

A competence framework for orthopaedic and trauma practitioners





Royal College
of Nursing

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1

Introduction

The rationale for the framework

This document is intended to provide a framework for orthopaedic and trauma practitioners in clinical practice. It is recognised that trauma and orthopaedic practitioners require specific, specialist knowledge and skills at different levels of practice (Clarke, 2003; Santy et al., 2005; RCN, 2005; Lucas, 2006; Flynn and Whitehead, 2006; Drozd, Jester and Santy, 2007).

The competences provide clarity for organisations as to what they can expect from orthopaedic and trauma practitioners, and can also be used as benchmarks for organisations to use in the recruitment, selection, development, appraisal and individual performance management. Alongside this, the competences can contribute to the continuing professional development of individuals in post to maintain and improve competence.

Within this competence framework the expectations of trauma and orthopaedic practitioners (Level 2-8) are clear and consistent. It is essential that appropriate education, training and development are in place to ensure that the right level of practitioners, with the requisite knowledge, understanding and skills, are caring for orthopaedic and trauma patients.

The benefits of the framework

This competence framework provides a foundation on which to develop and evaluate safe and effective orthopaedic and trauma practitioners. Contemporary health care necessitates both efficiency and competence. This framework aims to provide a solid foundation to optimise evidence-based practice and provide safe, competent care.

The development of the competences

Trauma and orthopaedic nursing competences were first published in 2005 by the Royal College of Nursing (RCN). These competences provided an overarching framework to enable trauma and orthopaedic practitioners to enhance their knowledge and skills to increase the safety and quality of patient care.

These revised orthopaedic and trauma competences (RCN, 2012) have been further developed by a competence development group representing adult and children's orthopaedic and trauma nursing. The group included representatives from Northern Ireland, Scotland, England and Wales working within both practice and educational settings.

Health care assistants and assistant/associate practitioners have been included in this new framework as these practitioners are directly involved in the care of orthopaedic and trauma patients. The skills and knowledge required by orthopaedic and trauma practitioners in the paediatric setting has also been evaluated (Judd and Wright, 2008; Judd, 2010).

Throughout this framework please note that where the terms 'child' or 'children' are used, these refer to 'infant', 'child' and 'young person'. Children or young people will be referred to as CYP.

RCN competence statement for paediatric nurses

The orthopaedic competences outlined in this document can be applied across the age range that extends from children to the older person, with some specific amendments for paediatrics. All children must be cared for by competent practitioners – for example, registered nurse (RN) Child or registered sick children's nurse (RSCN).

Professionals caring for children must have a sound knowledge of child anatomy and physiology, including child development (both physical and psychosocial issues). Children's nurses will understand the different physical aspects of caring for children with an orthopaedic/trauma condition, conservative management over surgical intervention, using appropriately sized equipment and different treatment plans appropriate to the child's age and physical size.

They need to understand a child's cognitive abilities and be able to communicate in an appropriate manner. The health care professional also needs to recognise the pivotal role of the child's parents/guardians and be able to fully involve them in the care of their child. This involves explaining orthopaedic diagnosis and treatment plans and encouraging parents to care for their child in the hospital

environment, while also supporting/providing technical orthopaedic clinical care. This extends to educating the family to be able to support the child's ongoing care at home.

Children's nurses need to be aware of the effect a strange clinical environment can have on a CYP and know how to familiarise the environment. They need to understand and be able to employ distraction therapy.

Health care professionals caring for children also need to understand child development and behaviour to promote successful interaction with the child, and to be able to detect delayed development and abnormal behaviours. There has to be an acute awareness of child protection issues and concerns, with a nurse needing to possess a detailed knowledge of child protection policy and procedures.

When the framework does not apply

The competences are for the purpose of practitioners working in acute and primary orthopaedic trauma settings in the United Kingdom. They have not been developed for the emergency department or critical care practitioners, as these are covered by the relevant RCN forums.

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The structure of the competence framework

This framework has been developed using the levels of practice used in the *NHS Career Framework* (2009). There are four core domains of practice within orthopaedic and trauma practice:

- partner/guide
- comfort enhancer
- risk manager
- technician.

There are competences within each of the four domains and different levels of practice for each competence. Thus, it is possible to be working at a higher level for some competences and lower levels for others. For example, in the technician domain, you may be at Level 5 in the casting subsection and Level 7 within the mobility aids subsection. The competences within each domain build upon the previous levels of practice.

The majority of practitioners working in NHS organisations will be working within the NHS Knowledge and Skills Framework (KSF) (Department of Health 2004) and the competences have been linked to this.

Please note that in the competence framework the term ‘carer’ refers to family members or people who provide significant care to the patient.

The core competence domains

Please refer to Table 1 for the core competence domains and the overall structure of the framework.

These four core domains were used in the original orthopaedic and trauma nursing competences (RCN, 2005) following a national consultation project with trauma and orthopaedic nurses. The competences define a minimum threshold for each level of practice; however the expectation is that practitioners will develop their practice beyond initial competence to optimise the quality of patient care.

Table 1 **Competence framework structure**

Domains of practice:

- partner/guide
- comfort enhancer
- risk manager
- technician.

Level of practice – the level that the practitioner is working at based on the *NHS Career Framework* (2009).

Competence statements – these are the role expectations at different levels of practice, and describe what is required at each level.

Performance criteria – describe what competent performance is at each of the different levels of practice.

Knowledge, understanding and skills – the specific orthopaedic and trauma knowledge, understanding and skills that are required at each level of practice.

Contextual factors – relates to the evidence-based or best practice that is available.

Knowledge and Skills Framework (KSF) – here links are made between the competences and the various dimensions and levels within the NHS KSF.

The competence levels

The *NHS Career Framework* comprises nine different levels at which a function may be performed, and reflects the level of responsibility, autonomy and decision making expected in a role:

- Level 1** the entry level for a support worker in the health environment; these practitioners should soon move to Level 2
- Level 2** health care support workers
- Level 3** senior health care support workers
- Level 4** assistant/associate practitioners
- Level 5** a newly qualified, competent staff nurse
- Level 6** an experienced, proficient nurse

- Level 7** a senior practitioner/expert nurse who undertakes holistic history-taking and physical assessment of the patient with a musculoskeletal condition or injury; educated to masters degree or doctoral level in advanced clinical practice
- Level 8** a consultant nurse who diagnoses and prescribes treatment for patients with a musculoskeletal condition or injury; acts as a resource providing advanced clinical expert advice to other nurses and health care professionals; integrates evidence-based practice from different sources in order to ensure the provision of high-quality care; contributes to the knowledge base through audit and research and develops guidelines and standards for practice
- Level 9** retains ultimate responsibility for clinical care, decision making and full accountability.

This document covers practice Levels 2-8 because there are few, if any, practitioners working at Level 9 within the orthopaedic and trauma clinical setting. The competence levels are not bands and should not be confused with 'banding' as per the *Agenda for Change* (DH, 2004).

The levels of practice are cumulative, with the practitioner being required to achieve all the pre-requisite levels; for example, to be deemed competent at Level 6 evidence of competence of Levels 2-5 are needed. The framework should be used alongside the Nursing and Midwifery Council's *The Code of Conduct* (2008) and *The Principles of Nursing Practice* (RCN, 2010) for practice Levels 5-8.

How to use the competence framework

The competences inform professional development. It is important that an honest assessment of current level of knowledge, understanding and skills is undertaken and the ability to apply these in practice. Help can be provided from colleagues, peers and managers while undertaking this assessment. Ensure that you understand what the competence statement is asking of you.

Responsibility has to be taken for producing the evidence to support the achievement of each competence at the

desired level. There are various forms of evidence that you can use including:

- self study
- undertaking learning programmes and/or academic qualifications
- seeking learning opportunities in the workplace – for example, job shadowing
- supervised practice with direct observation
- case studies
- viva voce (an oral assessment/exam)
- observed structured clinical examination (OSCE)
- practice write-ups
- oral and/or written reflections on the care you have provided
- portfolio of evidence
- reflective practice
- critical incident analysis.

This evidence should be kept in a professional portfolio and knowledge, skills and practice should be updated regularly.

3

The competences

Partner/guide

This domain relates to the partnership between the patient and the health care professional and the unique role in guiding the patient through their journey in orthopaedic and trauma health care.

Supporting the patient and ensuring they are at the centre of their care is essential. In addition, working in partnership with the patient's family/informal carers is vital, as is liaison and collaboration with all members of the multi-professional team (MPT) to ensure seamless holistic care.

Partner/guide competences

- Support and guidance.
- Patient information and education.
- Health promotion.
- Rehabilitation.

Partner/guide

Career framework level	Competence	Performance criteria	Knowledge, understanding and skills	Contextual factors	KSF
Health care support worker Level 2	Assists with patient care through effective communication under the direct supervision of a registered nurse.	Provides basic information to the patient and carers about their musculoskeletal condition/injury. Supports and encourages the patient when mobilising, according to the rehabilitation plan, with a focus on maintaining musculoskeletal integrity and mobility.	Applies basic knowledge of the musculoskeletal system to patient care. Possesses effective communication skills. Utilises excellent customer care skills.		Communication. Responsibilities for patient care. Core 1 Level 1-2 HWB1 Level 1
Senior health care support worker Level 3	Assists with patient care for an orthopaedic or trauma patient under the indirect supervision of a registered nurse.	All the above. Communicates basic information to the orthopaedic/trauma patient at a level that is appropriate. Accurately reports work activities to senior staff verbally and via written documentation.	All the above. Possesses sufficient understanding of musculoskeletal conditions, surgery and injuries to safely care for a patient under the direct supervision of a registered nurse.	All the above.	
Assistant practitioner Level 4	Facilitates holistic patient care through effective communication, delivery and health promotion under the indirect supervision of a registered nurse.	All the above. Recognises the psychological consequences of musculoskeletal conditions and injuries and reports concerns to a registered nurse. Uses simple health promotion strategies to promote musculoskeletal health within the immediate community.	All the above.		
Competent nurse Level 5	Facilitates holistic patient care through effective communication, delivery and delegation.	All the above. Gives detailed evidence-based verbal and written information and education to patients and carers Advises the patient about bone health in terms of healthy eating and healthy living. Develops and executes remobilisation and rehabilitation plans according to patient need within an MPT. Assesses the psychological impact of orthopaedic and trauma conditions and injuries on individuals and their families and provides appropriate psychological support. Makes timely and appropriate referrals to other professionals where the patient's physical, social and psychological needs indicate necessary. Assesses, plans, implements and evaluates care for a wide range of patients with a wide range of musculoskeletal conditions and injuries. Plans and manages discharge and/or transfer for patients with uncomplicated discharge needs. Liaises with members of the MPT in executing an uncomplicated discharge for a patient.	All the above.	Kneale and Knight (1997) BOA (2011) RCN (2007) An anatomy and physiology textbook.	Core 1 Level 3 HWB1 Level 2 HWB4 Level 3 HWB6 Level 3 HWB7 Level 3 HWB2 Level 3

Partner/guide (continued)

Career framework level	Competence	Performance criteria	Knowledge, understanding and skills	Contextual factors	KSF
Experienced /proficient nurse Level 6	Co-ordinates and guides patients and carers on their orthopaedic/trauma care journey.	All the above. Educates less experienced staff in the anatomy and physiology of the musculoskeletal system, orthopaedic and trauma conditions, surgery and injuries and their implications for care.	All the above.	Naidoo and Wills (2009)	Core 1 Level 3 G1 Level 3 HWB4 Level 3 HWB1 Level 3
Senior practitioner/expert nurse Level 7	Actively develops the practice of others in patient and carer education and support.	All the above. Develops and updates evidence-based patient and carer written information and guidelines. Uses a variety of media for teaching delivery. Uses complex health promotion strategies to promote musculoskeletal health within the wider community. Educates and updates other staff in contemporary evidence-based practices in orthopaedic and trauma practice. Provides expert physical and psychological support to patients with complex needs including multiple trauma and post traumatic stress. Advises other staff on admission and discharge of patients with complex needs. Audits, develops and improves practice in relation to admission and discharge.	All the above.		Core 1 Level 3 G1 Level 3 G1 Level 3
Consultant nurse Level 8	Develops and leads strategic plans to promote the musculoskeletal health of the wider community.	All the above.	All the above. Is research competent and generating new knowledge, developing evidence-based practice, policy and protocol in relation to supporting and guiding patients with musculoskeletal conditions and/or injuries.		Core 4 Level 4

Comfort enhancer

Comfort is a concept which is central to the fundamental care of the orthopaedic/trauma patient. Comfort is a complex human experience which can be interpreted in different ways. It is closely related to the experience of pain, especially for patients who have received an assault to musculoskeletal tissue (Morse and Proctor, 1998; Tutton and Seers, 2004; Cohen, 2009).

The comfort of orthopaedic/trauma patients is paramount for high-quality care and positive health outcomes. This essential aspect of care may be more complex for the orthopaedic/trauma patient due to the nature of their condition, injury or surgery. Musculoskeletal instability and movement can result in significant pain and discomfort.

Competence in providing essential care within this context is therefore central to high-quality care and again highlights the need for that care to be provided in a specialist setting where practitioners possess the requisite specialist competence (Santy et al., 2005; Drozd et al., 2007).

Comfort enhancer competences

- Pain and comfort assessment.
- Pain and comfort management.
- Moving and handling.

Comfort enhancer

Career framework level	Competence	Performance criteria	Knowledge, understanding and skills	Contextual factors	KSF
Health care support worker Level 2	Assists with essential care which takes into account the orthopaedic/trauma patient's pain and comfort levels under the direct supervision of a registered nurse.	Recognises and reports unacceptable levels of pain to a registered nurse. Provides care which meets the patient's hygiene and comfort needs taking into account their musculoskeletal condition and their cultural and spiritual needs.	Demonstrates an awareness of the impact of unresolved pain on the patient's recovery and/or rehabilitation and quality of life. Describes simple non-pharmacological strategies for the management of pain and the enhancement of comfort. Understands the importance of meeting the patient's hygiene and comfort needs.	The Equality Act (2010)	HWB2 Level 1 HWB6 Level 2 HWB5 Level 2 HWB7 Level 1
Senior health care support worker Level 3	Assists with essential care which takes into account the orthopaedic/trauma patient's pain and comfort levels under the direct supervision of a registered nurse.	All the above. Ensures the patient's pain management needs have been met. Uses simple, non-pharmacological strategies to help the patients to manage pain – for example, distraction, heat and ice therapy.	All the above. Recognises pain and reports to a qualified nurse. Recognises when a patient has received adequate pain relief prior to assisting with their care. Understands the need for positioning and supporting the patient's trunk, limbs and joints for comfort and healing.		
Assistant practitioner Level 4	Provides essential care which takes into account the patient's pain and comfort levels, under the indirect supervision of a registered nurse.	All the above. Accurately undertakes pain assessment. Ensures that the patient's trunk, limbs and joints are positioned and supported comfortably taking into account the musculoskeletal condition or injury. Effectively uses pillows and other devices for the management of pain and comfort.	All the above. Demonstrates an awareness of the impact of unresolved pain on the patient's recovery and/or rehabilitation and quality of life. Displays a basic knowledge of the anatomy and physiology of the musculoskeletal system to inform an understanding of how to position, reposition and support patients in enhancing comfort.	British Pain Society (2007a) British Pain Society (2007b) Royal College of Nursing (2009)	
Competent nurse Level 5	Assesses, plans, implements and evaluates care in order to meet the patient's anxiety, distress, pain and comfort needs.	All the above. Assesses and monitors pain and anxiety levels for patients with chronic and acute pain showing an understanding of the nature of pain in musculoskeletal conditions or injuries. All patients, including children, must have their pain levels established using an appropriate pain assessment tool. Administers prescribed analgesia according to assessed need. Appropriate distraction techniques are used and a play specialist is employed for children. Uses a selection of simple, alternative or complementary strategies for pain management. Regular and ongoing evaluation of pain management strategies. Makes timely and appropriate referrals to experts, such as the pain team, according to patient need. Supervises and manages the use of devices for acute and chronic pain; for example, patient controlled analgesia (PCA) and epidural infusions.	All the above. Adopts an evidence-based practice approach to pain and comfort management strategies. Appreciates the nature of acute and chronic pain in relation to musculoskeletal conditions and injuries. Possesses a sound knowledge of analgesic medications and adjunct medications such as non-steroidal anti-inflammatory drugs. Provides a sound rationale for alternative or complementary strategies for pain relief and comfort for patients with musculoskeletal conditions and/or injuries. Understands the different methods of pain relief and can evaluate their suitability for individual patients. Supports patients and carers in managing anxiety, distress, pain and comfort. Demonstrates individual accountability for the patient's pain and comfort management.	RCN (2002) NCEPOD (2010) Patients Association (2012) DH (2011) The Royal College of Anaesthetists (2004) NICE (2005) SIGN (2009) NICE (2011) RCN (2009) www.mhra.gov.uk/publications NMC (2008)	HWB2 Level 3 HWB6 Level 3 HWB5 Level 3 HWB7 Level 3

Comfort enhancer (continued)

Career framework level	Competence	Performance criteria	Knowledge, understanding and skills	Contextual factors	KSF
Experienced /proficient nurse Level 6	Assesses, plans, delivers and evaluates care for patients with complex comfort and pain management needs.	All the above. Solves problems and makes decisions regarding the maintenance of comfort with respect to the musculoskeletal conditions and injuries. Prescribes analgesia under agreed protocols according to patient need. Teaches other staff about pain assessment and pain management techniques.	All the above. Articulates the pathophysiology of acute and chronic pain. Completes an NMC-approved, nurse prescribing module.	NMC (2006) RCN (2006)	HWB2 Level 4 HWB6 Level 4 HWB5 Level 4 HWB7 Level 4 Responsibility for patient care G1
Senior practitioner/ expert nurse Level 7	Actively seeks to improve practice in the assessment and management of pain and comfort for patients suffering with musculoskeletal disorders or injuries.	All the above. Takes responsibility for auditing practice to ensure high-quality care in relation to comfort and pain management. Develops guidance and protocols for the management of pain and comfort in liaison with other members of the MDT. Independently prescribes analgesia and/or other adjuncts. Provides expert advice to other staff providing care to patients with pain of an unresolved or complex nature.	All the above.	All the above.	G1 Level 3
Consultant nurse Level 8	Prescribes, implements, monitors and evaluates pain management regimens – both pharmacological and non-pharmacological.	All the above. Undertakes a comprehensive and holistic assessment of a patient with pain issues. Identifies risk factors and contraindications to treatments. Undertakes an audit of pain management performance and patient outcomes. Investigates root cause analysis of any deviations/outcomes from protocols.	All the above. Develops evidence-based protocols and guidance for the management of pain in patients with musculoskeletal conditions or injuries. Develops educational tools for staff working with this patient group. Acts as a resource providing advanced, expert clinical advice to other nurses/health care professionals. Active involvement and instigation of research leading to new knowledge regarding pain assessment and management.	Cox, Hill and Lack (2012) DH (2010) International Council for Nurses (2008) RCN (2010) Scottish Government (2010)	G2 Level 3

Risk manager

Orthopaedic practitioners need to safely assess and manage the delivery of orthopaedic and trauma care.

One of the most central aspects of orthopaedic and trauma practice is the fact that orthopaedic and trauma surgery and injuries may carry with them a high risk of complications. The range of complications varies from those which are common to all situations where there is immobility and/or an assault to body tissues. However, there are a number of complications which are specific to trauma and orthopaedic patients such as compartment syndrome, fat embolism, osteomyelitis, neurovascular impairment, venous thromboembolism (VTE) and complex regional pain syndrome. It is the nature of these complications which requires highly specialised care.

Risk manager competences

- Risk assessment.
- Risk management.
- Discharge planning.
- Orthopaedic and trauma practitioner knowledge.

Management of clinical risks associated with trauma and orthopaedic practice

Career framework level	Competence	Performance criteria	Knowledge, understanding and skills	Contextual factors	KSF
Health care support worker Level 2	Assists in undertaking basic risk assessments for patients with a range of musculoskeletal conditions or injuries under the direct supervision of a registered nurse.	Assists in obtaining and recording basic assessment data including vital observations under the direct supervision of a registered nurse.* Actively adheres to local policy for manual handling in order to prevent injury to the patient, self and others. Participates in a culture which focuses on the management of risk and the prevention of complications.	Discusses the purpose of obtaining temperature, heart rate, blood pressure, and respirations for patients. Accurately obtains basic vital signs of patients under the direct supervision of a registered nurse. Understands the importance of recording and reporting all abnormal basic vital signs to a registered nurse. Understands the normal parameters for vital observations.	HSE (2012) Attends relevant training related to the operation of equipment such as tympanic thermometers and electronic blood pressure machines.	Core 3 Level 2 HWB1 Level 1 HWB3 Level 2 HWB5 Level 2
Senior health care support worker Level 3	Assists in undertaking basic risk assessments for patients with a range of musculoskeletal conditions or injuries under the direct supervision of a registered nurse.	All the above. Assists in obtaining, reporting and recording basic assessment data including vital signs under indirect supervision. Not neurovascular observations.	All the above.	All the above.	
Assistant practitioner Level 4	Undertakes basic risk assessments for patients with a range of musculoskeletal conditions and/or injuries under the indirect supervision of a registered nurse.	All the above. Accurately performs, reports and records basic assessment data including vital signs and neurovascular observations. Reports any suspected signs and symptoms of complications to a registered nurse. Undertakes actions required as a result of the risk assessment data and includes in the care delivery. Actively adheres to local policy for manual handling in order to prevent injury to the patient, self and others. Participates in a culture which focuses on the management of risk and the prevention of complications.	All the above. Possesses the underpinning knowledge and skill in relation to obtaining a patient's vital signs and neurovascular observations. Demonstrates the ability to promptly recognise suspected complications and reports immediately to a registered nurse.	DH (2010) SIGN (2010) Wright (2007) Judge (2007)	

*Please note that this does not include neurovascular observations.

Management of clinical risks associated with trauma and orthopaedic practice (continued)

Career framework level	Competence	Performance criteria	Knowledge, understanding and skills	Contextual factors	KSF
Competent nurse Level 5	Actively uses evidence-based preventative strategies following risk assessment for common conditions affecting patients with musculoskeletal conditions or injuries.	<p>All the above.</p> <p>Assesses patient risk of complications and injury such as falls, malnutrition, pressure ulcers and VTE using valid and reliable tools.</p> <p>Implements and evaluates evidence-based strategies to minimise specific complications including:</p> <ul style="list-style-type: none"> • VTE • compartment syndrome • fat emboli • chest infection • UTI/urinary retention • pressure ulcers • malnutrition • primary and secondary wound infection • osteomyelitis • neurovascular compromise • casts/splint sores • implant failure. <p>Recognises actual and potential complications of orthopaedic and trauma conditions, injuries and surgery.</p> <p>Assesses each child for potential safety risks. This will be dependent on age, mobility and ability to communicate.</p> <p>Assesses and observes each child, older adult or vulnerable person for physical and/or behavioural indications of abuse. Act according to local policy if a cause for concern is identified.</p> <p>Promptly recognises and reports all complications to medical staff.</p> <p>Informs and educates patients and carers about the risks of musculoskeletal conditions and injuries.</p> <p>Uses evidence-based preventative measures.</p> <p>Prescribes a plan of care based on risk assessment and management.</p> <p>Prescribes and delivers care to patients who have complications.</p> <p>Refers to other members of the MPT such as tissue viability.</p>	All the above.	<p>DH (2001)</p> <p>DH (2004)</p> <p>DH (2010)</p> <p>NMC (2012)</p> <p>MHRA (2011)</p> <p>The Scottish Government (2008)</p> <p>Safeguarding Children (2012)</p> <p>RCN (2011)</p> <p>Patients Association (2012)</p>	<p>Core 3 Level 2</p> <p>HWB1 Level 3</p> <p>HWB3 Level 3</p> <p>HWB5 Level 3</p> <p>HWB7 Level 3</p>
Experienced /proficient nurse Level 6	Applies specialised orthopaedic and trauma care knowledge and skills in the prevention and management of complications.	<p>All the above.</p> <p>Uses knowledge and experience to educate other staff to ensure their understanding of the complications of orthopaedic, trauma, surgery and conditions.</p>	All the above.		<p>Core 2 Level 2</p> <p>Core 5 Level 2</p>

Management of clinical risks associated with trauma and orthopaedic practice (continued)

Career framework level	Competence	Performance criteria	Knowledge, understanding and skills	Contextual factors	KSF
Senior practitioner /expert nurse Level 7	Monitors, evaluates and audits care given to patients at risk of suffering from orthopaedic or trauma complications.	All the above. Reports identified risks and/or suboptimal outcomes to senior management. Leads on improving identified concerns through education of staff, changing clinical practice and amending resources as necessary. Undertakes root cause analysis of discharge problems. Requests and interprets clinical investigations to facilitate diagnosis of complications; for example, ultrasound scan, bloods, skeletal x-rays.	All the above. Authority to change practice. Competent with audit.		Core 5 Level 4
Consultant nurse Level 8	Creates and develops a culture of quality care by leading on specific improvements that ensure that the complex needs of orthopaedic and trauma patients are met.	All the above. Undertakes root cause analysis of morbidity complications and untoward incidents. Develops evidence-based guidance and protocols regarding the prevention and management of orthopaedic and trauma complications. Leads on clinical risk assessment. Leads on corrective action to improve clinical practice.	All the above. Authority to change practice. Competent with audit.		Core 5 Level 4

Technician

This domain relates to the technical aspects of orthopaedic and trauma care and encompasses the highly technical nature of orthopaedic and trauma practice; for example, the knowledge, understanding and skill required for specialised devices and equipment which are used to either treat orthopaedic conditions and injuries or to protect patients from complications.

The trauma and orthopaedic practitioner therefore needs to be competent in managing and using such treatment modalities.

These technical aspects of care carry their own risk of complications and are therefore linked to the risk management domain.

Many of these technical aspects of trauma and orthopaedic care are highly specialised and some practitioners develop enhanced expertise in specific aspects; for example while many practitioners care for patients with casts, patients require the expertise of highly specialised practitioners for the application of casts. In turn, these highly skilled and educated practitioners require focused, in-depth training and education.

Keeping specialist skills up to date is imperative for safe and effective orthopaedic trauma care; for example, the use of traction for adults is now used less extensively and therefore these competences may require regular updating.

Technician competences

- Traction.
- Casting.
- External fixator and skeletal pin site care.
- Appliances, slings, splints and braces.
- Mobility aids.
- Cervical collars.

Traction

Career framework level	Competence	Performance criteria	Knowledge, understanding and skills	Contextual factors	KSF
Health care support worker Level 2	Assists with the application of skin traction and/or gallows/Bryant's traction and cares for a patient treated with traction under the direct supervision of a registered nurse.	<p>Collects appropriate equipment when given a comprehensive list.</p> <p>Assists in preparing the clinical area under the direct supervision of a registered nurse.</p> <p>Assists with the care of a patient being treated with traction.</p>	<p>Understands the need for the traction.</p> <p>Can name the equipment.</p> <p>Can prepare the clinical area with appropriate instruction and direct supervision.</p>		HWB5 HWB7 Level 2
Senior health care support worker Level 3	Assists with the application of skin traction and/or gallows/Bryant's traction as well as providing care for a patient being treated with traction, under the direct supervision of a registered nurse.	<p>All the above.</p> <p>Assists in the application of skin/gallows traction only with direct supervision from a registered nurse.</p> <p>Liaises with a registered nurse regarding the care of a patient being treated with traction.</p>	<p>All the above.</p> <p>Demonstrates a basic knowledge of traction and technical skill when assisting with the application of skin or Gallows traction.</p>		
Assistant practitioner Level 4	Applies skin traction and/or Gallows/Bryant's traction and cares for a patient being treated with traction, under the direct supervision of a registered nurse.	<p>All the above.</p> <p>Selects the appropriate traction equipment.</p> <p>Prepares the patient and the clinical area for application of traction.</p> <p>Safely assists with applying skin or Gallows/Bryant's traction.</p> <p>Safeguards the patient against injury from traction.</p> <p>Identifies the basic contraindications to treatment – such as skin reactions – and informs senior nurses.</p>	<p>All the above.</p> <p>Understands the principles of traction.</p> <p>Demonstrates how to apply skin/gallows/Bryant's traction under supervision.</p> <p>Understands and discusses the safety issues for a patient treated with traction.</p>		

Traction (continued)

Career framework level	Competence	Performance criteria	Knowledge, understanding and skills	Contextual factors	KSF
Competent nurse Level 5	Applies simple forms of traction following the prescription by others; for example, skin traction (Pugh's or gallows/Bryant's) and cares for a patient being treated with traction.	<p>All the above.</p> <p>Undertakes relevant risk assessments prior to applying traction; for example, moving and handling, health and safety and pressure area risk assessments.</p> <p>Undertakes psychological and physical preparation of the patient prior to and following application of traction.</p> <p>Includes family members in the preparation of patients for treatment with traction.</p> <p>Gains informed consent from the patient or carer prior to application or adjustment of traction.</p> <p>Prepares relevant traction equipment.</p> <p>Administers appropriate and adequate analgesia prior to application of traction.</p> <p>Measures and fits traction equipment that is the correct size and weight for the patient.</p> <p>Applies traction with regard for the anatomy of the limb/area and risks of damage to underlying structures.</p> <p>Checks the traction is working correctly and observes this regularly.</p> <p>Teaches the patient to undertake appropriate exercises while on traction in consultation with a physiotherapist.</p> <p>Promptly recognises and reports potential and actual problems to senior nursing staff.</p> <p>Teaches the patient, child, family about recognising potential complications.</p>	<p>All the above.</p> <p>Knowledge and understanding of the musculoskeletal condition as well as the management aims and purpose of traction.</p> <p>Describes the signs and symptoms of potential complications due to application of traction.</p>		<p>HWB7 Level 3</p> <p>HWB3 Level 3</p> <p>HWB1 Level 3</p> <p>HWB5 Level 3</p>
Experienced /proficient nurse Level 6	Applies more complex forms of traction; for example, Thomas splint or Dunlop traction.	<p>All the above.</p> <p>Rationalises the use of complex traction.</p> <p>Uses knowledge and experience to educate other staff to enhance their understanding of traction.</p> <p>Teaches the clinical skills of applying traction and caring for patients on traction, to other staff.</p>	All the above.	BAPRAS/ BOA (2009)	<p>HWB7 Level 3</p> <p>G1 Level 2</p>
Senior practitioner /expert nurse Level 7	Monitors, evaluates and supervises all aspects of traction care.	<p>All the above.</p> <p>Undertakes a comprehensive and holistic assessment of the clinical need for traction.</p> <p>Identifies the type of traction to be used and prescribes the weights in liaison with medical staff.</p> <p>Monitors, manages and evaluates the effects of traction.</p>	All the above.		<p>HWB7 Level 3</p> <p>G1 Level 2</p>
Consultant nurse Level 8	Leads on the development of evidence-based/best practice for patients receiving traction.	<p>All the above.</p> <p>Audits and further develops practice related to the care of patients with traction.</p>	All the above.		<p>HWB7 Level 4</p> <p>G1 Level 3</p>

Casting

Career framework level	Competence	Performance criteria	Knowledge, understanding and skills	Contextual factors	KSF
Health care support worker Level 2	To assist with the care of a patient with a cast or having a cast applied, under the direct supervision of a registered nurse.	Cares for a patient in a plaster cast under direct supervision of a registered nurse	Understands the reasons why a patient is immobilised in a cast.		Core 1 Level 1 & 2 HWB7 Level 1 & 2 HWB5 Level 1 & 2 HWB2 Level 1 HWB5 Level 1 & 2
Senior health care support worker Level 3	To assist with the care of a patient with a cast or having a cast applied, under the indirect supervision of a registered nurse.	All the above. Selects appropriate equipment for the application of a cast. Prepares the patient and the clinical area for application of a cast. Assists with the application of simple casts under direct supervision of appropriately qualified staff.	All the above.		
Assistant practitioner Level 4	To care for a patient with a cast or having a cast applied, under the indirect supervision of a registered nurse.	All the above. Identifies the basic contraindications to treatment with a cast; for example, skin rashes, severe eczema, and informs a senior nurse. Safeguards the patient against injury as a result of being treated with a cast. Advises the patient or child and family on caring for a plaster cast and the potential complications to look for, using age and cognitive level appropriate explanations.	All the above. Describes the care of a patient being treated with a cast. Discusses strategies to minimise damage to the cast by the patient or the environment. Describes the signs and symptoms of potential or actual complications due to the application of a cast.		

Casting (continued)

Career framework level	Competence	Performance criteria	Knowledge, understanding and skills	Contextual factors	KSF
Competent nurse Level 5	To care for a patient in a cast based on best practice and/or the evidence base.	<p>All the above.</p> <p>Undertakes physical and psychological preparation of the patient before, during and after cast application.</p> <p>Prepares the patient for a cast as well as gathering the appropriate equipment.</p> <p>Obtains informed consent is obtained from the patient.</p> <p>Pain assessment and management are included in the assessment and management plan for casting.</p> <p>Administers analgesia prior to the casting procedure</p> <p>Liaises with the MPT and appropriately qualified practitioners to ensure the safe application of casts.</p> <p>Discusses the complications of casting and the preventative strategies including:</p> <ul style="list-style-type: none"> elevation of the limb exercise of unaffected joints VTE prophylaxis correct casting procedure patient information regarding care of the cast. <p>Safely and competently performs the following:</p> <ul style="list-style-type: none"> trimming the cast bi-valving the cast windowing the cast. removing the cast. <p>Recognises and manages the risk of complications such as:</p> <ul style="list-style-type: none"> neurovascular impairment plaster sores compartment syndrome. <p>Documents neurovascular observations.</p> <p>Patient education is provided verbally.</p> <p>Written instructions regarding the care of the cast are explained and given to the patient/family.</p>	<p>Understands the rationale for casting as well as the underpinning anatomy and pathophysiology of conditions leading to treatment in casts.</p> <p>Cast adaptation and removal competences have been taught and assessed by appropriately qualified staff.</p> <p>Provides patient education in relation to patient self-care and management following discharge.</p>	<p>RCN SOTN (2000)</p> <p>Drozd, Miles and Davies (2009)</p> <p>Shields and Clarke (2011)</p>	<p>Core 1 Level 2</p> <p>HWB7 Level 2 & 3</p> <p>HWB1 Level 2 & 3</p> <p>HWB5 Level 2 & 3</p> <p>HWB7 Level 2 & 3</p> <p>HWB1 Level 2 & 3</p> <p>G1 Level 2</p>
Experienced /proficient nurse Level 6	To care for a patient in a cast based on best practice and/or the evidence base and supervises others in the delivery of care to patients with casts.	<p>All the above.</p> <p>Uses knowledge and experience to educate other staff to enhance their understanding of caring for patients and children with casts.</p> <p>Teaches evidence-based care of a patient in a cast to other staff.</p>	<p>All the above.</p> <p>If undertakes casting procedures, an assessment as competent at casting by a practitioner with appropriate knowledge and skills has been achieved.</p>	<p>Williams (2010)</p>	<p>G1 Level 2</p> <p>Core 1 Level 3</p>

Casting (continued)

Career framework level	Competence	Performance criteria	Knowledge, understanding and skills	Contextual factors	KSF
Senior practitioner /expert nurse Level 7	To disseminate evidence-based practice/best practice related to caring for patients being treated with casts.	All the above. Audits practice related to casting.	All the above.		G1 Level 3
Consultant nurse Level 8	Prescribes appropriate casts according to clinical need in partnership with the MPT.	All the above. Performs a comprehensive clinical assessment to determine the need and type of cast required. Identifies the contraindications and risk factors associated with cast application and removal. Assists in the application of specialist casts and performs treatment manipulation, for example, Ponseti casting.	All the above. Demonstrates critical thinking and diagnostic skills in the prescription of casts. Develops management plans related to casting, based on research and advanced clinical knowledge and skills.		HWB6 Level 3 & 4 HWB2 Level 3 & 4 G1 Level 3 & 4

External fixator and skeletal pin site care

Career framework level	Competence	Performance criteria	Knowledge, understanding and skills	Contextual factors	KSF
Health care support worker Level 2	Assists with the care of a patient with external fixator devices and pin sites under the direct supervision of a registered nurse.	Assists with the preparation of the clinical area and the patient for pin site insertion and/or cleaning, under direct supervision. Collects appropriate equipment when given a comprehensive list.	Recognises external pin sites.		HWB5 Core 1 HWB7 Level 2
Senior health care support worker Level 3	Assists the patient and/or carer to care for the external fixator devices and pin sites under the direct supervision of a registered nurse.	All the above. Assists to prepare the clinical area and patient under indirect supervision. Supports the patient to care for the external fixator and/or pin sites under the direct supervision of a registered nurse.	All the above. Discusses the rationale for using external fixation for certain patients' musculoskeletal conditions/injuries. Describes the signs and symptoms of pin site infection.		
The external assistant practitioner Level 4	Assists the patient and/or carer to care for the external fixator device and pin sites under indirect supervision of a registered nurse.	All the above. Effectively communicates with the patient/family regarding the care of external fixators and pin sites. Assists the patient and/or carer with performing external pin site care. Safeguards the patient and others against injury due to pin insertion. Identifies complications associated with external fixators and pin sites.	All the above. Discusses the rationale for using external fixation for certain patients' musculoskeletal conditions/injuries. Describes the signs and symptoms of pin site infection. Cleans the pin sites according to local policy and best practice under the direct supervision of a registered nurse.		

External fixator and skeletal pin site care (continued)

Career framework level	Competence	Performance criteria	Knowledge, understanding and skills	Contextual factors	KSF
Competent nurse Level 5	Assesses, plans, implements and evaluates the evidence-based care for a patient with an external fixator and pin sites.	<p>All the above.</p> <p>Prescribes care for the external fixators and pin sites.</p> <p>Educates the patient about the external fixator and pin site care.</p> <p>Identifies the basic contraindications to treatment, for example, infection and allergic reactions and reports to the medical team.</p> <p>Recognises and reports the signs and symptoms of external fixators and pin site infections, reactions and complications to the medical team.</p> <p>Recognises and reports any complications to the medical team including, tissue necrosis and skin blistering.</p> <p>Delivers and evaluates external fixator and pin site care based on best practice.</p> <p>Assesses and manages external fixator and pin site related pain adequately.</p> <p>Administers analgesia prior to insertion or removal of external fixator pins or wires.</p> <p>Supports the patient and carer with coming to terms with body image and other psychological issues.</p> <p>Identifies and reports to the medical team any complications of external fixator frames and pin sites.</p> <p>Explains the musculoskeletal condition or injury and the planned treatment programme to the patient and family.</p> <p>Utilises appropriate teaching aids.</p>	<p>All the above.</p> <p>Knowledge of the pathophysiology of the musculoskeletal condition/injury.</p> <p>Articulates the most recent guidelines for external fixators and pin site care.</p>	NMC (2008) Timms et al (2011)	<p>HWB7 Level 3</p> <p>HWB3 Level 3</p> <p>HWB1 Level 3</p> <p>HWB5 Level 3</p> <p>HWB7 Level 3</p> <p>Core 1 Level 2 & 3</p> <p>G1</p>
Experienced /proficient nurse Level 6	Delivers and supervises evidence-based care for patients with external fixators and/or skeletal pin sites.	<p>All the above.</p> <p>Uses specialist knowledge and experience to educate other staff to enhance their understanding of caring for patients with an external fixator or pin sites.</p> <p>Teaches external fixator and pin site care to patients and other practitioners.</p>	All the above.		<p>Core 1 level 3</p> <p>G1 Level 3</p>
Senior practitioner /expert nurse Level 7	Disseminates evidence-based/best practice related to caring for patients with external fixator devices and/or skeletal pin sites.	<p>All the above.</p> <p>Prepares the patient/child psychologically and physically for external fixator and pin site insertion and removal.</p>	All the above.		
Consultant nurse Level 8	Prescribes evidence-based care for patients with external fixators and/or skeletal pin sites.	<p>All the above.</p> <p>Safely alters the external fixator device as a result of a comprehensive patient assessment including strut changes and external fixator frame adjustments.</p> <p>Teaches the patient/child and family how to care for the external fixator device and pin sites.</p> <p>Prescribes the management of external fixator/pin site care.</p> <p>Audits practice related to external fixator and pin site care.</p> <p>Develops evidence-based patient information related to external fixators and pin site care.</p>	All the above.		<p>Core 1 Level 4</p> <p>HWB6 Level 3 & 4</p> <p>HWB7 Level 3 & 4</p> <p>G1 Level 4</p>

Appliances, slings, splints and braces

Career framework level	Competence	Performance criteria	Knowledge, understanding and skills	Contextual factors	KSF
Health care support worker Level 2	Assists in the application of commonly used appliances under the direct supervision of a registered nurse.	Safely assists in the application of commonly used appliances; for example; collar 'n' cuff, broad arm and high arm slings, a Bradford sling and a poly sling under direct supervision.	Discusses the use and application of commonly used appliances in the orthopaedic/trauma setting.		HWB6 HWB7 Level 2
Senior health care support worker Level 3	Uses common appliances under the direct supervision of a registered nurse.	All the above.	All the above. Articulates the principles of treating patients with the different appliances. Describes the signs and symptoms of potential complications resulting from treatment with orthopaedic appliances.		
Assistant practitioner Level 4	Uses common appliances under the indirect supervision of a registered nurse.	All the above. Safely and correctly applies slings, splints and braces.	All the above.		
Competent nurse Level 5	Assesses the patient holistically and correctly uses various appliances, slings, splints and braces which have been prescribed.	All the above. Understands the rationale for the choice of sling, splint or brace. Identifies the purposes of the different appliances. Provide patient education in relation to self-care of appliance, sling, splint/brace. Monitors and documents the patient's neurovascular status. Recognises and reports problems immediately to senior staff. Takes prompt action to minimise or resolve complications. Refers to the orthotics team as necessary.	All the above. Discusses the underlying musculoskeletal condition or injury. Articulates knowledge of the pathophysiology of the musculoskeletal system. Accurately demonstrates functional and resting positions.		HWB7 Level 3 HWB3 Level 3 HWB1 Level 3 HWB5 Level 3 G1 Level 3
Experienced /proficient nurse Level 6	Supervises the practice of other staff in relation to the application of orthopaedic appliances, slings, splints and braces.	All the above. Uses knowledge and experience to educate other staff to enhance their understanding of orthopaedic appliances, slings, splints and braces. Teaches clinical skills to others.	All the above.		

Appliances, slings, splints and braces (continued)

Career framework level	Competence	Performance criteria	Knowledge, understanding and skills	Contextual factors	KSF
Senior practitioner /expert nurse Level 7	Prescribes all types of orthopaedic appliances, slings, splints and braces and supervises staff caring for patients requiring appliances.	All the above. Assesses the clinical need for an orthopaedic appliance. Applies selected appliances and reviews the treatment outcome. Identifies complications of appliance treatments. Rationalises the choice of sling, splint or brace. Prescribes the management of the appliance and refers if necessary to MPT.	All the above.		
Consultant nurse Level 8	Disseminates evidence bases/best practice relating to the care of patients being treated with orthopaedic appliances, slings, splints and braces.	All the above. Audits practice related to orthopaedic appliances, slings, splints and braces. Investigates adverse incidents related to orthopaedic appliances. Generates new knowledge which informs policy development in relation to orthopaedic appliances, slings, splints and braces.	All the above.		

Mobility aids

Career framework level	Competence	Performance criteria	Knowledge, understanding and skills	Contextual factors	KSF
Health care support worker Level 2	Assists with mobilising an orthopaedic/trauma patient under the indirect supervision of a registered nurse.	Demonstrates safe and competent practice when mobilising patients under indirect supervision with the following: <ul style="list-style-type: none"> • crutches • walking sticks • frames • wheelchairs. 	Understands the function of mobility aids. Recognises the safe use of mobility aids.		HWB1 Core 1 Level 2 Core 3 Level 1 HWB5 Level 2
Senior health care support worker Level 3	Assists with patient mobility for an orthopaedic/trauma patient under the indirect supervision of a registered nurse.	All the above. Communicates basic mobility education and information to the patient at a level that is appropriate, under indirect supervision. Accurately reports the patient's mobility activities to senior staff.	All the above. Able to identify potential safety hazards associated with mobility aids. Checks the aids are fit for purpose and reports faulty aids immediately to senior staff.		
Assistant practitioner Level 4	Liaises with the MPT regarding appropriate mobility aids for patients.	All the above.	All the above. Measures and supplies mobility aids following appropriate education and training.		
Competent nurse Level 5	Accurately assesses the patient's needs and selects appropriate mobility aids in conjunction with the physiotherapist.	All the above. Assesses the patient's ability to progress from mobilising with supervision of staff to mobilising independently in liaison with the physiotherapist. Educates the patient and carers about the safe use of the mobility aid.	All the above.	NICE (2011) SIGN (2009)	Core 1 Level 2 Core 3 Level 2 HWB5 Level 3 HWB6 Level 3 G1 Level 2
Experienced /proficient nurse Level 6	Teaches and supervises other staff who assist patients with mobility aids.	All the above. Uses knowledge and experience to educate other staff to enhance their understanding of caring for patients using mobility aids. Teaches clinical skills relating to mobility to others.	All the above. Knowledge and understanding of altered gait patterns.	All the above.	G 1 Level 3
Senior practitioner /expert nurse Level 7	Prescribes mobility aids for patients.	All the above.	All the above.		As level 6
Consultant nurse Level 8	Disseminates evidence-based best practice related to supporting patients with mobility needs.	All the above. Audits practice related to mobility aids. Investigates adverse incidents related to mobility aids.	All the above.		HWB2 Level 4 HWB5 Level 4 HWB6 Level 4 G1 Level 4 Core 1 Level 4 IK2 Level 3

Cervical collars

Career framework level	Competence	Performance criteria	Knowledge, understanding and skills	Contextual factors	KSF
Health care support worker Level 2	Assists in caring for a patient treated in a cervical collar under the direct supervision of a registered nurse.	Discusses the reason a patient has been prescribed a cervical collar.	Understands the function of a cervical collar. Articulates that a cervical collar is never removed without direct medical advice and is performed only under the direct supervision of a more senior practitioner.		Core 1 Level 1 & 2 HWB7 Level 1 & 2 HWB5 Level 1 & 2 HWB2 Level 1 HWB5 Level 1 & 2
Senior health care support worker Level 3	Demonstrates safe practice when caring for a patient being treated in a cervical collar under the direct supervision of a registered nurse.	All the above. Identifies potential and actual complications of wearing a cervical collar and promptly reports to a registered nurse.	All the above. Observes the patient's skin for signs of pressure damage under direct supervision.		
Assistant practitioner Level 4	Demonstrates safe practice when caring for a patient treated in a cervical collar under the indirect supervision of a registered nurse.	All the above.	All the above. Discusses the basic anatomy of the cervical spine and the spinal cord. Recognises and reports changes to the patient's skin to a registered nurse. Good patient skin hygiene is performed.		
Competent nurse Level 5	Assesses, plans, implements and evaluates the care for a patient wearing a cervical collar.	All the above. Safely cares for a patient with a cervical collar. Refers to an orthotist or doctor for the initial assessment, measurement and fitting of the cervical collar. Discusses the evidence-based management of a patient wearing a cervical collar. Discusses spinal precautions and spinal protection for the patient. Pressure area care is performed to reduce the incidence of pressure ulceration as a result of wearing a cervical collar.	All the above. Understands the patient's injury and the potential complications related to the cervical collar as well as the injury. Understands that if a patient is wearing a temporary hard collar that this should be replaced with an alternative as per doctor's prescription within 48 hours of admission. Awaits spinal clearance by a doctor. Names different cervical collars and rationalises their use. Performs log rolling for the patient on bed rest, with a minimum of five practitioners, at least every two hours. A senior practitioner leads the log rolling manoeuvre while supporting the patient's head and neck to maintain spinal alignment.	NMC (2008) British Trauma Society (2002) BOA (2008)	Core 1 Level 2 Core 3 Level 2 HWB2 Level 2 & 3 HWB3 Level 2 & 3 HWB5 Level 2 & 3 HWB6 Level 2 & 3 HWB7 Level 2 & 3

Cervical collars (continued)

Career framework level	Competence	Performance criteria	Knowledge, understanding and skills	Contextual factors	KSF
Experienced /proficient nurse Level 6	Assesses, plans, implements and evaluates the care for a patient wearing a cervical collar and supervises other staff.	All the above. Teaches other staff about the assessment and management of patients wearing cervical collars.	All the above.		Core 1 Level 3 Core 3 Level 3 HWB2 Level 3 HWB3 Level 3 HWB5 Level 3 HWB6 Level 3 HWB7 Level 3 G1 Level 3
Senior practitioner /expert nurse Level 7	Measures and sizes the patient for a cervical collar.	All the above.	All the above. Assessed as competent to measure and fit cervical collars by an appropriately qualified practitioner.		As level 6
Consultant nurse Level 8	Prescribes cervical collars.	All the above. Assesses and manages the care of patients with potential spinal injuries. Performs and documents a full physical neurological assessment of the patient. Measures, sizes and fits cervical collars.	All the above. Audits practice related to cervical collars. Investigates any adverse incidents related to the care of patients in cervical collars.		Core 1 Level 4 Core 3 Level 4 HWB2 Level 4 HWB3 Level 4 HWB5 Level 4 HWB6 Level 4 HWB7 Level 4 G1 Level 4

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Further reading and useful websites

Further reading

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Kneale J and Davis P (2005) *Orthopaedic and trauma Nursing (2nd edition)*, London: Churchill Livingstone.

Useful websites

Arthritis Research UK

www.arthritisresearch.org

International Hip Dysplasia Insitute

www.hipdysplasia.org

National Confidential Enquiry into Patient Outcome and Deaths

www.ncepod.org.uk

National Institute for Health and Clinical Excellence

www.nice.org.uk

National Hip Fracture Database

www.nhfd.co.uk

National Joint Registry

www.njrcentre.org.uk

Orthopaedic Scores

www.orthopaedicscores.com

Perthes Association

www.perthes.org.uk

Scottish Intercollegiate Guidelines Network www.sign.ac.uk

STEPS, the national association for children with lower limb abnormalities

www.steps-charity.org.uk



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