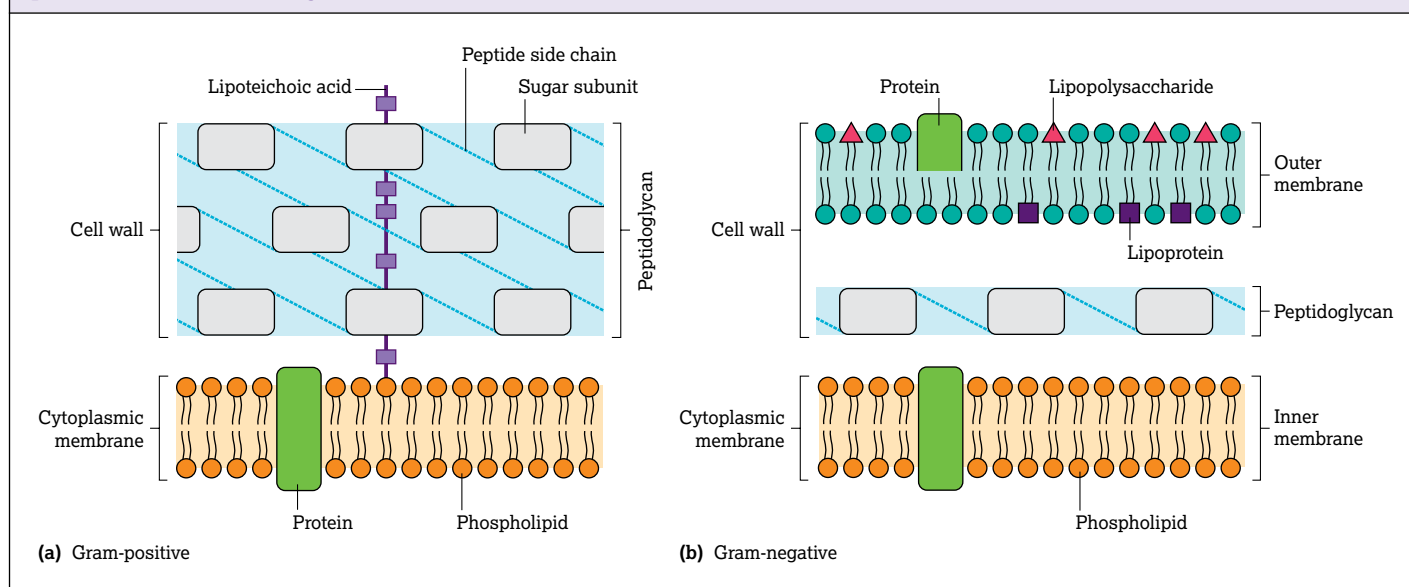
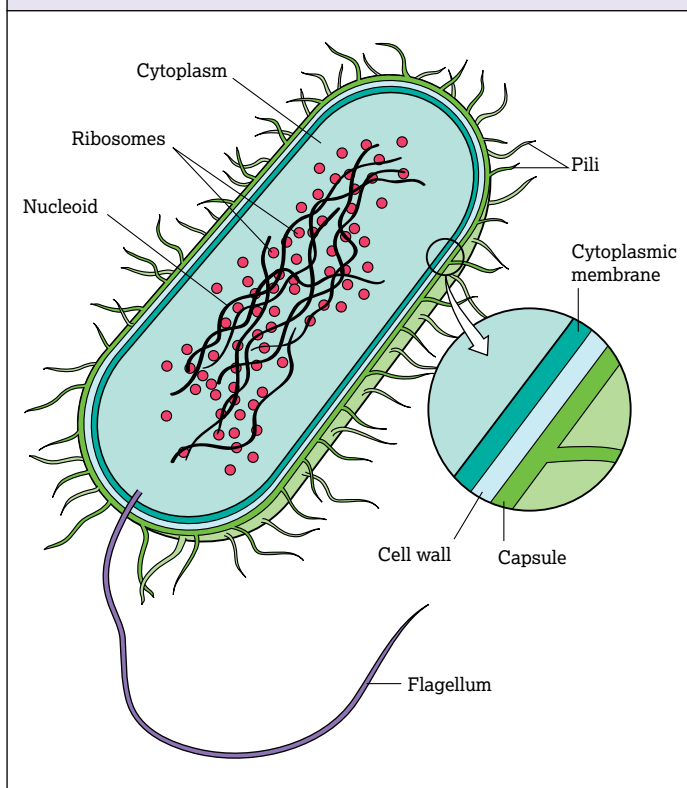


Figure 4.3 Bacterial structures.



cell dies and disintegrates, leaving the spore to survive until conditions are suitable for it to germinate into a normal, 'vegetative' bacterial cell, which can then reproduce (Goering et al. 2012). Spores are extremely tough and durable. They are not easily destroyed even by boiling or via the alcohol-based handrubs widely used for hand hygiene, hence the need to physically remove them from the hands by washing with soap and water when caring for a patient with *C. difficile* infection. Commonly used disinfectants containing quaternary ammonium compounds (such as benzalkonium chloride) are ineffective against spores.

Some bacteria produce toxins, which are proteins released by the bacteria that can increase the severity of disease. Endotoxins are pieces of the cell wall of gram-negative bacteria; these initiate a strong immune response from the body, which can cause catastrophic damage. For example, endotoxins of *Neisseria meningitidis* cause the breakdown of blood vessels, leading to anoxic tissue and the need for amputation. Antibiotics may kill the bacteria but in doing so flood the body with deadly endotoxins.

Some medically significant bacteria are listed in Table 4.3. A few bacteria do not easily fit into the gram-positive/negative dichotomy. The most medically significant of these are the mycobacteria, which have a waxy coat and are responsible for diseases including tuberculosis and leprosy (Goering et al. 2012).

Culture and sensitivity testing

When a sample arrives in the laboratory, it is put onto agar plates to culture any organisms present. The site of the specimen and clinical information may dictate which tests are deployed and what media are used, which is why it is very important to fill out the microbiology request form with as much detail as possible (for more detail see Chapter 13: Diagnostic tests). The provision of accurate and comprehensive information assists the microbiologist in interpreting the findings in the laboratory and simple information, such as the site of the specimen (if a wound), the type of urine, recent travel and current antibiotic use, can also be helpful.

Table 4.3 Medically significant bacteria

	Spherical	Rod-shaped
Gram positive	<i>Staphylococcus aureus</i> <i>Streptococcus</i> spp.	<i>Clostridioides difficile</i> <i>Clostridium tetani</i> <i>Bacillus</i> spp.
Gram negative	<i>Neisseria meningitidis</i> <i>Neisseria gonorrhoeae</i>	<i>Escherichia coli</i> <i>Pseudomonas aeruginosa</i> <i>Klebsiella pneumoniae</i> <i>Acinetobacter baumannii</i> <i>Salmonella</i> spp. <i>Legionella pneumophila</i>

Different types of agar plate may be used to grow different bacteria. Once the organism has been grown, it can be subjected to further tests to identify it, including a gram stain to see whether it is gram positive or gram negative, examination for the presence of pus cells and sensitivity testing. Sensitivity testing usually involves spreading the organism over an agar plate that contains small antibiotic discs. If the bacteria grow all the way up to the disc, they are resistant to that antibiotic. A 'zone of inhibition' around the disc implies they are sensitive to the antibiotic and that the antibiotic may be used to treat that infection. A faster and more modern technique to identify and speciate microbes involves the use of matrix-assisted laser desorption/ionization time-of-flight mass spectrometry (MALDI-TOF MS) (Crozzatto et al. 2012).

Modern laboratories use molecular technology to diagnose patients without the need for culture. These techniques include polymerase chain reaction (PCR) and enzyme immuno-assay.

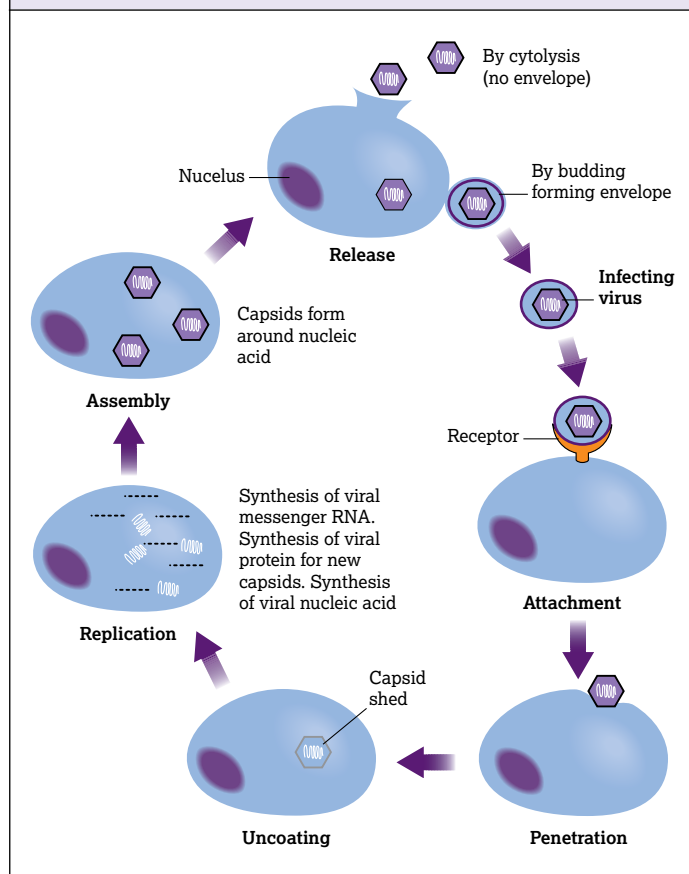
Viruses

Viruses are much smaller, and even simpler, than bacteria. Nobel laureate Peter Medawar is said to have described viruses as 'bad news wrapped in protein' and indeed they are little more than a protein capsule containing some genetic material. They rely on other organisms for their survival and reproduce within a host cell, using the cell's own mechanisms to reproduce, which leads to the death of the host cell (Goering et al. 2012). The life cycle of a virus is illustrated in Figure 4.4. The small size of viruses (e.g. poliovirus is only 30 nanometres across) means that most are smaller than the wavelengths of visible light. They can only be 'seen' with a specialist instrument such as an electron microscope, which will only be available in a very few hospital microbiology laboratories. Diagnosis of viral infections is normally based on the patient's symptoms, with confirmation by laboratory tests designed to detect either the virus itself or antibodies produced by the patient's immune system as a response to infection (Goering et al. 2012). Modern laboratories use PCR to amplify the genes in the sample to make them detectable quickly.

There are viruses that specifically infect humans, other animals or plants, or even bacteria. This is one characteristic that can be used in classifying them. However, the main basis for classification is by the type of genetic material they contain – DNA (deoxyribonucleic acid) or RNA (ribonucleic acid), in either a double or single strand. Other characteristics include the shape of the viral particle and the sort of disease caused by infection (Gillespie and Bamford 2012).

A final point to consider in relation to viral structure and infection prevention and control is the presence or absence of a lipid envelope enclosing the viral particle. Viruses that have a lipid envelope, such as herpes zoster virus (responsible for chickenpox and shingles), are much more susceptible to destruction by alcohol than those without. Norovirus and rotavirus, which are common causes of viral gastroenteritis (WHO 2009a), are examples of viruses without a lipid envelope. For this reason, alcohol hand sanitizers are not recommended during outbreaks of norovirus in hospitals.

Figure 4.4 The viral life cycle. RNA, ribonucleic acid.
Source: Adapted from Perry (2007) with permission of John Wiley & Sons.



Fungi

Like bacteria, fungi exist in many environments on earth, including occasionally as commensal organisms on human beings. Fungi are familiar to us as mushrooms and toadstools and the yeast that is used in brewing and baking. They also have many uses in the pharmaceutical industry, particularly in the production of antibiotics. Fungi produce spores, both for survival in adverse conditions, as bacteria do, and to provide a mechanism for dispersal in the same way as plants (Goering et al. 2012).

A few varieties of fungi are able to cause opportunistic infections in humans. These are usually found in one of two forms: either as single-celled yeast-like forms, which reproduce in a similar fashion to bacteria (by dividing or budding), or as plant-like filaments called 'hyphae'. A mass of hyphae together forms a 'mycelium'. Some fungi may appear in either form, depending on environmental conditions. Fungal infections are referred to as 'mycoses'. Superficial mycoses, such as ringworm and thrush (*Candida albicans*), usually involve only the skin or mucous membranes and are normally mild, if unpleasant; however, deeper mycoses involving major organs can be life threatening. These occur in patients who have severely impaired immune systems and may be an indicator of such impairment; for example, pneumonia caused by *Pneumocystis jirovecii* (previously *carinii*) is considered a clinical indication of AIDS (acquired immune deficiency syndrome). Superficial infections are generally transmitted by physical contact, whereas deeper infections can result from spores being inhaled. This is why it is important to ensure that patients with impaired immunity are protected from situations where the spores of potentially pathogenic fungi, such as *Aspergillus* spp., are likely to be released, for example during building work (Goering et al. 2012).

Protozoa

Protozoa are single-celled animals, some species of which are medically important parasites of human beings, particularly in tropical and subtropical parts of the world, where diseases such as malaria are a major public health issue. Unlike bacteria, their relationship with humans is almost always parasitic. The life cycles of protozoa can be complex and may involve stages in different hosts.

Medically important protozoa include *Plasmodium* spp., the cause of malaria; *Giardia* spp. and *Cryptosporidium* spp., which can cause gastroenteritis; and *Trichomoniasis* spp., which is a sexually transmitted cause of vaginitis (Gillespie and Bamford 2012).

The most common routes of infection of protozoa are by consuming them in food or water or via an insect vector such as a mosquito (Goering et al. 2012). **Cross-infection** in the course of healthcare is uncommon but not unknown.

Helminths

'Helminths' is a generic term for parasitic worms. A number of worms from three different groups affect humans: tapeworms (cestodes), roundworms (nematodes) and flukes (trematodes). Transmission generally occurs via ingestion of eggs or larvae, or infected animals or fish, but some are transmitted via an insect vector and some, notably the nematode *Strongyloides* spp., have a larval stage that is capable of penetrating the skin (Gillespie and Bamford 2012).

Helminth infections can affect almost every part of the body, and the effects can be severe. For example, *Ascaris* worms can cause bowel obstruction if there are large numbers present; *Brugia* spp. and *Wuchereria* spp. obstruct the lymphatic system and eventually cause elephantiasis as a result; and infection with *Toxocara* spp. (often after contact with dog faeces) can result in epilepsy or blindness (Goering et al. 2012). However, cross-infection in healthcare is not normally considered a significant risk.

Arthropods

Arthropods (insects) are most significant in infectious disease in terms of their function as vectors of many viral, bacterial, protozoan and helminth-caused diseases. Some flies lay eggs in the skin of mammals, including humans, and the larvae feed and develop in the skin before pupating into the adult form, whereas some, such as lice and mites, are associated with humans for the whole of their life cycle. Such arthropod infestations can be uncomfortable, and there is often significant social stigma attached to them, possibly because the creatures are often visible to the naked eye. The activity of the insects and the presence of their saliva and faeces can result in quite severe skin conditions that are then vulnerable to secondary fungal or bacterial infection (Goering et al. 2012).

Lice

Species of *Pediculus* infest the hair and body of humans, feeding by sucking blood from their host. The adult animal is around 3 mm long and wingless, moving by means of claws. It cannot jump or fly, and dies within 24 hours if away from its host, so cross-infection normally occurs via direct contact or transfer of eggs or adults through sharing personal items (Cummings et al. 2018).

Scabies

Scabies is caused by the mite *Sarcoptes scabiei*, an insect less than 1 mm long that burrows into the top layers of skin. The female mites lay eggs in these burrows and the offspring can spread to other areas of the body. Infestation usually starts around the wrists and in between the fingers because acquisition normally occurs via close contact with an infected individual (e.g. by holding hands). The burrows are visible as a characteristic rash in the areas affected. The skin starts to itch a few weeks after infes-

tation, which is a reaction to the faeces of the mite. A delay in recognition can lead to mass infestation, especially within families or in settings where there is a lot of interpersonal care, such as a nursing home. In immunocompromised hosts and those unable to practise normal levels of personal hygiene, very high levels of infestation can occur, often with thickening of the skin and the formation of thick crusts. This is known as 'Norwegian scabies' and is associated with a much higher risk of cross-infection than the normal presentation.

Scabies is most often associated with long-stay care settings, but there have been outbreaks associated with more acute health-care facilities (Cassell et al. 2018). Treatment with scabicide must be co-ordinated to ensure untreated hosts do not reinfect those already treated.

Prions

Prions are thought to be the causative agents of a group of diseases called transmissible spongiform encephalopathies (TSEs), the most well known of which are Creutzfeldt–Jakob disease (CJD) and its variant (vCJD) (Table 4.4). These are fatal neuro-degenerative diseases with a lengthy incubation period (up to 50 years) and no conventional host response, making them difficult to detect.

TSEs can be naturally occurring, inherited or acquired (Table 4.4). They are characterized by 'plaques' in the brain that are surrounded by holes that give the appearance of a sponge, hence the name. The causative 'organism' is a prion, defined in 1982 by Stanley Prusiner as a proteinaceous infectious particle resistant to procedures that modify nucleic acid.

From an **infection control** perspective, the key point is that prions contain no genetic material; therefore, it can be argued that they are not alive and so cannot be killed. Control is achieved via recognition of risk and physical removal through cleaning procedures. Prions are not affected by routine **decontamination** processes such as autoclaving or chemical disinfection. This has led to extensive reviews of decontamination procedures in the UK with increased emphasis on effective washing to remove any residual organic material, and on the tracking of instruments to individual patients to facilitate any look-back exercise. Modern decontamination services are now capable of removing prions from the surface of even complex instruments; however, where risk is identified, single-use instruments are usually recommended, especially for neurological work.

In the 1990s there was a lot of concern about the emergence of vCJD, which was associated with consumption of contaminated beef from cattle who had bovine spongiform encephalopathy

(BSE). With intense input from public health initiatives and what was then called the Ministry of Agriculture, Fisheries and Food, beef was made safe again. However, UK citizens born before 1992 are still considered at risk of vCJD due to its long incubation period.

There were also several cases of CJD associated with contaminated medical products, such as human pituitary hormone, dura mater grafts and medical instruments. For this reason, all patients undergoing surgery should be assessed for risk of CJD by asking the following questions:

- Do you have a blood family member who has suffered from CJD?
- Have you ever received hormones derived from a human pituitary gland (e.g. growth hormone)?
- Have you ever had a corneal transplant or a dura mater graft?
- Have you been told that 'you may be at risk of CJD for public health purposes'?

A patient with CJD or vCJD is not infectious to other people under routine circumstances so no special precautions are required other than if dealing with cerebrospinal fluid (CSF). A spillage of CSF should be cleaned up with a strong disinfectant such as 10,000 ppm of chlorine.

Sources of infection

An individual may become infected with organisms already present on their body (**endogenous** infection) or introduced from elsewhere (**exogenous** infection). The majority of HCAs are endogenous, hence the importance of procedures such as effective skin decontamination prior to invasive procedures (NHS England and NHSI 2019).

Indicators and effects of infection

Generally, infection is said to have occurred when infectious agents enter a normally sterile area of the body and cause symptoms as a result. There are obvious exceptions (e.g. the digestive tract is not sterile, being home to trillions of micro-organisms, but many types of infectious gastroenteritis are caused by particular organisms entering this area), but this is a useful working definition. The symptoms of infection are listed below. Not all symptoms will be present in all cases, and it should be noted that many symptoms are caused by the body's response to infection and so may not be present in severely immunocompromised patients (Fishman 2011).

Symptoms of infection

The cardinal signs of inflammation will often be present:

- **Heat:** the site of the infection may feel warm to the touch, and the patient may have a raised temperature.
- **Pain:** at the site of the infection.
- **Swelling:** at the site of the infection.
- **Redness:** at the site of the infection
- **Loss of function:** the affected area may not work properly.

In addition, there may be other signs, such as:

- pus
- raised white cells in blood results
- raised C-reactive protein (CRP) in blood results
- altered blood gases
- feeling of general malaise
- aching joints
- abdominal pain and tenderness
- nausea, diarrhoea and/or vomiting
- oliguria or anuria
- urinary frequency and/or pain on passing urine (strangury)
- confusion (notably in the elderly)
- loin pain.

It is important to look for these clinical signs of infection before making a diagnosis based on the result of a specimen alone.

Table 4.4 Types of transmissible spongiform encephalopathies

Type	Examples
Idiopathic (just happens for no clear reason)	Sporadic (classical) CJD Sporadic fatal insomnia
Inherited (genetic)	Familial CJD Gerstmann–Sträussler–Scheinker syndrome and variants Fatal familial insomnia
Acquired	Derived from humans: <ul style="list-style-type: none"> • kuru (cannibalism) • iatrogenic CJD (contaminated medical devices or blood products) Derived from bovines: vCJD (diet – meat infected with bovine spongiform encephalopathy)

CJD, Creutzfeldt–Jakob disease; vCJD, variant Creutzfeldt–Jakob disease.

RELATED THEORY

Healthcare-associated infection

An HCAI is acquired while receiving care in a hospital or other healthcare setting and must not have been present prior to that episode of healthcare; 6.6% of people who go into hospital in the UK will develop an HCAI. The figure for Europe is about 4 million people every year, with around 37,000 deaths occurring as a direct result (PHE 2017). The majority of these infections result from the procedures and interventions that patients undergo as treatment, such as insertion of invasive devices, surgery or the administration of antimicrobials that alter natural bacterial flora; all of these ultimately breach the body's natural defences and thereby increase vulnerability to infection. The greater the number of devices and the longer they are *in situ*, the more likely it is that an infection will occur. If the patient is also immunocompromised, the infection risk can be much higher. One report found that patients receiving treatment under oncology or haematology specialities were almost four times as likely to have an HCAI (a similar rate to those in intensive care units) compared to other patients in the same hospital and were twice as likely to be receiving an antibiotic (PHE 2018a).

In addition, bringing many vulnerable people together in a healthcare setting increases the likelihood of exposure to infection and the risk of cross-infection. Patients are often expected to share a room and bathroom facilities with those who may be carrying infection or different normal flora to them. This can lead to cross-infection, for example a patient who has diarrhoea may contaminate a shared toilet, thereby passing the infection to others using the same facilities.

The greater the number of patients that staff are caring for and the greater their workload, the greater the risk of cross-infection between patients. Overcrowding, lack of time and lack of facilities also contribute to non-compliance with best practice (Borg 2003, Eiamsitrakoon et al. 2013, Harbarth et al. 1999, Kampf et al. 2009, WHO 2009a).

Prevalence of healthcare-associated infection

The national Point Prevalence Survey of Healthcare-Associated Infections and Antimicrobial Use in European Acute Care Hospitals (ECDC 2016), conducted by Public Health England and the European Centre for Disease Prevention and Control, identified a prevalence rate of 6.6% (PHE 2017) (Figure 4.5). In acute hospitals, 1 in 15 patients had an HCAI on the day of survey, with the highest prevalence rates in intensive care units (17.6% of patients) followed by surgery (8.5%) and medicine (5.8%).

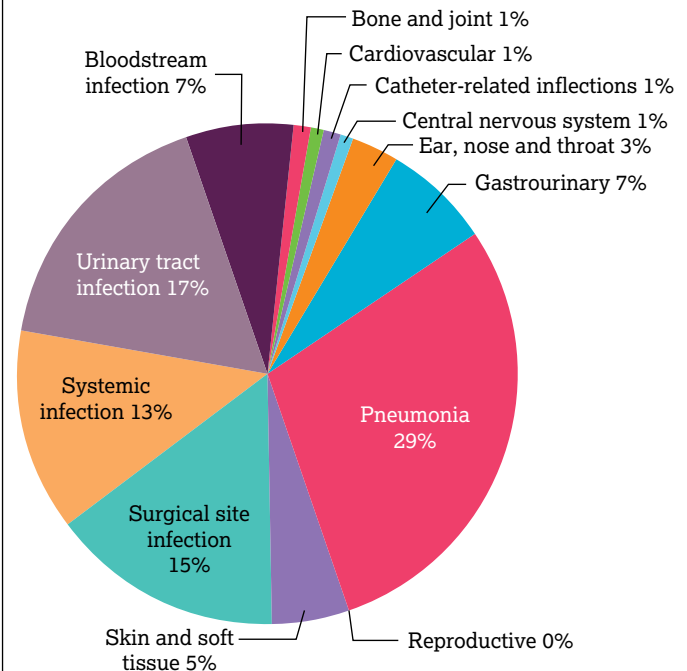
The most common types of infection were pneumonia and lower respiratory tract infection, urinary tract infections, and surgical site infections. There was very little change from the patterns seen from the previous survey, conducted in 2011 (ECDC 2013). While bacteraemia (bacteria infecting the bloodstream) was less common, it can still have serious consequences for patients. Of the infections identified, gram-negative bacteria species were responsible for 35% of bloodstream HCAIs, which justifies the focus of national prevention strategies in this area.

The most commonly isolated micro-organisms were *E. coli* (18.9%), *S. aureus* (17.6%), *C. difficile* (8.1%), *Pseudomonas aeruginosa* (7.8%), *Klebsiella pneumoniae* (4.9%) and *Enterobacter cloacae* (2.8%). *E. coli* was the most commonly isolated micro-organism in urinary tract infections (50.9%), whereas *S. aureus* was the most commonly isolated micro-organism in pneumonia and lower respiratory tract infections (19.3%), surgical site infections (30.2%) and bloodstream infections (19.2%).

The challenge of antimicrobial resistance

Over the past century, there have been many changes in the types of organism that cause problems in healthcare, largely mirroring advances in medicine. The advent of penicillin and then other antibiotics in the 1940s allowed such advances in medicine and surgery. More complex surgery became possible, such as surger-

Figure 4.5 Results from the national Point Prevalence Survey in ESPAUR, 2016. Source: Data from English Surveillance Programme for Antimicrobial Utilisation and Resistance (ESPAUR): Report 2018 (PHE 2018a).



Box 4.1 Tackling Drug-Resistant Infections Globally: Final Report and Recommendations (O'Neill 2016)

'The magnitude of the problem is now accepted. We estimate that by 2050, 10 million lives a year are at risk due to the rise of drug-resistant infections if we do not find proactive solutions now to slow down the rise of drug resistance. Antibiotics are a special category of antimicrobial drugs that underpin modern medicine as we know it: if they lose their effectiveness, key medical procedures (such as gut surgery, caesarean sections, joint replacements, and treatments that depress the immune system, such as chemotherapy for cancer) could become too dangerous to perform.'

ies requiring implants (joint replacements) or organ transplants, and patients were able to tolerate treatments such as chemotherapy. More and more patients began to survive previously untreatable conditions, largely due to the ability to treat complications such as infection.

With the increasing use of antibiotics, new challenges began to emerge, including *C. difficile* infections (CDI) in the 1970s and epidemic strains of methicillin-resistant *S. aureus* (MRSA) in the 1980s. During the 1990s and early 2000s there was a significant rise in both MRSA and CDI in the UK. Concerted effort engineered by the UK government saw impressive reductions in both these infections (DH 2019); however, the 2000s saw a rise in the prevalence of gram-negative organisms with increasing resistance to antibiotics and an associated increase in untreatable infections. It is fair to argue that increasing antimicrobial resistance is the biggest challenge to healthcare across the world. As stated by the UK Chief Medical Officer Professor Dame Sally Davies, 'We have reached a critical point and must act now on a global scale to slow down antimicrobial resistance' (DH 2014) (see also Box 4.1).

Nurses, along with other healthcare workers, have a duty to reduce the burden of antimicrobial resistance through effective infection prevention in their everyday work and help to preserve antimicrobials for future generations. An infection prevented means an antibiotic not required.

The term 'antimicrobial stewardship' is widely used to describe efforts to improve and rationalize antimicrobial prescribing. Much of this effort is targeted at doctors, who are the main prescribers of antimicrobials. Examples include the *Start Smart – Then Focus* toolkit (PHE 2015) and *Antimicrobial Stewardship: Systems and Processes for Effective Microbial Medicine Use* (NICE 2015), which exist to improve antimicrobial prescribing and develop a wider understanding of antimicrobial stewardship. 'Start smart' means:

- not starting antimicrobial therapy unless there is clear evidence of infection (ideally supported by appropriate microbiology samples)
- following local antibiotic guidance and taking into account a clear allergy history
- ensuring review dates and rationales for prescribing are all clearly documented.

'Then focus' means:

- reviewing the clinical diagnosis and continuing need for antimicrobials at 48–72 hours
- then clearly documenting a prescribing decision to stop, switch (from intravenous to oral), change (to a narrower-spectrum antibiotic in light of microbiology results), continue (and document the next review date) or use outpatient parenteral antibiotic therapy.

Nurses also have an important role in antimicrobial stewardship even if they are not themselves prescribers. This should include not being afraid to question the use of antimicrobials and encouraging good documentation.

Current infection challenges

In the UK, *E. coli* has increasingly been implicated as a source of bloodstream infection, as can be seen in Figure 4.6. *E. coli* and other gram-negative bloodstream infections caused by organisms such as *Klebsiella* spp. and *P. aeruginosa* are subject to mandatory reporting and reduction targets. A significant proportion of these isolates are showing increasing resistance to antimicrobials, which makes recognition and reduction of risk factors very important in controlling their spread. Such gram-negative infections seem predominantly to originate in the community and are often associated with older age, dehydration and urinary tract problems. Examples include an elderly gentleman with an enlarged prostate that leads to repeated urinary tract infection and an elderly lady becoming dehydrated because she is not drinking due to anxiety about incontinence (PHE 2018b).

EVIDENCE-BASED APPROACHES

With good infection prevention and control practice, many HCAs can be prevented. This has been demonstrated by the significant reductions in MRSA bloodstream infection in English NHS hospitals between 2005 and 2018 (PHE 2018b, 2018c) and the dramatic fall in the number of cases of *C. difficile* infection in England (PHE 2018b, 2018d). These reductions were achieved via the systematic application and monitoring of established practices for the prevention and control of infection, including diligent hand hygiene and correct aseptic technique.

The use of effective infection prevention practices, including hand hygiene, environmental cleaning and care of invasive devices, leads to less cross-transmission, less infection, and less need for antimicrobials and other remedial treatments. It is therefore safer for patients and more cost-effective, and it contributes to reducing the burden of antimicrobial resistance.

Infection prevention and control underpins the clinical practices of all disciplines of healthcare and is fundamental to patient safety. As in other disciplines, robust evidence should underpin

and improve practice and be used to ensure patients are receiving optimal care. However, it is not always possible to carry out robust randomized controlled trials (RCTs) to evidence all interventions and in some cases it is very difficult to ascertain which of several interventions implemented concurrently has made a difference. For example, hand hygiene must be accepted as good practice on the basis of the results of a multitude of non-RCT studies (Pittet et al. 2000) and experience.

One of the most favoured means of presenting best practice is in the form of 'care bundles'. It can even be argued that a set of measures implemented during an outbreak comprises an 'outbreak bundle'. A care bundle is a group of evidence-based interventions that have been put together to be practised consistently with the intention that if all the elements are undertaken together, a particular outcome will occur – or, in the case of infection prevention, will not occur. The bundle normally consists of around five elements, each of which have robust evidence indicating that, if they are implemented reliably, for every patient, on every occasion, they will result in the most benefit of all possible interventions (Rochon et al. 2017).

In the UK, in 2005 the Department of Health issued *Saving Lives*, which is a package of 'high impact interventions'. This bundle was put together to reduce infection in key target areas including peripheral vascular devices, central vascular access devices, urinary catheters, surgical wound infection, ventilator-associated pneumonia and nasogastric feeding. The tools were reviewed and reissued by the Infection Prevention Society in 2017. The suite of tools covers:

- prevention of ventilator-associated pneumonia
- prevention of infections associated with peripheral vascular access devices
- prevention of infections associated with central venous access devices
- prevention of surgical site infection
- prevention of infections in chronic wounds
- prevention of urinary-catheter-associated infections
- promotion of stewardship in antimicrobial prescribing.

CLINICAL GOVERNANCE

Hygiene Code

Infection prevention and control in England is underpinned by the Health and Social Care Act (2008), which has been summarized in a separate code of practice (DH 2015a). Known as the Hygiene Code, this mandates a set of responsibilities to healthcare providers including hospitals, general practitioners, dentists and care homes. This legislation is monitored and enforced by the Care Quality Commission (CQC), which assesses care providers against the requirements of the Code during periodic inspections. Each provider must be registered with the CQC and declare compliance with the 10 criteria of the Hygiene Code. These criteria are summarized in Table 4.5.


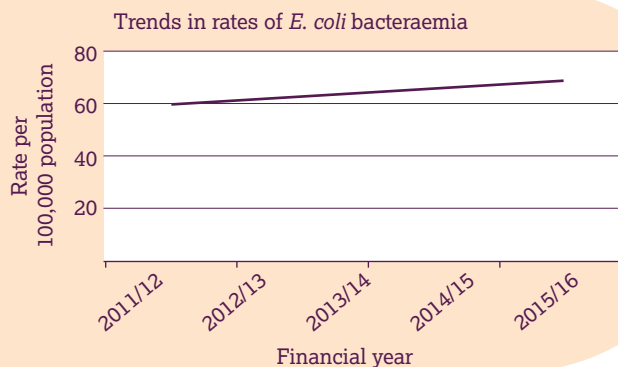
All healthcare organizations are required to appoint a senior manager to the role of 'director of infection prevention and control', or DIPC (DH 2003). This person must have the seniority to be able to influence the board of directors to ensure that infection prevention is accorded the highest priority.

All but the smallest healthcare providers should have (or have access to) an infection prevention and control team, who will advise on day-to-day aspects of infection prevention. The team will usually consist of one or more nurses trained in infection prevention along with a consultant microbiologist or infection control doctor and an antimicrobial pharmacist. Some teams will have additional staff working in audit, surveillance, or data collection and analysis. The role of the infection prevention and control team is varied but principally involves providing advice, education and support to healthcare professionals, caregivers and the wider organization to ensure patient and staff safety is maintained and risks are minimized.

Figure 4.6 *E. coli* bacteraemia rates in England, 2015/2016. Source: NHS Improvement (2017). © Crown copyright.

Overall rate

70 people out of every
100,000
will acquire an
E. coli bacteraemia

Risk greater among elderly


Adult male rate

50
adult males
out of every
100,000
(age 45–64)



Adult female rate

51
adult females
out of every
100,000
(age 45–64)



Elderly male rate

824
elderly males
out of every
100,000
(age ≥85)

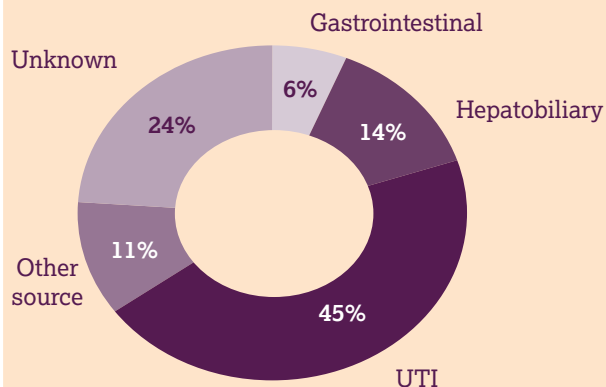


Elderly female rate

568
elderly females
out of every
100,000
(age ≥85)



Most common source of infection

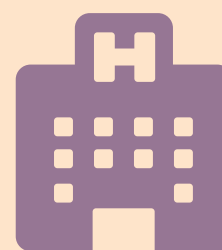


© Crown copyright 2016

Most cases are community onset



73%
<2 days



27%
≥2 days

For full report, please see
<https://www.gov.uk/government/statistics/mrsa-mssa-and-e-coli-bacteraemia-and-c-difficile-infection-annual-epidemiological-commentary>

Professional responsibility

In England, nurses must be aware of the measures that are in place in their workplace to ensure compliance with the Hygiene Code. For example, many hospital trusts have a programme of regular visits to clinical areas by senior staff, who carry out inspections against the criteria of the Code as if they were external assessors. This programme ensures that senior staff are familiar with the Code and that everyone is familiar with the

inspection process. In addition, nurses may need to carry out activities to promote compliance and provide evidence of assurance, such as audits of hand hygiene performance or compliance with aseptic technique. One such set of audits in place in many hospitals in England is the aforementioned Saving Lives (Infection Prevention Society 2017). Audits are discussed in more detail in the section below on **environmental hygiene** and the management of waste in the healthcare environment.

Table 4.5 The Hygiene Code

- 1 Systems to manage and monitor the prevention and control of infection. These systems use risk assessments and consider the susceptibility of service users and any risks that their environment and other users may pose to them.
- 2 Provide and maintain a clean and appropriate environment in managed premises that facilitates the prevention and control of infections.
- 3 Ensure appropriate antimicrobial use to optimize patient outcomes and to reduce the risk of adverse events and antimicrobial resistance.
- 4 Provide suitable accurate information on infections to service users, their visitors and any person concerned with providing further support or nursing/medical care in a timely fashion.
- 5 Ensure prompt identification of people who have or are at risk of developing an infection so that they receive timely and appropriate treatment to reduce the risk of transmitting infection to other people.
- 6 Systems to ensure that all care workers (including contractors and volunteers) are aware of and discharge their responsibilities in the process of preventing and controlling infection.
- 7 Provide or secure adequate isolation facilities.
- 8 Secure adequate access to laboratory support as appropriate.
- 9 Have and adhere to policies, designed for the individual's care and provider organizations that will help to prevent and control infections.
- 10 Providers have a system in place to manage the occupational health needs and obligations of staff in relation to infection.

Source: DH (2015a). © Crown copyright.



Learning Activity 4.1

Learning into practice

- 1 Which types of pathogen (e.g. virus, bacteria) cause the following common infections? The first one has been completed for you.

Infection	Cause
<i>Staphylococcus aureus</i>	Bacteria
<i>Candida albicans</i> , or thrush	
<i>Pediculus humanus capitis</i>	
Covid-19	
<i>Escherichia coli</i>	
<i>Clostridioides difficile</i>	
<i>Herpes zoster</i>	

- 2 What are the five 'cardinal signs' of infection?

- 3 A patient is suspected of having a urinary tract infection. What signs would there be in a blood test result that would support this diagnosis?
- 4 Identify four strategies that, in recent years, have significantly reduced the national incidence of healthcare-associated infections.
- 5 What is antimicrobial stewardship? Choose an option.
 - A Cost-effective charges for the prescription of antimicrobials
 - B Measures to improve and rationalize antimicrobial prescribing
 - C Allowing the patient a short trial of antimicrobials to see whether they work
 - D Ensuring the patient's allergies to antimicrobials are identified and noted
 - E Correct storage of antimicrobials to avoid wastage

See the answers on the companion site of this student edition: www.royalmarsdenmanual.com/student10e.



Other legal and professional issues

In England, the Health and Safety at Work etc. Act (1974) is the primary piece of legislation relating to the safety of people in the workplace. It applies to all employees and employers, and requires them to do everything that is reasonable and practicable to prevent harm coming to anyone in the workplace. It requires employers to provide training and appropriate protective equipment, and it requires employees to follow the training that they have received, use the protective equipment provided, and report any situations where they believe inadequate precautions are putting anyone's health and safety at serious risk.

The Nursing and Midwifery Council's *Code* (NMC 2018) states that all nurses must work within the limits of their competence. This means, for example, not carrying out aseptic procedures

without being competent and confident that this can be done without increasing the risk of introducing infection through lack of knowledge or technique.

In addition to healthcare-specific requirements, items of legislation and regulation have been devised with the objective of reducing the risk of infection; these apply to healthcare as much as they do to any other business or workplace. These include legislation and regulation relating to food hygiene (Food Safety Act 1990), water quality (Water Supply (Water Quality) Regulations 2016), waste management (Waste (England and Wales) Regulations 2011) and other issues that are peripheral to healthcare but must be taken into account when developing policies and procedures for an NHS trust or other healthcare provider. The relevant regulations are summarized in Table 4.6.

Table 4.6 Legislation significant to healthcare infection control policy

Legislation	Coverage
Control of Substances Hazardous to Health (COSHH) (HSE 2002)	Introduced to prevent or reduce healthcare worker exposure to potentially harmful substances. The guidance includes the need to identify hazards, risk assess the potential for harm, if possible remove the harm, and where needed provide measures to reduce the level of harm. This includes the need to provide suitable equipment, training and where necessary health surveillance. The COSHH regulations have forced changes in areas such as endoscopy, where previously harmful chemicals (such as glutaraldehyde) were used with little control. Modern endoscopy units use safer chemicals in special automated processors to significantly reduce the potential for harm to users.
Health Building Note 00-09: Infection Control in the Built Environment (DH 2013c)	Provides guidance on infection prevention measures for new buildings and refurbishments. Includes guidance on finishes, layout and fittings. Should be read in conjunction with other health building notes (HBNs) for specific facilities, such as Health Building Note 04-01 Supplement 1: Isolation Facilities for Infectious Patients in Acute Settings (DH 2013d).
Legionnaires' Disease: The Control of Legionella Bacteria in Water Systems – Approved Code of Practice and Guidance (HSE 2013a)	Sets out the requirements of employers to control legionella, including identifying and assessing sources of risk; preparing a scheme to prevent or control risk; implementing, managing and monitoring precautions; keeping records of precautions; and appointing a responsible manager.
Water Systems: Health Technical Memorandum 04-01 Addendum – <i>Pseudomonas aeruginosa</i> – Advice for Augmented Care Units (DH 2013a)	Concerned with controlling or minimizing the risk of morbidity and mortality due to <i>Pseudomonas aeruginosa</i> associated with contaminated water outlets. Guidance is provided on assessing the risk to patients, and the document offers remedial actions to take when a water system becomes contaminated with <i>P. aeruginosa</i> , including protocols for sampling, testing and monitoring water. It also offers advice on forming a water safety group and developing water safety plans. This guidance came about in response to an outbreak in Belfast where three babies died and several others were infected via water contamination with <i>P. aeruginosa</i> (Wise 2012).
Health Technical Memorandum 07-01: Safe Management of Healthcare Waste (DH 2013b)	Sets out the necessary handling of waste to reduce harm to people and the environment.
Food Safety Act (1990)	Sets out regulations for the safe handling and preparation of food.

Hand hygiene

DEFINITION

Hand hygiene, or hand **decontamination** as it is also called, is the process used to render the hands physically clean with a reduced microbial load. Hand hygiene may involve the use of soap and water to wash the hands, principally to remove organic soiling, and/or the use of an alcohol-based hand sanitizer, which if applied correctly will remove most micro-organisms (Boyce et al. 2002, Gold and Avva 2018, NHS England and NHSI 2019, Pittet et al. 2000).

RELATED THEORY

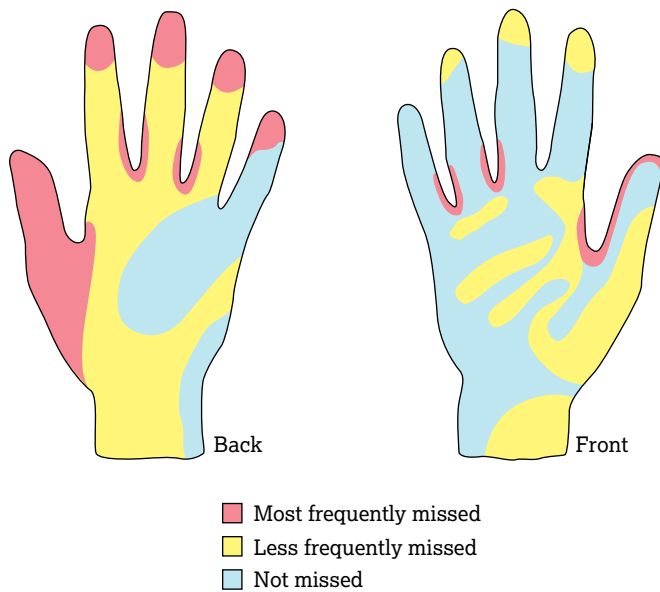
Hand hygiene is generally accepted as a cornerstone of good **infection prevention and control**, so it is essential that wherever care is provided, there are accessible and appropriate facilities for hand hygiene (WHO 2009a). The hands of healthcare workers are a common cause of transmission of micro-organisms between patients and are frequently implicated as the route of transmission in **HCAIs** (Moolenaar et al. 2000, Mortimer et al. 1962, Pittet et al. 2000, Sax et al. 2007). Transient micro-organisms (bacteria, fungi and viruses) are organisms located on the surface of the skin and beneath the superficial cell of the stratum corneum. The subungual regions of the nails harbour the majority of the micro-organisms found on the hands (AORN 1997, Hedderwick et al. 2000, McNeil et al. 2001). They are acquired from and transfer easily to the animate (patient) and inanimate environments during contact activities. Damaged skin, moisture, false nails and jewellery increase the possibility of **colonization** with transient micro-organisms (McNeil et al. 2001). Both microbial load and type depend upon the prevalence of micro-organisms in the

environment and on the activities being undertaken by healthcare workers. Hands have been found to be contaminated after general ward-based activities including bed making, handling curtains and patients' clothing, and washing materials, and after sluice room activities. Transient micro-organisms, unlike resident bacteria, can easily be removed from the hand surface via effective hand hygiene (Boyce et al. 2002).

There are three main levels of hand hygiene:

- 1 Hand washing is the process for the physical removal of soil (dirt, blood, body fluids and transient micro-organisms) from the hands (e.g. after using the lavatory or before preparing a meal) using ordinary liquid soap and water. In the clinical setting it should be performed as per 'My 5 Moments for Hand Hygiene' (discussed below) (Sax et al. 2007, WHO 2009a).
- 2 Aseptic hand decontamination or hand antisepsis is the destruction of micro-organisms on the hands (e.g. prior to a dressing procedure). If carrying out an aseptic procedure, an antiseptic soap may be used as an alternative to ordinary soap (but it is not essential). This will contain a disinfectant such as chlorhexidine or povidone-iodine. Alternatively, it is very acceptable to wash with ordinary soap and water, dry hands and then apply alcohol-based handrub.
- 3 Surgical scrub aims to remove dirt and organic matter, kill transient micro-organisms, and reduce the numbers of resident and transient bacteria on the skin prior to surgery. Surgical scrub technique may be carried out using antiseptic soap or approved alcohol-based handrubs. Antiseptic handwash solutions such as chlorhexidine gluconate or povidone-iodine solution should be used with an appropriate technique and for a minimum of 3 minutes as part of surgical preparation. Approved alcohol-based products may be used on physically clean hands for a 90-second scrub.

Figure 4.7 Taylor's work in 1978 showed the areas most commonly missed following hand washing – in particular, the thumbs, especially on the dominant hand and in between the fingers. *Source:* Reproduced from Taylor (1978) with permission of EMAP Publishing Ltd.



Taylor (1978) noted that some nurses could wash their hands for a long time but not cover all the surfaces, whereas others could cover all the surfaces within 30 seconds (Figure 4.7). A six-step hand hygiene technique to cover all areas of the skin was first described by Ayliffe et al. (1978) to test the efficacy of different hand disinfectants. The technique has been adopted by the World Health Organization (WHO) (2009a) as standard and is used worldwide; however, more recently some have queried whether a three-stage technique would be more practical, especially for the use of alcohol-based handrub (Tschudin-Sutter et al. 2017).

EVIDENCE-BASED APPROACHES

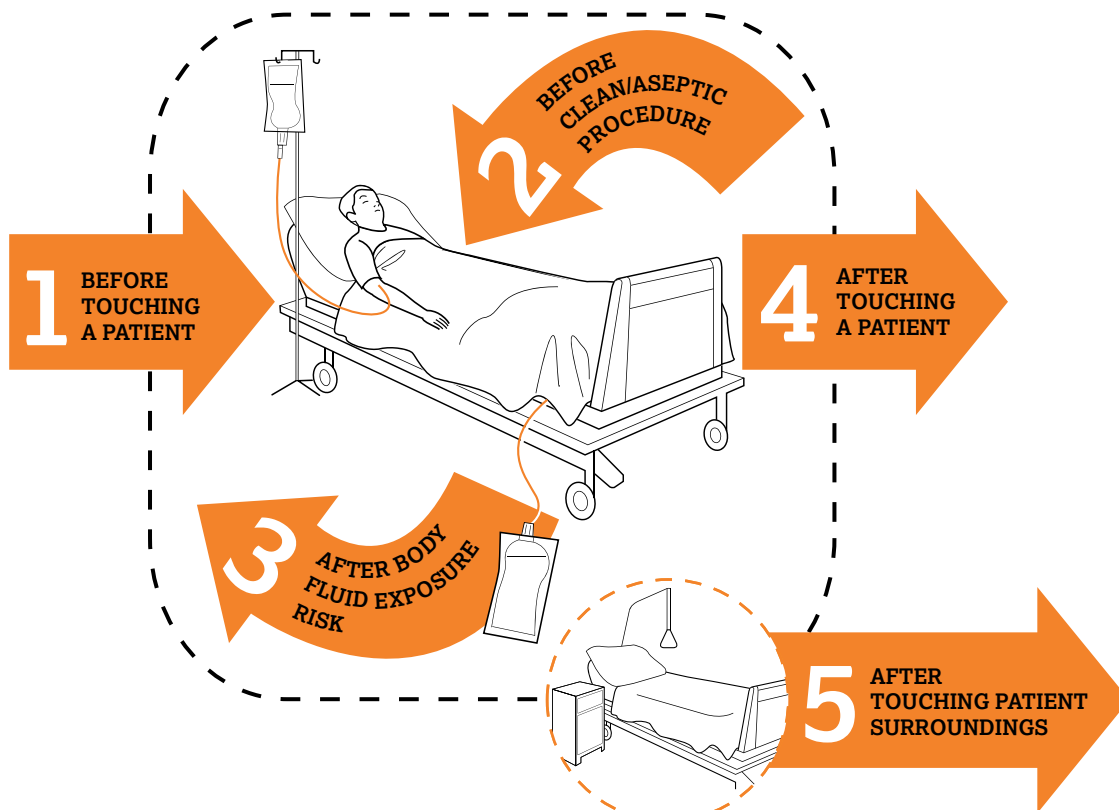
The key considerations for hand hygiene are: when should hands be decontaminated, what with and how? The WHO uses the concept of 'My 5 Moments for Hand Hygiene' as a means to focus hand hygiene where it matters – at the point of patient contact (Sax et al. 2007) (Figure 4.8). The WHO describes the 'patient zone' as an imaginary line around the patient. The patient zone is not necessarily a bed or chair; it is wherever the patient is. The WHO then describes the opportunities for hand hygiene within the patient zone. These are:

- *Moment 1:* Entering the patient zone before patient contact.
- *Moment 2:* Carrying out a clean or aseptic procedure.
- *Moment 3:* Handling blood or body fluids.
- *Moment 4:* Leaving the patient zone after patient contact.
- *Moment 5:* After contact with the patient's immediate environment.

Bare below the elbows

In order to facilitate effective hand hygiene it is expected that all healthcare workers should be 'bare below the elbows' when giving patient care (NICE 2017). This involves wearing short-sleeved

Figure 4.8 'My 5 Moments for Hand Hygiene'. *Source:* Reproduced from Sax et al. (2007) with permission of Elsevier.



clothing, not having false nails or nail varnish, and removing all wrist and hand jewellery to allow effective hand hygiene up to and including the wrists (DH 2010a). A plain, smooth metal ring is usually acceptable; however, it should be moveable to ensure decontamination and drying underneath (NHS England and NHSI 2019). There is some debate as to whether it is necessary to be bare below the elbows in a clinical area if not giving care. This may be acceptable in some organizations for non-uniformed staff if they are having no direct patient contact – for example, a ward clerk sat at a desk, or staff visiting other staff in offices on the ward. However, ideally everyone entering a ward should be able to easily decontaminate their hands and this is best facilitated by being bare below the elbows.

PRE-PROCEDURAL CONSIDERATIONS

Equipment

Hand hygiene equipment

Clinical handwash basins

Clinical handwash basins (CHBs) (Figure 4.9) should be available in sufficient numbers such that a healthcare worker does not have to walk too far to decontaminate the hands. In a hospital, a CHB

would be expected for roughly every 4–6 beds. While it is important to have an appropriate number of CHBs to allow easy access to hand washing, it should be noted that if they are poorly sited and underutilized they may become a risk for infection. This is because organisms such as *Legionella pneumophila* can build up in underused pipework – a so-called ‘dead leg’. Any water outlet that is not in regular use should be flushed at least twice a week to reduce this risk. Consideration should be given to removal (back to the circulating pipework) of any underused outlets. In some circumstances, point-of-use filters may be employed to ensure water leaving the tap is clean (Garvey et al. 2018, Vonberg et al. 2005).

CHBs should be used solely by clinical staff for hand hygiene. They should have taps that can be turned on and off without using the hands; that is, they should be non-touch or lever operated (NHS England and NHSI 2019). They should not have plugs (to encourage hand washing under running water) or overflows. Water should be able to drain freely and quickly to discourage growth of microbes from drains (Aranega-Bou et al. 2019, Walker and Moore 2015). CHBs should not be used for the disposal of wash water, intravenous fluids, drugs or beverages as this encourages the growth of harmful organisms such as *Pseudomonas aeruginosa* (Garvey et al. 2018, Kotay et al. 2017, Loveday et al. 2014b). Basins that are also used by patients may require plugs, which will require careful management with some client groups to reduce the risk of flooding. In all cases, the taps should be positioned so that water does not fall directly into the outflow as this may lead to splashes containing organisms from within the drain, which has been implicated in outbreaks of infection (Aranega-Bou et al. 2019, Walker et al. 2014, Wise 2012). Taps should be of a mixer type that allows the temperature to be set before hand washing starts. Access to basins must be unobstructed by any furniture or equipment to ensure that they can easily be accessed whenever required.

Liquid soap dispensers

Liquid soap dispensers should be positioned close to handwash basins and care should be taken to ensure that soap cannot drip onto the floor from the dispenser and cause a slip hazard. Soap should be simple and unscented to minimize the risk of adverse reactions from frequent use. There is no advantage to using soap or detergents containing antimicrobial agents for routine hand washing. Antiseptic preparations may carry a higher risk of adverse reactions. Bar soap should not be used as the wet bar can grow micro-organisms between uses. For surgical scrub or hand antisepsis, the most commonly used preparations contain either chlorhexidine or povidone-iodine; both reduce bacterial counts significantly but chlorhexidine has a residual effect that may reduce rapid regrowth.

Paper towel dispensers

A paper towel dispenser should be fixed to the wall close to each handwash basin. Hand towels should be of adequate quality to ensure that hands are completely dried by the proper use of one or two towels. To conveniently dispose of these towels, a suitable bin with a pedal-operated lid should be positioned close to the basin, but not so that it obstructs access to the basin (WHO 2009a).

Alcohol-based hand sanitizers

Alcohol-based hand sanitizers should be available at the point of care in every clinical area for use immediately before care and between different care activities on the same patient. Dispensers may be attached to the patient's bed or bedside locker, and free-standing pump-top bottles can be used where appropriate, such as on the desk in a room used for outpatient clinics. Dispensers should not be sited close to sinks unless this is unavoidable because of the risk of confusion with soap and the risk of adding organic material to the drains (Kotay et al. 2017). Smaller sized

Figure 4.9 Clinical handwash basin.



personal-issue bottles are appropriate where there is a risk that alcohol-based handrub may be accidentally or deliberately drunk, such as in paediatric areas or when caring for a patient with alcohol dependency (NPSA 2008).

Pharmacological support

Hand washing is a mechanical process and it is the combination of rubbing and friction to generate a lather that removes dirt, debris and micro-organisms, rather than any 'antiseptic' in the soap. Hands should be washed only with soaps that are designed for hand washing. In a hospital there will usually be one approved brand that meets the European Norms: EN1499 for soap or EN1500 for surgical hand preparation. The products will usually be unperfumed and hypoallergenic. In a patient's home, a health-care worker should use any reasonable handwash soap provided.

Detergents

Detergents are surfactants designed to remove organic soiling, including grease, from a surface. They do not specifically kill micro-organisms but may remove them as part of the mechanical action of the process of washing. There are many different types of detergent for use on different surfaces, from washing-up liquid to soap designed for washing hands and keeping skin soft.

Alcohol-based handrub

Alcohol-based handrub may be considered the gold standard for hand hygiene and is recommended for use in most circumstances except if hands are visibly soiled or when caring for patients with vomiting or diarrhoeal illness (Gold and Avva 2018, NHS England and NHSI 2019). This is because alcohol is not effective in the presence of organic soiling, against *C. difficile* spores or against non-enveloped viruses such as norovirus. When compared with soap and water hand washing, alcohol-based handrub is more effective at reducing bacteria on hands, causes less skin irritation, requires less time to use and can be made more easily accessible at the point of care (Boyce et al. 2002, Gold and Avva 2018, Voss and Widmer 1997). Antiseptic handrubs based on non-alcoholic antiseptics are available but evidence suggests that alcohol is the most useful agent in terms of the range and speed of antimicrobial activity (Rotter 2001, WHO 2009a).

Some alcohol-based handrubs may also be used for surgical scrub and there is evidence that they may have greater efficacy than either povidone-iodine or chlorhexidine-based traditional soap products (Kampf and Kramer 2004, NHS England and NHSI 2019, Widmer 2013).

Hand washing

EVIDENCE-BASED APPROACHES

Hand washing involves three important stages: preparation, washing and rinsing, and drying (NHS England and NHSI 2019).

Hands should always be wet under running tepid water before applying soap. This is to allow the soap to lather when the hands are rubbed together. It is the friction and the lather that removes the dirt and debris and moves the transient organisms to the surface so that they can be effectively rinsed away under the running water. Wetting also reduces the risk of skin irritation. The hands should be rubbed for between 15 and 30 seconds with particular attention paid to the thumbs and the tips of the fingers (Figure 4.10).

It is essential that hands are dried thoroughly after washing; this is because bacteria (especially gram negatives such as *E. coli*) can multiply on a wet surface, leaving hands contaminated. Good-quality paper towels are recommended in hospital settings (NHS England and NHSI 2019). Warm air dryers may be effective but are noisy in clinical areas and there are some concerns that they may increase the number of bacteria in the washroom and lead to them spreading (Best et al. 2018).

Figure 4.10 Correct position to wash hands.



Hand care

Hands are used continually by healthcare workers, so it is important that they are maintained in a healthy condition. Dry, excoriated skin is more likely to shed micro-organisms to others and more likely to become contaminated, which may be harmful to the individual. Staff with acute or chronic skin lesions, conditions or reactions, or possible dermatitis, should seek advice from their local occupational health advisor.

Cuts and abrasions must be covered with a water-impermeable dressing prior to clinical contact. It is especially important that staff with skin lesions that cannot be adequately covered seek advice from the occupational health department as it may not be safe for them to work, especially if they are undertaking high-risk aseptic procedures (NICE 2017).

Skin damage and dryness often result from frequent use of harsh soap products, application of soap to dry hands, or inadequate rinsing of soap from the hands. It is essential that correct technique is used to minimize this risk. Alcohol-based sanitizer products may be better for the skin than repeated washing with soap and water, which can remove the skin's natural oils; this is because the alcohol-based products contain emollients, which are rubbed back into the hands as they are **decontaminated**.

Hand cream may help to prevent dry and chapped skin. This should be supplied from a dispenser or be for personal use, as communal jars may become contaminated and become a source of infection.

Procedure guideline 4.1 Hand washing

Essential equipment

- Handwash basin
- Liquid soap
- Paper towels
- Domestic waste bin

Action	Rationale
Pre-procedure	
1 Remove wristwatch, any rings and/or bracelets and roll up sleeves. <i>Note:</i> it is good practice to remove all hand and wrist jewellery and roll up sleeves before entering any clinical area, and the Department of Health has instructed NHS trusts to implement a 'bare below the elbows' dress code.	Jewellery inhibits good hand washing. Dirt and bacteria can remain beneath jewellery after hand washing. Long sleeves prevent washing of wrists and will easily become contaminated and so a route of transmission of micro-organisms (DH 2010b, C ; WHO 2009a, C). Many organizations' dress codes allow staff to wear wedding rings while providing care. Although it can be argued that a smooth ring is less likely to retain dirt and bacteria than one with a stone or engraving, there is no evidence to suggest that wedding rings inhibit hand decontamination any less than other rings. E
2 Cover cuts and abrasions on hands with waterproof dressings.	Cuts and abrasions can become contaminated with bacteria and cannot be easily cleaned. Repeated hand washing can worsen an injury (WHO 2009a, C). Breaks in the skin will allow the entry of potential pathogens . E
3 Remove nail varnish and artificial nails (most uniform policies and dress codes prohibit these). Nails must also be short and clean.	Long and false nails and imperfections in nail polish harbour dirt and bacteria that are not effectively removed by hand washing (WHO 2009a, C).
Procedure	
4 Turn on the taps and where possible direct the water flow away from the plughole. Run the water at a flow rate that prevents splashing.	The plughole and the associated waste are often contaminated with micro-organisms, which could be transferred to the environment or the user if splashing occurs (Aranega-Bou et al. 2019, R ; Garvey et al. 2016, C).
5 Run the water to a comfortable temperature.	Warm water is more pleasant to wash with than cold so hand washing is more likely to be carried out effectively. E Water that is too hot could cause scalding (DH 2017, C).
6 Wet the surface of the hands and wrists.	Soap applied directly onto dry hands may damage the skin. The water will also quickly mix with the soap to speed up hand washing. E
7 Apply liquid soap and water to all surfaces of the hands.	Liquid soap is very effective in removing dirt, organic material and any loosely adherent transient flora. Tablets of soap can become contaminated, potentially transferring micro-organisms from one user to another, but may be used if liquid soap is unavailable (WHO 2009a, C). To ensure all surfaces of the hands are cleaned. E
8 Rub hands together for a minimum of 10–15 seconds, paying particular attention to between the fingers and the tips of the fingers and thumbs (Action figure 8). The areas that are most frequently missed through poor hand hygiene technique are shown in Figure 4.7.	To ensure all surfaces of the hands are cleaned. Areas that are missed can be a source of cross-infection (Fraise and Bradley 2009, E).
9 Rinse soap off hands thoroughly.	Soap residue can lead to irritation and damage to the skin. Damaged skin does not provide a barrier to infection for the healthcare worker and can become colonized with potentially pathogenic bacteria, leading to cross-infection (DH 2017, C).
10 Turn off the taps using a wrist or elbow. If the taps are not lever-type, turn them off using a paper hand towel to prevent contact.	To avoid recontaminating hands. E
Post-procedure	
11 Dry hands thoroughly with a disposable paper towel from a towel dispenser.	Damp hands encourage the multiplication of bacteria and can become sore (DH 2017, C).

- 12 Dispose of used paper towels in a black bag in a foot-operated waste bin.

Paper towels used to dry the hands are normally non-hazardous and can be disposed of via the domestic waste stream (DH 2013b, **C**).

Using a foot-operated waste bin prevents contamination of the hands. **E**

Electric hand dryers are generally not recommended for use in clinical areas (Best et al. 2018, **E**).



Action Figure 8 (1) Rub hands palm to palm. (2) Rub the back of each hand with the palm of the other hand with fingers interlaced. (3) Rub palm to palm with fingers interlaced. Rub with the backs of the fingers against the opposing palms with fingers interlocked. Rub the tips of the fingers. Rub the tips of the fingers in the opposite palm in a circular motion. (4) Rub each thumb clasped in the opposite hand using a rotational movement. (5) Rub each wrist with the opposite hand. (6) Rinse hands with water.

Use of alcohol-based handrub

EVIDENCE-BASED APPROACHES

Alcohol-based handrub should be applied in a sufficient quantity to physically clean hands. It should be rubbed into all surfaces

until it has evaporated and the hands are dry (NHS England and NHSI 2019).

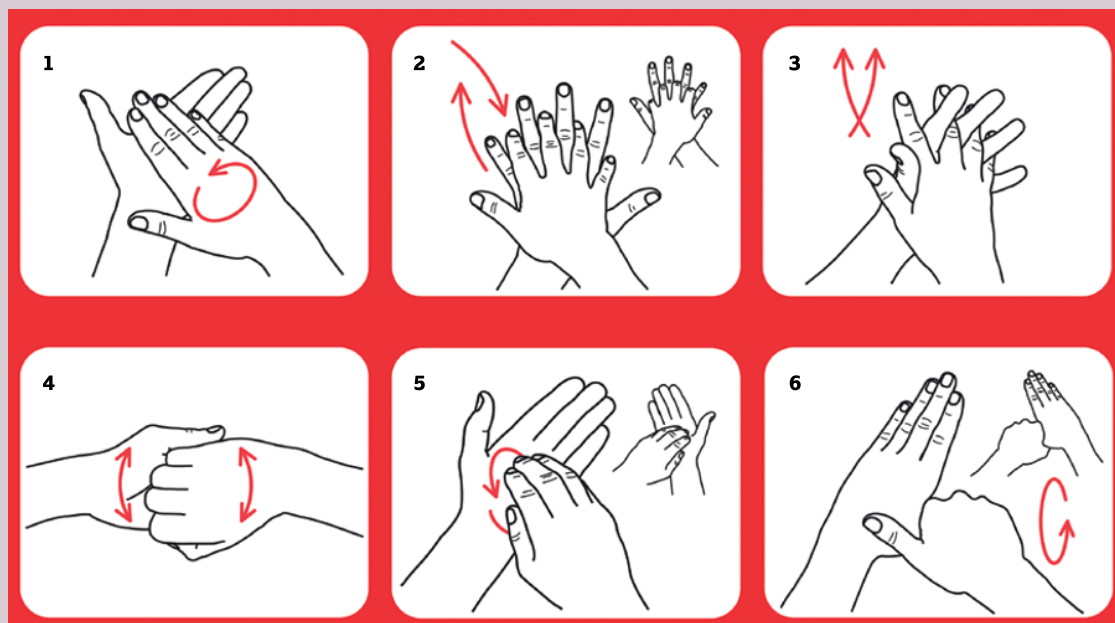
Procedure guideline 4.2 Hand decontamination using an alcohol-based handrub

Essential equipment

- Alcohol-based handrub

Action	Rationale
Procedure	
1 Dispense the amount of alcohol-based handrub indicated in the manufacturer's instructions into the palm of one hand. If hands are large, a greater amount may be needed to ensure coverage.	Too much handrub will take longer to dry and may consequently cause delays; too little will not decontaminate hands adequately. E
2 Rub the alcohol-based handrub into all areas of the hands until the hands are dry, using the illustrated actions in Action figure 2 .	To ensure all areas of the hands are decontaminated. Alcohol is a rapid-acting disinfectant with the added advantage that it evaporates, leaving the hands dry. This prevents contamination of equipment while facilitating the application of gloves (WHO 2009a, C).

(continued)

Procedure guideline 4.2 Hand decontamination using an alcohol-based handrub (*continued*)

Action Figure 2 Alcohol-based handrub hand hygiene technique for visibly clean hands. After applying a palmful of the product in a cupped hand: (1) rub hands palm to palm. (2) Rub right palm over left dorsum with interlaced fingers and vice versa. (3) Rub palm to palm with fingers interlaced. (4) Rub the backs of the fingers against the opposing palms with fingers interlocked. (5) Rub rotationally, backwards and forwards, with clasped fingers of right hand in left palm and vice versa. (6) Rub rotationally with the left thumb clasped in the right palm and vice versa. *Source:* Reproduced from Stewardson et al. (2014). <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0105866>. Licensed under CC BY 4.0.



Learning Activity 4.2

Clinical application

The ward manager asks you to help support Caitlin, a newly appointed healthcare assistant, who is studying for her Care Certificate. She is exploring the topic of hand hygiene and has some questions to answer. Because she is new to healthcare, she needs some guidance. Help Caitlin to identify the correct responses to these questions.

- 1 Which of the following will increase the risk of infection transmission despite hand washing? Choose an option.
 - A Broken skin, nail varnish, wearing a ring with a stone, false nails
 - B Nail varnish, wearing a ring with a stone, false nails, damp skin
 - C Broken skin, nail varnish, damp skin, tattoos
 - D Broken skin, wearing a ring with a stone, false nails, damp skin
 - E Nail varnish, false nails, damp skin, tattoos

- 2 Which of these nursing activities result in hand contamination? Select all that apply.

- Bed making
- Bedbathing
- Emptying urine bottles
- Handling curtains
- Assisting a patient to use a commode

- 3 What are the '5 Moments' for hand hygiene?

- 4 You are bedbathing a patient with Caitlin. The water in the washbowl needs to be refreshed, as it has become tepid and soapy. Caitlin goes towards the ward sink to perform this activity. Is this correct?

- 5 Why is hand drying important?

See the answers on the companion site of this student edition:
www.royalmarsdenmanual.com/student10e.



Surgical hand antisepsis

EVIDENCE-BASED APPROACHES

Surgical hand antisepsis is the antiseptic surgical scrub or antiseptic handrub performed before donning sterile attire pre-operatively. The aim is to reduce the number of resident and

transient flora to a minimum and also to inhibit their regrowth for as long as possible, not just on the hands but also on the wrists and forearms (AIPP 2017).

Surgical hand antisepsis can be performed using an approved antiseptic surgical scrub such as chlorhexidine gluconate or povidone-iodine, or an approved alcohol-based handrub. There is