Hip fracture is the most common reason for emergency surgery in older people (Johansen et al, 2017). Approximately 70,000 hip fractures occur annually in the UK at a cost of roughly £2bn to the NHS (National Institute for Health and Care Excellence, 2018). Most patients with hip fracture are characterised by older age (>70 years), frailty, coexisting health problems and functional deterioration (Kelly-Pettersson et al, 2017; Prestmo et al, 2015), posing challenges for both acute care and rehabilitation. Due to age and frailty, up to a third of people with a hip fracture will die within a year of the event (National Hip Fracture Database, 2017).

This article outlines the essential elements of nursing care for patients with a hip fracture from admission to rehabilitation and discharge. NHS England and NHS Improvement (2017) use the National Tariff Payment System to incentivise elements of care identified as important in improving patient outcomes after a fragility hip fracture (Box 1).

**Diagnosis**

Patients typically present with pain and inability to walk after a low-velocity fall. Depending on the type of fracture, some movement may be possible, but it will be painful. Pain is typically in the upper outer thigh or groin. If the fracture is displaced, the affected limb may appear shortened, abducted and/or rotated.

Anterior-posterior pelvic and lateral hip X-rays are required when hip fracture is suspected (National Clinical Guideline Centre, 2011). Shenton’s line (the smooth curve formed by the inferior aspect of the superior pubic ramus and medial aspect of the femur) can be used to assess the position of the femoral head in relation to the acetabulum. Disruption to this line or to the cortical surface may indicate a fracture.

If a hip fracture is suspected but not visible on X-ray, magnetic resonance imaging may be used to confirm diagnosis. If this is contraindicated (for example, in a patient with a pacemaker), computed tomography may be considered (NCGC, 2011).
**Clinical Practice**

**Review**

**Types**

Hip fractures, also called proximal femoral fractures (see part 1), are classified depending on whether they have occurred within or outside the hip capsule - they are either intracapsular or extracapsular.

- Intracapsular fractures can be classified as ‘femoral neck’ (the most common type) or ‘femoral head’ fractures;
- Extracapsular fractures can be classified as trochanteric or sub-trochanteric.

Fractures can also be categorised using the Garden classification (Fig 1) depending on whether they are complete and whether there is displacement.

Displaced femoral neck fractures are likely to disrupt the intramedullary vessels and capsular retinaculum blood supply to the femoral head and are, therefore, associated with subsequent avascular necrosis (also known as osteonecrosis) - that is, death of bone tissue secondary to ischaemia (Fig 2). This can cause chronic pain and reduced mobility.

The Garden classification can be used to identify which patients are at risk of developing avascular necrosis of the femoral head. However, caution is advised, as the anterior/posterior view does not consider a displacement that may only be visible on lateral X-ray (Coughlin, 2010).

Garden stages 3 and 4 fractures are most likely to disrupt the blood supply to the femoral head. For patients with a displaced intracapsular hip fracture, current NICE guidance recommends either total hip replacement or hemiarthroplasty (NICE, 2017). Displaced extracapsular fractures are less likely to cause vascular disruption and can therefore be managed using surgical techniques such as hip screws (NCCG, 2011).

**Immediate and urgent care**

In the emergency department, a ‘fast-track’ protocol should ensure rapid access to imaging, analgesia and identification of a bed on an orthopaedic ward.

Many patients who present with a suspected hip fracture will have comorbidities such as ischaemic heart disease, hypertension, chronic kidney disease and dementia (Shah et al, 2014). Patients should be cannulated when they arrive in the emergency department and an electrocardiogram and baseline blood tests (full blood count, urea and electrolytes, coagulation screen) should be obtained. The Nottingham Hip Fracture Score can be used to predict 30-day and one-year mortality and assist with care planning (Moppett et al, 2012).

**Box 1. Elements of hip fracture care defined in the National Tariff**

- Start of anaesthesia for surgery within 36 hours of arrival in the emergency department, or within 36 hours of diagnosis if the patient has already been admitted
- Patient assessed by a geriatrician in the peri-operative period (within 72 hours of admission)
- Abbreviated mental test performed before surgery and score recorded in the National Hip Fracture Database
- Nutritional assessment performed during admission
- Delirium assessment using the 4AT screening tool performed during admission
- Patient assessed by a physiotherapist on the day of, or the day after, surgery
- Fracture prevention assessment (falls and bone health) performed during admission


Patients’ cognition should be assessed on admission, as potential cognitive impairment will have consequences for their care. Cognition can be assessed using tools such as the Mini Mental State Examination (MMSE) or Montreal Cognitive Assessment (MOCA). Capacity to consent to treatment must be formally assessed and documented, and then reviewed when there is change in the patient’s condition. A clerking proforma that incorporates an abbreviated MMSE is commonly used.

As patients with hip fracture are at increased risk of delirium, the 4AT rapid clinical test for delirium (theqat.com) can be used to screen patients on admission and again when there is a change in cognitive function.

“Older patients surviving a hip fracture are likely to have significant health and social care needs”

Pain should be assessed and analgesia offered immediately on arrival to hospital, before hip fracture is confirmed; it should be reassessed within 30 minutes of the initial analgesia and then hourly until the patient is settled on a ward (NCCG, 2011). Patients with cognitive impairment may find it difficult to self-report pain or use a numerical rating scale, which could lead to under-reporting and sub-optimal management, so these patients need special attention.

Paracetamol should be administered regularly, unless contraindicated, while additional opioids or the use of nerve blocks may be considered to provide sufficient pre-operative pain relief. However, non-steroidal anti-inflammatory drugs are not recommended (NCCG, 2011).

**Peri-operative care**

In 2016, only 2% of patients with hip fracture received non-surgical treatment (NHFID, 2017). As many patients with hip fracture have complex medical histories, they may have previously been informed that they are ‘not fit’ for elective surgery. Understandably, many will be anxious at the prospect of surgery (Johansen et al, 2017), so when discussing diagnosis and treatment, it is important to consider patients’ and families’ concerns and give them the opportunity to ask questions.

Conservative treatment is typically for patients approaching the end of life or in whom the risks of surgery outweigh the benefits. The decision to choose conservative care needs to be clearly documented and reviewed, should the patient’s condition improve.

Open discussion with patients and relatives about the risks of surgery is important; while good management reduces mortality, hip fracture remains associated with a high mortality rate within the first year of injury. Approximately 20% of hip fracture patients experience serious adverse events during their hospital stay (Kelly-Pettersson et al, 2017).

Time to surgery has been identified as a key factor in minimising complications (Kelly-Pettersson et al, 2017). Adults should have surgery on a planned trauma list on the day of, or the day after, admission (NICE, 2016). This requires interprofessional collaboration and coordination to ensure patients are optimised for surgery in a timely manner. In most large hospital trusts, this is done by a trauma coordination service which will prioritise patients.

**Ongoing inpatient care**

During their stay in hospital, patients should have physiological signs regularly monitored using the National Early
Warning Score (NEWS). This involves assessing respiratory rate, oxygen saturation, temperature, blood pressure, heart rate and neurological status.

Fluid and electrolyte balance needs attention, as abnormalities are common and up to one-third of patients with hip fracture present to hospital with some degree of renal impairment (Scottish Intercollegiate Guidelines Network, 2009; White et al, 2009). Fluid balance should be closely monitored, as patients are at risk of blood loss due to the fracture and after surgery. While an initial blood pressure of 120/80mmHg may be satisfactory in many patients, it may reflect a significant drop in those who are usually hypertensive. Some patients may be dehydrated on admission and need intravenous fluids.

Nutritional assessment is an important part of the initial assessment, as there is a high prevalence of malnutrition in people with hip fractures (NHFD, 2017). Patients with low nutritional reserves may be more susceptible to infection and may take longer to reach their maximum rehabilitation potential. Screening for malnutrition – using, for example, the Malnutrition Universal Screening Tool (MUST) – will identify those at risk. Oral supplements given before, or soon after, surgery may help to prevent complications (Avenell et al, 2016).

As well as offering nutritional supplements and additional snacks, it is important to reduce barriers to patients eating well. For example, those who are immobile in bed may find it difficult to reach drinks and eat meals; ensuring they are in an appropriate position to eat when their meal arrives and their drinks and meal trays are within reach will help.

Skin integrity and risk of pressure ulcers should be assessed on admission and regularly thereafter, as patients are at increased risk of pressure damage due to immobilisation. The assessment should consider any pain or discomfort reported by the patient and the skin should be checked for integrity, colour changes and variations in heat and moisture. The assessment may reveal, for example, incontinence, oedema or dry or inflamed skin (NICE, 2014).

Risk-assessment tools such as the Braden Scale may be used to complement clinical judgement and determine appropriate pressure-relieving devices and interventions. Pressure area care should be reviewed regularly and as the patient’s condition changes. Patients should be encouraged to change position regularly if they are able, or helped to do so if not.

Comprehensive geriatric assessment and collaboration with orthogeriatricians are key to improving outcomes, achieving optimal recovery and increasing the number of patients discharged directly home from hospital (Leal et al, 2017; Prestmo et al, 2015).

Care in preparation of discharge
After surgery, a coordinated multidisciplinary approach is required to ensure that patients have the best chance to regain mobility and return to their pre-fracture level of independence (NCGC, 2011). At a 120-day follow-up of mobility, only 10% of people described themselves as ‘freely mobile without aids’, compared with 37% before the hip fracture (NHFD, 2017). Early mobilisation reduces the incidence of post-operative complications and increases the chance of early recovery. Similarly, higher levels of mobility are associated with a shorter length of stay (Shadmi and Zisberg, 2011).

A history of falls in the past year is a key predictor of further falls (NICE, 2015), so it is important to assess patients’ risk of falls and identify modifiable risk factors (see part 1). This requires multidisciplinary assessment and possibly referral to a specialist falls assessment team. Factors to consider include hazards in the home such as rugs, ill-fitting footwear and poor lighting. Simple equipment such as rails, walking aids or perch stools may support independent living and reduce the risk of falls. Community assessment and follow-up should be arranged if appropriate.

As many patients sustain their hip fracture from a fall, it is important to consider the possible psychological impact of the fall. Fear of falling is a significant predictor of poor quality of life, so interventions aimed at reducing that fear may significantly improve quality of life (Iglesias et al, 2009).
Older patients surviving a hip fracture are likely to have significant health and social care needs (Smith et al, 2013). An occupational therapist can assess their needs for additional support after discharge and help them regain function.

The average length of stay in NHS care after a hip fracture is 21 days and 17% of patients are discharged to "ongoing care" (NHFD, 2017). Identifying those at risk of discharge to other care facilities will allow proactive discharge planning, which may in turn help increase the number of patients who can be discharged directly home (Salar et al, 2017).

There are cases where intermediate care is needed to bridge the gap between hospital and home. If patients are medically stable, but have not yet reached their full rehabilitation potential, they may be considered for early supported discharge with ongoing community rehabilitation (NCGC, 2011).

Secondary prevention
Hip fracture following low-intensity trauma is commonly caused by an underlying pathology such as osteoporosis (see part 1). The secondary prevention of fragility fractures is an integral part of care, which should therefore include the assessment and management of osteoporosis (see part 1).

Fracture liaison services identify patients who have sustained a fragility fracture, are at risk of osteoporosis and are appropriate for further assessment. Dual-energy X-ray absorptiometry can be used to measure bone mineral density and diagnose osteoporosis (see part 1). This, along with a detailed review by the fracture liaison team, can be organised after discharge. McLellan et al (2011) reported that, for every 1,000 patients with a fragility fracture assessed by fracture liaison services, approximately 18 further fragility fractures (including 11 hip fractures) were prevented and £21,000 saved.

Patients diagnosed with osteoporosis may require medication to increase their bone density (see part 1). This should be accompanied by information on lifestyle changes that can improve overall bone health (see part 1). Initially, patients may be prescribed bisphosphonates to slow down bone turnover and improve bone density, but other antiresorptive or bone-stimulating medications can also be used (NHFD, 2017).

Conclusion
Hip fractures are a common injury seen predominantly in older people. Patients often have multiple comorbidities, which increase the risk of mortality. A multidisciplinary approach is required to provide timely and efficient care during admission, optimise outcomes after surgery and improve quality of life after discharge. Nursing staff have a key role in assessing and managing patients, and in reducing risks associated with immobility and malnutrition.

References