Chapter 4: Model for arthroplasty rehabilitation

4.1 Summary

The need for hip and knee arthroplasty surgery is projected to double over the next decade with Australia's ageing population and demands for increased quality of life of that ageing population; hence the importance of developing a model that addresses arthroplasty management across the continuum from assessment to surgery to rehabilitation and recovery to everyday living.

There is very little literature on the arthroplasty continuum of care in its entirety, once on the waiting list for surgery and during the peri operative hospitalisation. Most studies focus on limited interventions during the inpatient episode of care, with outcomes measured against alterations in length of stay and early functional outcomes. There is good evidence that a comprehensive prehabilitation program is associated with improved patient outcomes, reduced hospital stay and reduction in post discharge rehabilitation requirement (Orthopaedic Prehabilitation Project - An optimised Discharge Planning Tool for Patients undergoing Hip and Knee Arthroplasty – development, implementation and evaluation-RGH)[6]

The Statewide Orthopaedic Clinical Network has considered the journey of individuals with arthritis of the hip and knee through triaging, initial management and prioritised selection onto the waiting list for surgery in the Arthroplasty Demand and Allocation Management proposal (ADAM)[3]. The model outlined in this chapter provides a seamless link with the ADAM project clearly defining the role of prehabilitation in self management, education and optimal management of co-morbidities, so that the individual is more likely to achieve a positive outcome from their arthroplasty surgery. Rehabilitation, re-integration and ongoing maintenance of function post surgery are also addressed.

This model is designed to assist in the provision of an equitable arthroplasty service across South Australia, providing services close to home where feasible and prioritisation of those clients most in need. It is expected that this model is applicable to sites providing arthroplasty surgery both in metropolitan and country areas.

4.2 Key recommendations

Service continuum

> The arthroplasty rehabilitation model needs to be implemented in conjunction with the ADAM[3] project to ensure seamless integration across the continuum

Initial management / assessment – general practitioner

> General practitioners should refer individuals who present with reduced mobility, range of motion and pain as a result of hip / knee arthritis who may require surgical intervention for a specialist orthopaedic appointment at a hospital outpatient service via a standardised GP referral form

Outpatient appointment and review

> Comprehensive outpatient assessment will occur with a multidisciplinary team including an orthopaedic specialist to determine if conservative or surgical management is required. This will occur in conjunction with the indentified personnel undertaking triage and prehabilitation coordination.

> If surgical management is required, the individual will be placed on the arthroplasty waiting list and the prehabilitation process immediately commenced under the direction of the indentified personnel undertaking the prehabilitation coordination.

Whilst on waiting list / prior to surgical intervention

> Individuals on the waiting list will be contacted by the indentified personnel undertaking the triage coordination every 3 months to assess change in condition and re-prioritise as appropriate

> Individuals will be encouraged to participate in prehabilitation, self management and education programs whilst on the waiting list

> Within 2-6 weeks of planned surgery, the individual will be required to attend a pre-admission appointment to prepare for surgery and to allow potential needs post surgery to be addressed

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Acute inpatient care – admission, surgery and recovery

- Admission will occur on the day of surgery
- Rehabilitation will commence promptly after surgery, within 12-18 hours, unless there are specific contraindications
- It is expected that the majority of individuals undergoing arthroplasty rehabilitation will be able to discharge directly home at day 3-5 post surgery with access to follow up rehabilitation and community services as required

Post-acute rehabilitation

- Access to inpatient, ambulatory (home based and day centre based) and community (including single discipline allied health) rehabilitation programs must be available with multiple access points
- Service and staffing requirements are as per the Australasian Faculty of Rehabilitation Medicine guidelines

Ongoing maintenance and function

- Access to ongoing community support / services for those individuals who continue to have difficulties with mobility, functional tasks and participation in everyday activities post arthroplasty surgery need to be available. This is of particular relevance to those with co-morbidities. Multiple access points to these services are needed.
- Ongoing orthopaedic specialist review to meet mandated long term follow up requirements of individuals undergoing arthroplasty surgery is required

4.3 Background

With South Australia's ageing population it is anticipated that the number of arthroplasty surgeries required in the next decade will double (AOA NJRR Report, 2008)[7] and hence this model is important to ensure that the accessibility and sustainability of services for these individuals.

There is a paucity of current literature on the complete journey for the client with arthritis of the hip and knee, from early assessment and conservative management options, through to the diagnostic and clinical decisions leading to arthroplasty surgery and finally, the implementation of a rehabilitation and long term follow up program, individualised for each client.

Most studies focus on limited interventions during the inpatient episode of care, with outcomes reported against alterations in length of stay and early functional outcomes.

This Model for Arthroplasty Rehabilitation draws upon a range of improvement projects undertaken in public hospitals in South Australia over the past 3 years, in the management of individuals with arthritis of the hip and knee with the aim to ensure integration across the continuum, optimise use of resources, promote communication between all key stakeholders and improve client outcomes. Projects include:

- Orthopaedic Waiting List (OWL) SA Health, RGH
- Prehabilitation Project, RGH
- ARAC Review QEH, RGH
- ADAM Project Phase 1, Orthopaedic Clinical Networks
- CHSA Arthroplasty Project – 'Prehabilitation and Rehabilitation in Joint Arthroplasty'

Appendix 3 provides detailed information on South Australian statistics for hip and knee arthroplasty

Appendix 4 provides details on Waiting List Principles for hip and knee arthroplasty as defined by Arthroplasty Sub-Group of SA Clinical Networks

Current services

Orthopaedic inpatient rehabilitation services are currently available in public and private hospitals. Public hospitals providing orthopaedic rehabilitation are Hampstead Rehabilitation Centre, St Margaret's Hospital and the Repatriation General Hospital. Private hospital providers include Griffith Rehabilitation Hospital, Calvary College Grove Rehabilitation Hospital and The Memorial Hospital.

The Repatriation General Hospital provides home based and centre based services for those living within the southern suburbs of Adelaide. Hampstead Rehabilitation Centre has a Day Therapy Service that individuals living in the north can access.

Various orthopaedic outpatient and community based therapy services are provided by private providers, public hospitals, Commonwealth funded Day Therapy Centres and community organisations such as Domiciliary Care SA. Interventions include one to one, group, condition specific and falls prevention.

Perceived current service deficiencies

In reviewing current services available in South Australia for individuals who require arthroplasty, the following deficiencies were noted:

- Limited structured pathways
- Limited structured prehabilitation
- Limited ongoing assessment of clients on the waiting list for surgery
- Limited structured education program
- Poor consistency in prediction of discharge destination and requirements
- Poor communication/ coordination between metropolitan and country allied health services
- Lack of consistency in service delivery across metropolitan and country hospitals

4.4 The model

4.4.1 Organisation of services

- Given the elective nature of hip and knee arthroplasty surgery described in this model, it is imperative that as much intervention and planning has occurred prior to the individual being admitted for surgery. This will minimise potential for surgery to be cancelled, limit required hospital length of stay and ensure prompt organisation of appropriate equipment, supports and follow up rehabilitation. The identification of personnel to undertake triage and prehabilitation coordination will facilitate this.
- Multi-disciplinary team input that fosters communication, teamwork and client outcomes across the continuum is essential. The multi-disciplinary team should include orthopaedic surgeon, anaesthetist and appropriate allied health practitioners, some of whom may be multi-tasked, especially in rural communities undertaking smaller numbers of arthroplasty interventions.
- Early comprehensive assessment by the multidisciplinary team including an orthopaedic surgeon, indentified personnel undertaking the triage and prehabilitation coordination, is essential to ensure an appropriate management plan is developed and a decision re conservative or surgical management made.
- All individuals who are identified as requiring hip or knee arthroplasty surgery need to be able to easily access early prehabilitation and should be strongly encouraged to be involved. Consideration to how this can be best achieved in the country is required. Currently the variability in access to discharge support services across both metropolitan and country regions influences the time of engagement of individuals in prehabilitation on the waiting list for surgery, resulting in delays for discharge from hospital and in some cases, cancellation of cases due to late identification of significant co-morbidities.
- Following surgery, early commencement of rehabilitation with a focus on mobilisation, transfers and self care is needed to maximise and individual's recovery.
- Access to inpatient, ambulatory (home based and day centre based) and community rehabilitation (including single allied health disciplines) programs are needed for individuals post arthroplasty surgery. The type of rehabilitation needed will be dependent on the individual's needs and circumstances including previous level of function, formal and informal supports, previous place of residence, existing co-morbidities and potential for improvement.
- Multiple access points to rehabilitation are needed, especially for individuals who experience a deterioration in mobility and/or function at a later time.
- The team needs to be aware of community programs and services essential to facilitate the fulfilment of client goals, maintenance of functional gains and monitoring, both in the pre-operative and post operative phase.
- Following discharge from hospital, the mandated requirement for long term follow up of individuals having undergone hip or knee arthroplasty surgery needs to be adhered to.

4.4.2 The continuum of care

The phases of the continuum for individuals requiring hip or knee arthroplasty surgery is as follows:

- Initial management / assessment – general practitioner
- Outpatient appointment and review
- While on waiting list / prior to surgical intervention
- Acute inpatient care – admission, surgery and recovery
- Post-acute rehabilitation
- Ongoing maintenance of function

The flowchart below (Figure 4) schematically presents the expected / anticipated process that an individual who is likely to require arthroplasty surgery of the hip and knee will follow across the continuum from assessment through to rehabilitation and reintegration into the community. A more detailed flowchart is provided in Appendix 5

This model interacts seamlessly with the ADAM project which covers the initial phases of this continuum therefore detailed information of these phases are not provided within this document.

Appendix 6 Possible outcomes following ARAC service and implication for orthopaedic outpatient clinic and other services

Appendix 7 Patient focussed booking process

Initial management / assessment – general practitioner

Key requirements

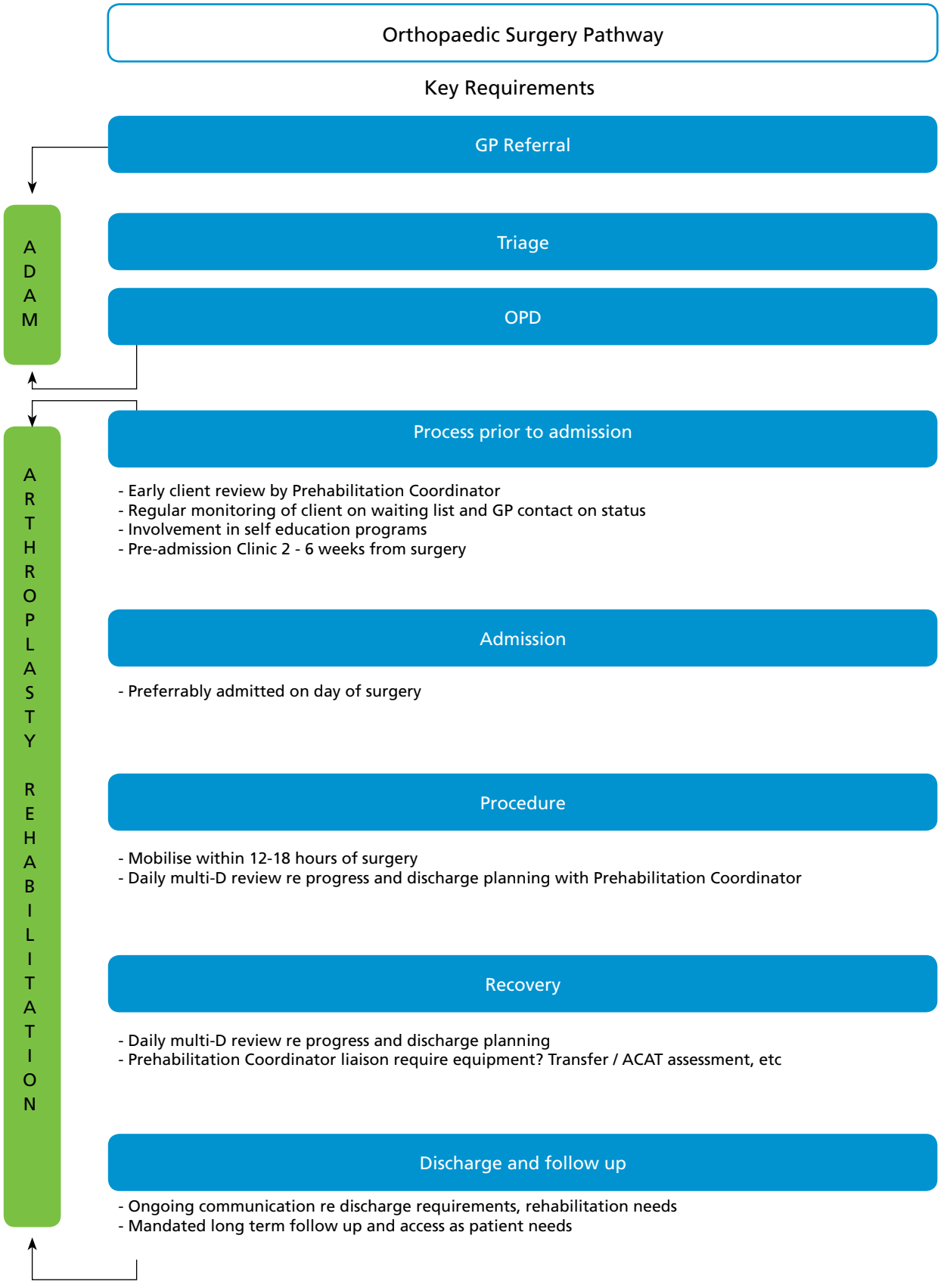
- An individual who is experiencing difficulty with mobility, transfers and participation in everyday activities due to pain, discomfort and reduced range of motion of the hip and/or knee will usually present to a general practitioner for assessment and input.
- If it is identified the individual's issues can be managed conservatively the general practitioner will probably make a referral for intervention from single discipline allied health professionals such as physiotherapy; to community services to provide support in managing everyday tasks (e.g. Council, Domiciliary Care SA) and; services that assist with addressing exercise, strength, balance and self management of condition (e.g. Commonwealth funded Day Therapy Centres).
- If the general practitioner is unsure of the best management plan for the presenting condition or feels surgical intervention may be required, a referral to a hospital outpatient orthopaedic service will be made. This is covered in more detail in the ADAM project, however one key requirement is the use of a standardised GP referral form to the outpatient service to alert the service to specific needs of the individual, specific co-morbidities which may impact on discharge following arthroplasty surgery and client awareness of self management options.

Outpatient appointment and review

Key requirements

- The orthopaedic specialist will oversee the assessment by an appropriately trained multidisciplinary team, of the individual and discuss conservative and surgical treatment options with them and their family / carers. Depending on outcome of this assessment and discussion the individual may either be referred for:
  - conservative management in the community with input from single discipline allied health (e.g. physiotherapy); community services for support and; services to address exercise, strength, balance and self management of condition.
  - surgical intervention and placed on the waiting list for this to occur.
- The general practitioner will be informed of the recommended management plan following orthopaedic specialist review.
- It is noted that some referrals to the orthopaedic specialist may come from sources other general practitioners such as other specialists, if this is the case the same process will be followed.
- If surgical intervention is identified as the most appropriate treatment option, early referral to the prehabilitation coordinator will occur and a standardised arthroplasty questionnaire completed.
- The triage practitioner will prioritise the individual on the waiting list based on the severity of their condition and the impact it is having on their mobility and participation in everyday activities. This will be communicated to the general practitioner.

Figure 4: Arthroplasty Continuum of Care – Possible Pathways



Whilst on waiting list / prior to surgical intervention

Key requirements

- The triage practitioner will contact individuals on the waiting list every three months and use a standardised prioritisation tool to assess change in condition and need for re-prioritisation or further intervention whilst on the waiting list for surgery to facilitate optimisation of management.
- Involvement in self management/ education programs directed to optimising physical and psychological fitness for surgery are to be encouraged whilst on the waiting list for surgery.

Within 3 months of planned surgical date:

- The prehabilitation coordinator will contact the individual and outline the available pre-habilitation program. Prehabilitation programs must be conducted within an appropriate time frame, so that any arising medical or social aspects can be addressed in a timely manner, so that there is no impact on the planned date of surgery. In some instances, more thorough medical assessment may be required pre-operatively. This contact will also enable potential discharge destination to be identified and discussed.
- Prehabilitation aims to enhance the functional capacity of individuals to withstand the stresses of orthopaedic surgery and optimise their recovery. Prehabilitation includes:
  - Early identification and management of co-morbidities
  - Addressing cardiovascular fitness, flexibility training and ability to undertake functional tasks
  - Self management programs
  - Identification of likely discharge needs post arthroplasty surgery and preparation for this.
- Attendance at pre-admission clinic 2-6 weeks prior to planned date of surgery. At this appointment the individual will be reviewed by the surgical team, anaesthetists, triage coordinator at a minimum with assessment by the allied health team where possible. This will allow potential needs post surgery to be identified including mobility, equipment, community supports and need for follow up rehabilitation (inpatient, ambulatory or community program).

Acute inpatient care – admission, surgery and recovery

Key requirements

- Given the elective nature of arthroplasty it is preferable that individuals are admitted on the day of surgery. This may vary in some instances such as if management of co-morbidities required or on the individual's usual place of residence.
- Active coordination of admissions needs to occur to minimise cancellations.
- In order to maximise future rehabilitation potential, the arthroplasty surgery must be performed by a suitably experienced surgeon and anaesthetist utilising current recognised and evidence based operative and anaesthetic techniques, taking into account the circumstances of the individual.
- Ongoing multi-disciplinary review is essential on a daily basis whilst the client is an inpatient and should include medical, nursing, allied health and the prehabilitation coordinator
- Access to an individual's support network, being family and friends remains critical to provide both psychological support and the potential for a reduced length of stay.
- Rehabilitation must commence early in this phase, with a focus on the individual's mobility and function in basic everyday activities including self care, toileting and feeding. Mobilisation including sitting out of bed should commence within 12-18 hours of surgery
- Early commencement of rehabilitation will assist in guiding the need for ongoing rehabilitation (inpatient, ambulatory or community) and facilitate planning of discharge to the most appropriate destination. Discharge options will vary depending on the individual's mobility, independence in everyday activities, informal social supports and goals. The most appropriate discharge option will be determined in partnership with the individual, their carers and family and the multi-disciplinary team.

- The first option for all individuals who have undergone arthroplasty surgery should be discharge home with access to appropriate care and rehabilitation services to ensure maximal independence is achieved as soon as possible. It is expected that the majority of individuals undergoing arthroplasty surgery will be able to discharge home on day 3-5 post surgery with appropriate follow up which may include:
  - Early supported discharge services such as rehabilitation in the home and centre-based day rehabilitation
  - Transition care (community) or the equivalent available for all age groups
  - Community programs / services e.g. Domiciliary Care SA, Commonwealth funded Day Therapy Centres, council services such as cleaning, shopping and transport
  - Single discipline interventions (e.g. physiotherapy), either public, private or non-government organisations.
- Prior to discharge the multi-disciplinary team needs to ensure that equipment, home modifications and all necessary community based supports have been organised for individuals to facilitate their safe discharge home.
- If an individual is being discharged directly home, the general practitioner needs to be informed and made aware of the suggested ongoing management plan including follow up rehabilitation and services that have been organised. This should occur within the 48 hours prior to the individual's discharge. The individual and family / carers also need to be informed of this information with relevant education provided as appropriate.
- Some individuals who have limited mobility and require assistance with self-care and other activities post arthroplasty surgery will not be suitable for discharge directly home and will require one of the following options depending on their needs:
  - Inpatient rehabilitation for patients requiring this level of assistance
  - Respite / non-weight bearing beds if required for all age groups prior to an intensive inpatient or ambulatory rehabilitation program
  - Residential transition care or the equivalent service available for all age groups
  - Return to local country health services or permanent residential aged care facility – high care (if previously resided in such facility).
- In some instances a change of usual accommodation may be needed such as permanent residential care but this is likely to be rare given the elective nature of arthroplasty surgery.
- Prior to discharge, appropriate orthopaedic follow up needs to be arranged.
- It is important that where a client requires an up transfer, due to a specific orthopaedic complication, where possible the operating surgeon should be notified so that they can have input into that client's treatment plan.

Post-acute rehabilitation

Key requirements

- Post acute rehabilitation whether provided as inpatient, ambulatory (home based or centre based) or community (including singled discipline allied health) needs to focus on maximising an individual's recovery following arthroplasty surgery.
- Rehabilitation goals need to be realistic and achievable, focusing initially on independence in mobility, self care and functional tasks that will facilitate community re-integration and participation in previous life roles. Goals need to be established in partnership with the individual, their family / carers and treating health professionals.
- In conjunction with the rehabilitation program provided to the individual, the need for community supports (such as personal care, transport and domestic assistance), equipment and home modifications to enable safety and independence in the community needs to be addressed.
- The general practitioner needs to be kept informed of the individual's rehabilitation plans and progress.
- Access to orthopaedic review needs to be available
- Where applicable a Return to Work plan needs to be considered which may involved specialist agencies such as Commonwealth Rehabilitation Service to assist in this process.

Ongoing maintenance of function

Key requirements

- Following arthroplasty surgery it is anticipated that the majority of individuals will have improved mobility, function and independence than prior to surgery and will be able to resume previous roles and activities.
- For some however, in particular those with other co-morbidities ongoing support to optimise their function and independence may be needed. The availability and ease of access to these community services is important so that the individual sustains the functional gains they have achieved following the surgery. Referral pathways that ensure individuals have access to these services through a variety of access points are needed. Services will vary depending on an individual's age and also needs as noted above.
- The involvement of the general practitioner in the individual's ongoing management plan post arthroplasty surgery including regular monitoring of sustained improvement in mobility, function and independence is important. Any noted deterioration in an individual's mobility or independence needs to be addressed promptly so that a burst of rehabilitation via am ambulatory or community program can be organised to prevent any further deterioration.
- Ongoing multidisciplinary orthopaedic review will be required by all individuals undergoing arthroplasty surgery with access to an orthopaedic specialist if required.

4.5 Workforce

NB Refer to Chapter 6 Workforce for the specific competencies related to the joint replacement (Arthroplasty) coordinator role.