

BEST PRACTICE IN AMPUTEE REHABILITATION

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VA/DoD CLINICAL PRACTICE GUIDELINE FOR REHABILITATION OF LOWER LIMB AMPUTATION



DEPARTMENT OF VETERANS AFFAIRS DEPARTMENT OF DEFENSE GUIDELINE SUMMARY



KEY ELEMENTS ADDRESSED BY THE GUIDELINE

1. Defines the phases of rehabilitation care and the steps included in each phase.
2. Recognizes the importance of comprehensive interdisciplinary assessment of the patient before and after surgery and understanding the physical and social support system.
3. Recognizes the importance of the decision about the appropriate level of amputation to maximize function.
4. Discusses surgical principles to optimize wound healing and shaping of the residual limb for prosthetic rehabilitation.
5. Discusses immediate postoperative dressing and management of the residual limb to maximize healing and functional outcome.
6. Identifies key elements of the rehabilitation treatment and prosthetic training across all phases of the rehabilitation process.
7. Emphasizes the importance of foot care to prevent future amputation and optimize the condition of the contralateral limb.
8. Describes the key components of medical management of medical comorbidities and prevention of complications.
9. Addresses strategies for pain management across all phases of the rehabilitation process.
10. Emphasizes the contribution of behavioral health assessment and intervention.
11. Recognizes the importance of patient education.
12. Emphasizes the need for life-long follow-up care.

VA access to full guideline: <http://www.oqp.med.va.gov/cpg/cpg.htm>

DoD access to full guideline: <http://www.qmo.amedd.army.mil/pguide.htm>

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AMPUTATION

The clinical practice guideline is designed to achieve several specific goals:

1. Describe prosthetic training, physical conditioning, and psychosocial rehabilitation to maximize the patient's function and quality of life.
2. Describe appropriate interventions to optimize the patient's physical function after an amputation (e.g., strength, aerobic endurance, and balance).
3. Promote an interdisciplinary team approach that is patient focused.
4. Revise existing clinical pathways to be consistent with current evidence-based rehabilitation methods.
5. Provide facilities with a structured framework of appropriate rehabilitation interventions to improve the patient's outcome and reduce current practice variation.
6. Establish priorities for future research efforts that will generate practice-based evidence.
7. Identify outcome measures that can ultimately be used to improve practice in the field and in future guidelines.
8. Assist in identifying priorities for research efforts and allocation of resources.

Amputation Rehabilitation Health-Related Outcomes

(VA/DoD CPG for Rehab of LL Amputation 2007)

1. Postoperative Pain

- Reduce residual limb pain, improve effectiveness of coping, and reduce interference with daily function
- Reduce phantom limb pain
- Decrease consumption of narcotics (amount and type of pain medications throughout the acute surgical and early pre-prosthetic training phases)

Amputation Rehabilitation Health-Related Outcomes

(VA/DoD CPG for Rehab of LL Amputation 2007)

2. Physical Health

- Reduce the risk of adverse effects due to periods of prolonged immobilization:
 - Decrease contractures
 - Decrease incidence of pressure ulcers
 - Decrease incidence of deep vein thrombosis
- Improve physical status (e.g., balance, normal range of motion especially at the hips and knees; increase strength and endurance to maximize efficient use of a prosthesis)

Amputation Rehabilitation Health-Related Outcomes

(VA/DoD CPG for Rehab of LL Amputation 2007)

3. Function

- Improve functional status (e.g., independent bed mobility, independent transfer, wheelchair mobility, gait, and safety)
- Improve ambulation (e.g., distance of ambulation, hours of prosthetic wearing, use of an assistive device, and ability to ascend/descend stairs)
- Improve quality of life/decrease activity limitation (e.g., activities of daily living [ADL], recreation, physical activity beyond ADL, community re-integration; and return to home environment)

Amputation Rehabilitation Health-Related Outcomes

(VA/DoD CPG for Rehab of LL Amputation 2007)

4. Psychological Support and Well-Being

- Reduce psychological comorbidities pre- and postoperative (e.g., depressive and anxiety disorders)
- Improve the quality of life
- Decrease the physical and mental/emotional disease burden

Amputation Rehabilitation Health-Related Outcomes

(VA/DoD CPG for Rehab of LL Amputation 2007)

5. Patient Satisfaction

- Improve satisfaction with the level of skills and levels of independence individual patients have been able to achieve
- For patients receiving prostheses, improve satisfaction with the prosthesis (comfort, functionality, and cosmesis)
- Improve satisfaction with the progress of care and status at discharge

Amputation Rehabilitation Health-Related Outcomes

(VA/DoD CPG for Rehab of LL Amputation 2007)

6. Reintegration (*decrease participation restrictions*)

- Improve the discharge outcome (discharge to the least restrictive environment)
- Improve vocational outcomes
- Improve recreational participation
- Maximize community participation

Amputation Rehabilitation Health-Related Outcomes

(VA/DoD CPG for Rehab of LL Amputation 2007)

7. Healthcare Utilization (*length of stay*)

- Optimize the length of rehabilitation stay
- Optimize the time from prosthetic fitting to reaching the mobility goals, regardless of the process of rehabilitation
- Increase life-long follow-up

Phases of Amputee Rehab

(Esquenazi '01)

1. Pre-operative
2. Amputation surgery / dressing
3. Acute post surgical
4. Pre-prosthetic
5. Prosthetic prescription / fabrication
6. Prosthetic training
7. Community integration
8. Vocational rehabilitation
9. Follow-up

Core and Module approach

(VA/DoD CPG for Rehab of LL Amputation 2007)

- ▣ Core recommendations cut across the phases
- ▣ Module recommendations correspond to phases of Amputee Rehabilitation
 - A. Pre-operative
 - B. Immediate Post-op
 - C. Pre-prosthetic Rehab
 - D. Prosthetic Training
 - E. Rehab & Prosthesis Follow-up

Core recommendations

CORE-1.

- ▣ **Interdisciplinary Consultation/Assessment**
- ▣ *Interdisciplinary team assessment and management should be employed in the care of all patients with amputations throughout all phases of care*

Core recommendations CORE-2.

- ▣ **Rehabilitation Treatment Plan**
- ▣ *A comprehensive, interdisciplinary, patient-centered treatment plan should be developed early in the course of the rehabilitation process, and updated and modified throughout all phases of care.*

Core recommendations

CORE-3.

▣ Pain Management

- ▣ *Pain assessment and treatment using pharmacological and non-pharmacological means for pain control should start in the preoperative phase and continue throughout the rehabilitation and prosthetic training.*
- ▣ 12. When assessing pain, standardized tools should be used. E.g.; Visual Analogue Scale (VAS), Short Form McGill Pain Questionnaire (SF-MPQ), and Pain Interference Scale (PIS).
- ▣ 17. Transition to a non-narcotic pharmacological regimen combined with physical, psychological, and mechanical modalities should be considered throughout the rehabilitation process.
- ▣ 18. There is no consistent evidence to support or refute one specific type of pain control.

Core recommendations

CORE-4.

- ▣ **Medical Care**
- ▣ *Comprehensive medical assessment and the management of individuals undergoing amputation are imperative throughout the continuum of care. Optimizing medical, surgical, and rehabilitation outcomes requires a holistic approach to patient care.*

Core recommendations

CORE-5.

- ▣ Cognitive Assessment
- ▣ *A cognitive/neuropsychological assessment should be conducted prior to the operation, if possible, to assist in the process of determining the patient's ability to learn, adapt to, and utilize a prosthesis following surgery as well as the long-term abilities for autonomous and independent living. The assessment may be repeated after the surgery if indicated by the patient's function or the response to treatment.*

Core recommendations

CORE-6.

- ▣ The Residual Limb
- ▣ *The residual limb should be appropriately managed to prepare for prosthetic training and to enhance functional outcomes.*
- ▣ 27. Limb volume management
- ▣ 28.educated about care and management of the residual limb
- ▣ 29. Interventions to prevent contracture....
- ▣ 31. Limb protection should be emphasized ...
- ▣ 32. Skin and soft tissue should be monitored ...

Core recommendations

CORE-7

- ▣ The Contralateral Limb
- ▣ *Comprehensive evaluation of the neurological, musculoskeletal, soft tissue and vascular status of the contralateral limb is necessary to initiate educational programs and establish specialized footwear or orthotic needs.*
- ▣ 34. Comprehensive assessment ...
- ▣ 35. ...educated about strategies to protect ...
- ▣ 36. Appropriate foot care as indicated ...

Core recommendations

CORE-8.

- ▣ **Behavioral Health Assessment and Treatment**
- ▣ *Complete a psychological assessment in the preoperative phase, if possible. Evaluate the psychosocial status and treat problems throughout all phases of rehabilitation.*
- ▣ 43. Specific structured interventions for problems such as depression, anxiety, sexual difficulties, substance abuse or drug overuse, and pain should be considered.
- ▣ 46. The use of validated tools for assessment should be considered: e.g. Prosthesis Evaluation Questionnaire (PEQ), Trinity Amputation and Prosthetic Experience Scales (TAPES), The Hospital Anxiety and Depression Scale (HAD), The SF-36 Health Survey

Core recommendations CORE-9.

- ▣ **Social Environment (Support)**
- ▣ *Identify the social and physical support system that will be available to the patient during the rehabilitation process and help cope with the challenges of limb loss.*
- ▣ Interpersonal Social Environment
- ▣ Physical Environment
- ▣ Economic Environment

Core recommendations CORE-10.

- ▣ **Peer Support Interventions**
- ▣ *Peer support should be considered, if available, throughout the course of amputation and rehabilitation.*

Core recommendations

CORE-11.

▣ Patient Education

- ▣ *Patients scheduled for amputation should receive in-depth education regarding the procedure itself, and the various components of postoperative care and rehabilitation activities that will occur. A combination of information-giving and coping skills training should continue through all phases of the rehabilitation care.*

Table 7. Patient Education Summary Table

Education Content	Learning assessment	Pain control	Patient safety/falls	Complication prevention	Incentive spirometry	Tobacco cessation	Bowel/bladder management	Deep vein thrombosis prevention	Contracture prevention	Pressure ulcer reduction	Edema control	Sequence of amputation care	Prosthetic options	Wound care/scar management	Role of interdisciplinary team members	Peer support	Protection of contralateral limb	Signs/symptoms of infection	Care of prosthesis	Donning/doffing prosthesis	Skin hygiene
Preoperative	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x					
Postoperative		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x			x	
Pre-prosthetic rehabilitation		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		x	x	
Prosthetic training		x	x	x		x					x		x	x	x	x	x	x	x	x	

Core recommendations CORE-12.

- ▣ **Learning Assessment**
- ▣ *Obtain a learning assessment of the patient and family.*

Core recommendations

CORE-13.

- ▣ **Physical Rehabilitation**
- ▣ *The aim ... is to achieve maximum independence and function.*
- ▣ *takes into account their pre-amputation lifestyle, expectations, and medical limitations.*
- ▣ *The level of amputation, physical and psychological presentation, and social environment influence the expected level of functional independence.*
- ▣ *identify when the individual has achieved optimum function with or without the prosthesis*

Core recommendations CORE-13.

- ▣ **Physical Rehabilitation**
- ▣ CORE-13.1 Range of Motion
- ▣ CORE-13.2 Strengthening
- ▣ CORE-13.3 Cardiovascular Fitness and Endurance
- ▣ CORE-13.4 Balance

Core recommendations

CORE-14.

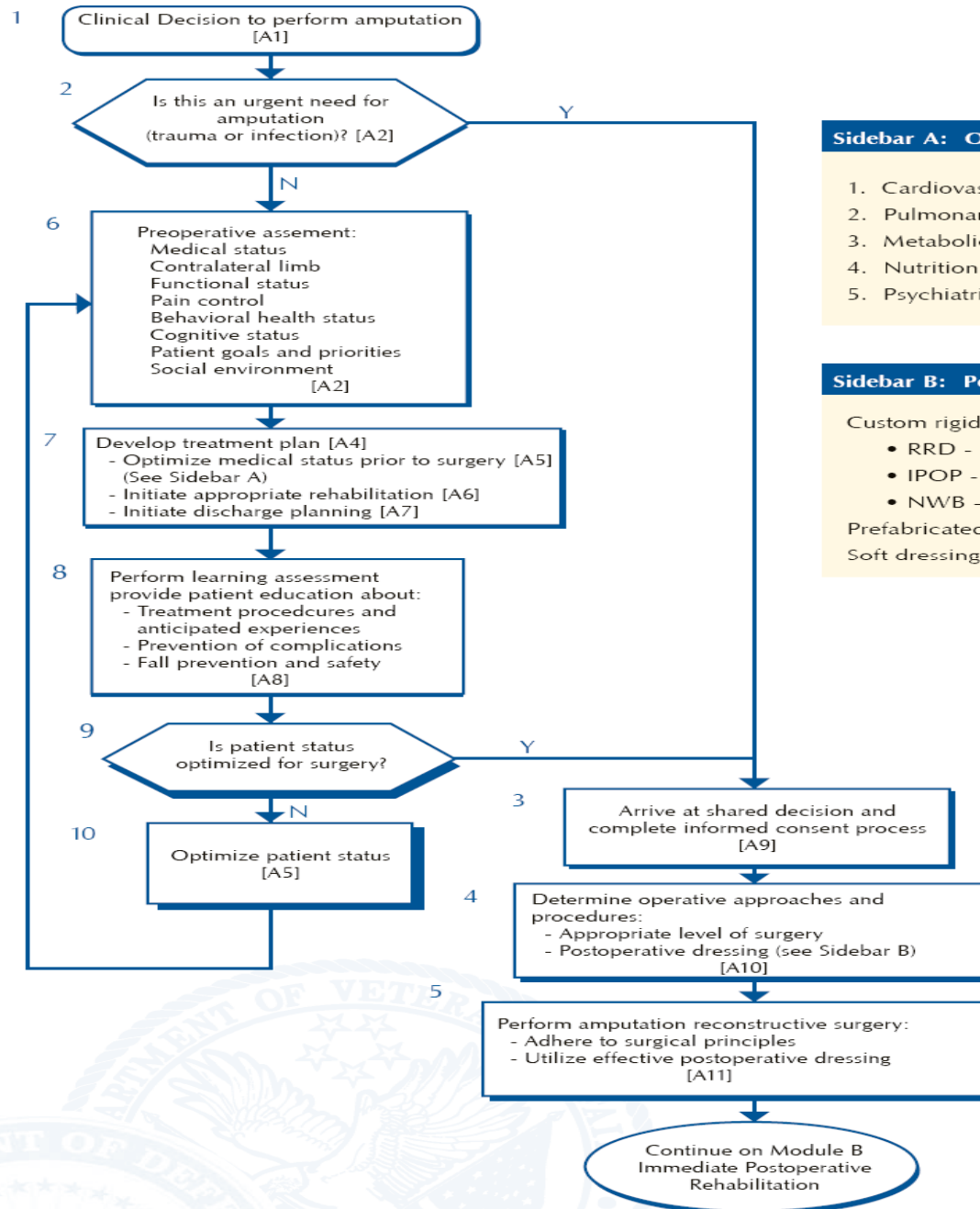
- ▣ **Functional Rehabilitation**
- ▣ *Functional rehabilitation includes assessment and activities, such as activities of daily living (ADL), transfers, and mobility, which are performed to achieve a functional goal.*
- ▣ 14.1 Functional Activities of Daily Living
- ▣ 14.2 Mobility (table 8) and Equipment
- ▣ 14.3 Community Reintegration

Table 8. Advantages and Disadvantages of Recommended Mobility Assessment Tools

Amputee Mobility Predictor (AMP)	<ul style="list-style-type: none"> • Valid both with and without a prosthesis • High inter- and intra-rater reliability • Correlates with the 6-Minute Walk as a predictor of prosthetic success • Negative correlation with age and comorbidity • Can be performed in 15 minutes or less in the clinic • Requires little equipment 	<ul style="list-style-type: none"> • None found in the literature review
Functional Independence Measure (FIM)	<ul style="list-style-type: none"> • Easily performed during evaluation and at intervals during rehabilitation • Good intra- and inter-rater reliability • Good predictor of continued prosthetic use after discharge 	<ul style="list-style-type: none"> • Does not act as a predictor of prosthetic success • Does not fully capture functional changes with progression of therapy • Highest functional level that can be attained with a prosthesis is 6 out of 7 regardless of the patient's functional abilities (ceiling effect)
Two-Minute Walk	<ul style="list-style-type: none"> • Easily performed in the clinic • High intra- and inter-rater reliability • Responsive to change with continued rehabilitation • Correlates with other measures of physical function (6-Minute Walk, 12-Minute Walk) 	<ul style="list-style-type: none"> • Increases in distance may simply be related to external cues rather than a response to therapy
Timed Up and Go (TUG)	<ul style="list-style-type: none"> • Easily performed in the clinic • High intra- and inter-rater reliability 	<ul style="list-style-type: none"> • No studies found regarding predictive validity • No studies found regard TUG in gait with a single limb and assistive device • One study indicates that the TUG is dependent on the chair type (arms and height)
Upper Extremity Ergometry	<ul style="list-style-type: none"> • Has been shown to be an effective way to determine safe maximal heart rates for exercise and prognostic information concerning the functional outcome after rehabilitation • Patients that achieve a maximum work capacity of 45 watts per minute were able to ambulate with a prosthesis without an assistive device; those that achieve a maximum work capacity of 60 watts per minute were able to ambulate outdoors with their prosthesis • Easy to administer and inexpensive 	<ul style="list-style-type: none"> • Severe cardiac disease is prevalent in patients with dysvascular amputations • Patients should be monitored for arrhythmias and ST-segment depression throughout testing or exercise programs

Module A

- ▣ *Preoperative Assessment and Management*



Sidebar A: Optimizing Medical Comorbidity

1. Cardiovascular (including DVT prophylaxis)
2. Pulmonary
3. Metabolic
4. Nutrition
5. Psychiatric Illness

Sidebar B: Postoperative Dressing

- Custom rigid dressing
- RRD - Rigid removable dressing
 - IPOP - Immediate postoperative prosthesis
 - NWB - Non-weight bearing rigid dressing
- Prefabricated dressing
- Soft dressing



Two major classifications of postoperative dressings that are commonly used:

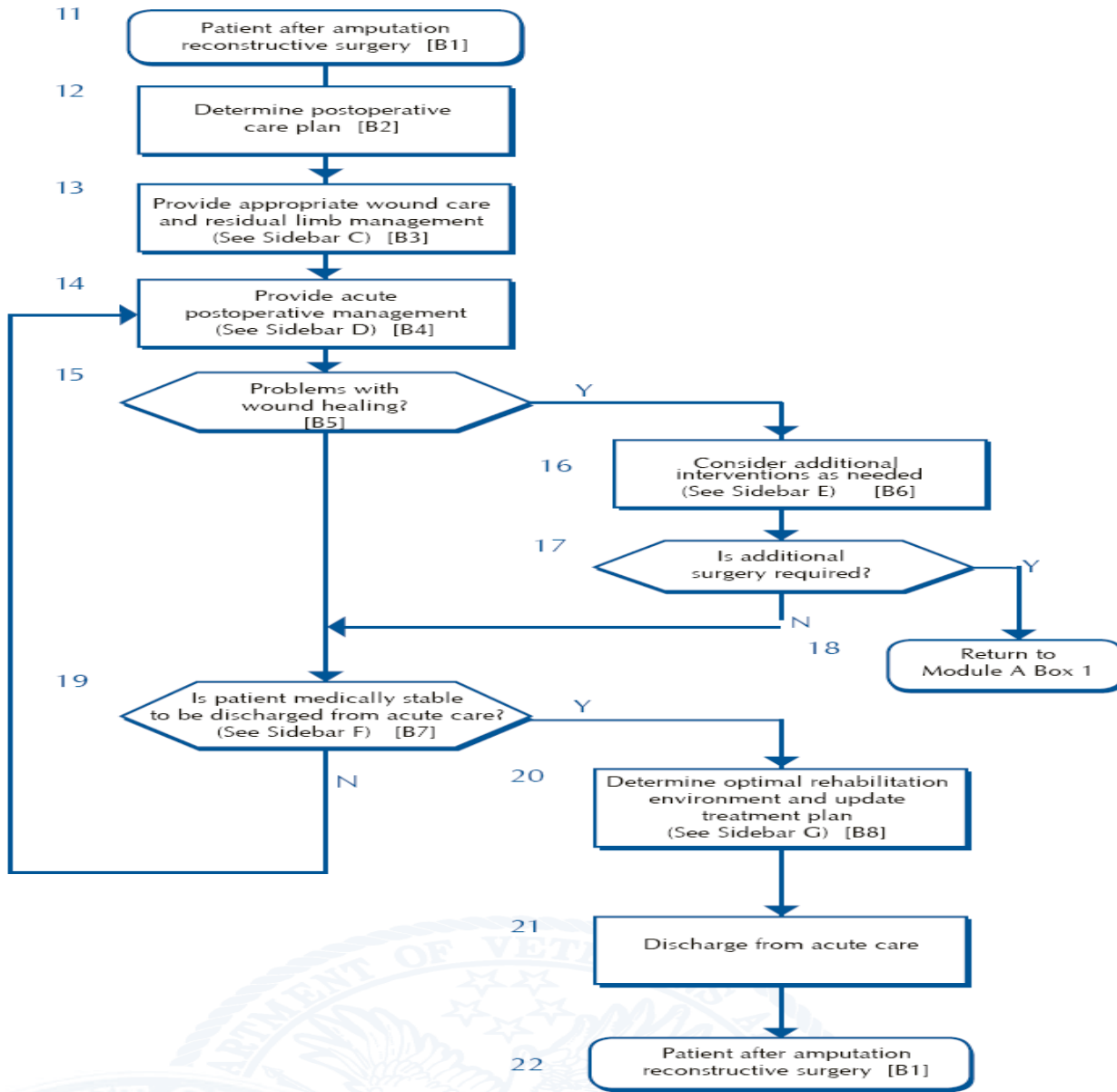
▣ **Soft dressing**

- ACE wrap
- Shrinker
- Compression pump

▣ **Rigid dressing**

- Non-weight bearing rigid dressing (NWB)
- Immediate postoperative prosthesis (IPOP)
- Custom rigid removable dressing (RRD)
- Prefabricated rigid removable dressing (RRD)
- Prefabricated pneumatic immediate postoperative prosthesis (AirPOP)

An appropriate postoperative dressing should be selected by the surgeon in the preoperative phase to protect the residual limb, decrease edema, and facilitate wound healing; consider the use of a rigid postoperative dressing.



Sidebar C: Residual Limb Management

- Edema control
- Prevention of contractures
- Protection from trauma
- Management of postoperative dressing

Sidebar D: Acute Postoperative Management

- Medical comorbidity
- Rehabilitation intervention
- Discharge planning
- Pain control
- Behavioral health

Sidebar E: Interventions to Resolve Wound Healing Problems

- Revision surgery
- Vascular evaluation/intervention
- Infection evaluation and treatment
- Aggressive local wound care
- Hyperbaric oxygen (HBO) [B6]

Sidebar F: Criteria for Discharge from Acute Care

- Wound healing appropriately
- Lack of infection
- Acceptable bowel and bladder function
- Medical comorbidity controlled
- Hemodynamically stable [B7]

Sidebar G: Possible Rehabilitation Environment

- Acute inpatient rehabilitation
- Outpatient rehabilitation
- Sub-acute rehabilitation
- Home therapy
- Self-directed therapy
- Skilled nursing facility
- Long-term care [B8]

Table 9. Categories of Wound Healing (adapted from Smith, 2004)

Category I:	<i>Primary</i> ; heal without open areas, infections or wound complications; no wound healing intervention required.
Category II:	<i>Secondary</i> ; small open areas that can be managed and ultimately healed with dressing strategies and wound care. Additional surgery is not required. May be possible to stay with the original plan with some portion of the wound intentionally left open.
Category III:	Skin and subcutaneous tissue involvement (no muscle or bone involvement); requires minor surgical revision.
Category IV:	Muscle or bone involvement; requires major surgical revision but heals at the initial amputation "level."
Category V:	Requires revision to a higher amputation level; for example, a transtibial amputation that must be revised to either a knee disarticulation or a transfemoral amputation.



23 Patient discharged from acute care after amputation surgery [C1]

24 Postoperative assessment:
 Medical Status
 Physical & functional status
 Pain control
 Behavioral health status
 Cognitive status
 Social environment
 Residual limb and wound healing [C2]

25 Determine rehabilitation goals [C3]

26 Provide treatment as needed to optimize patient's medical condition(s) for rehabilitation [C4]

27 Provide Patient Education [C5]

28 Establish/update rehabilitation treatment plan [C6]
 Provide physical and functional intervention based on current and potential function (See Sidebar H) [C7]

29 Is prosthesis appropriate to improve functional status and meet realistic patient goals? [C8]

30 Prescribe appropriate DME [C9]

31 Have rehabilitation goals been met?

33 Reassess goals and reevaluate treatment plan

32 Follow-up See Module E

Continue to: Prosthetic Training Module D

Sidebar H: Physical and Functional Interventions

- Range of motion (ROM)
- Strength
- Cardiovascular-endurance and fitness
- Balance
- Mobility
- Functional activities of daily living
- Community reintegration

(See CORE-13 and CORE 14)



Table C-1: Prosthesis Prescription Components Based on the Type of Ambulation Required

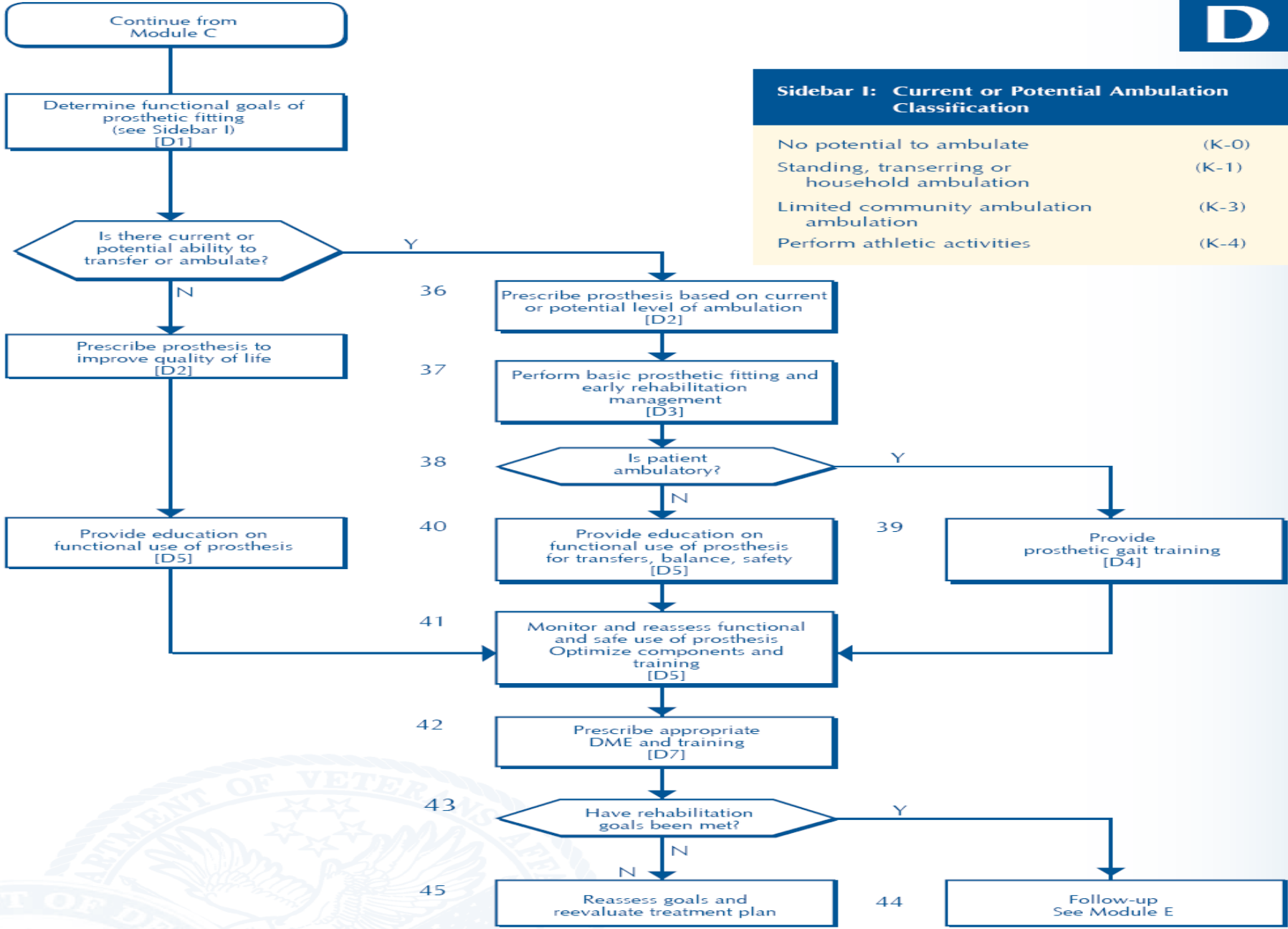
Functional Level	TRANSTIBIAL PRESCRIPTION	TRANSFEMORAL PRESCRIPTION
Unlimited household ambulatory (K 1)	<ul style="list-style-type: none"> • Patella tendon bearing (PTB) or total surface bearing (TSB) • Sleeve or pin/shuttle • Soft foam or gel liner • Flexible keel foot • Endoskeletal or exoskeletal pylon 	<ul style="list-style-type: none"> • Modified quadrilateral (quad) (improve sitting comfort) • Silesian/pin/ shuttle/lanyard/total elastic suspension (TES) • Gel liner or frame socket • Knee systems * • Flexible keel or single axis foot • Endoskeletal pylon
Limited community ambulatory (K 2)	<ul style="list-style-type: none"> • PTB or TSB • Sleeve or pin/shuttle or suction • Soft foam or gel liner or hard socket • Flexible keel, multi-axial, or energy storage foot • Endoskeletal or exoskeletal pylon 	<ul style="list-style-type: none"> • Quad, modified quad or ischial containment • Pin/shuttle/lanyard/silesian/suction/TES • Gel liner or frame socket • Knee systems * • Flexible keel or single axis foot • Endoskeletal pylon
Community ambulatory (K 3)	<ul style="list-style-type: none"> • PTB or TSB • Sleeve, pin/shuttle, suction, or vacuum • Soft foam or gel liner or hard socket • Flexible keel, multi-axial foot • Torsion and/or vertical shock pylon • Endoskeletal or exoskeletal pylon 	<ul style="list-style-type: none"> • Quad, modified quad or ischial containment • Pin/shuttle, suction, silesian/suction/TES • Gel liner or frame socket • Knee systems * • Flexible keel, multi-axial or energy storage foot • Torsion and/or vertical shock pylon • Endoskeletal pylon
Exceeds basic ambulation (K 4)	<ul style="list-style-type: none"> • PTB or TSB • Pin/shuttle/sleeve/suction • Soft foam or gel liner • Flexible, multi-axial, or energy storage foot • Specialty foot (running) • Torsion and/or vertical shock pylon • Endoskeletal or exoskeletal pylon 	<ul style="list-style-type: none"> • Ischial containment • Suction/pin/shuttle/silesian/suction/combo • Gel liner or frame socket • Knee systems * • Quad, modified quad Flexible keel or specialty foot (running) • Torsion and/or vertical shock pylon • Endoskeletal pylon

*The specifications for knee systems are too varied to be presented in this table.

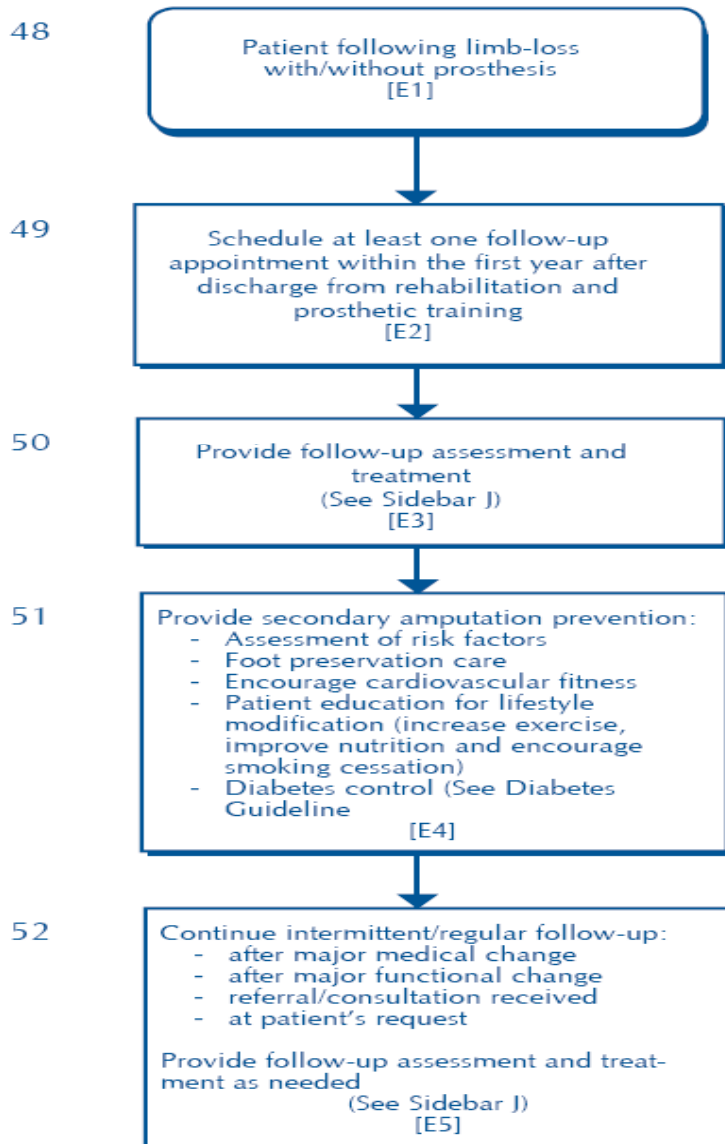
Table C-2: Specialty Prosthesis

Function Level	TRANSTIBIAL PRESCRIPTION	TRANSFEMORAL PRESCRIPTION
Water limb	<ul style="list-style-type: none"> • Patella tendon bearing (PTB) or total surface bearing (TSB) • Sleeve and/or cuff and waist belt • Hard socket or gel liner • Water resistant foot • Endoskeletal or hollow core 	<ul style="list-style-type: none"> • Quad, modified quad or ischial containment • Pin/shuttle/lanyard/silesian/total elastic suspension (TES) • Water resistant foot • Waterproof single axis knee • Endoskeletal or hollow core
Cycling	<ul style="list-style-type: none"> • PTB or TSB with low posterior brim • Pin/shuttle/sleeve/cuff • Hard socket or soft foam or gel liner • Dynamic Response Foot (consider direct pedal attachment) • Endoskeletal or exoskeletal 	<ul style="list-style-type: none"> • Quad, modified quad or ischial containment • Pin/shuttle/lanyard/TES • Dynamic Response Foot (consider direct pedal attachment) • Endoskeletal
Snow skiing/boarding	<ul style="list-style-type: none"> • PTB or TSB • Pin/shuttle (add external brace for snow skiing) • Gel liner • Dynamic Response Specialty Foot for skiing (eliminate boot) foot for boarding • Endoskeletal 	<ul style="list-style-type: none"> • Prosthesis not recommend for snow skiing • Quad, modified quad or ischial containment • Pin/shuttle/lanyard/silesian/TES • Dynamic Response Foot for boarding • Endoskeletal
Water skiing/boarding	<ul style="list-style-type: none"> • PTB or TSB • Suction (add external brace for skiing) • Gel liner • Water resistant energy storage foot • Endoskeletal or exoskeletal 	<ul style="list-style-type: none"> • Prosthesis not recommend for water skiing

Sidebar I: Current or Potential Ambulation Classification	
No potential to ambulate	(K-0)
Standing, transerring or household ambulation	(K-1)
Limited community ambulation	(K-3)
Perform athletic activities	(K-4)



Level of Function	Description of Ambulation Level
K 0:	The patient does not have the ability or potential to ambulate or transfer safely with or without assistance and the prosthesis does not enhance his/her quality of life or mobility.
K 1:	The patient has the ability or potential to use the prosthesis for transfers or ambulation on level surfaces at fixed cadence - typical of the limited and unlimited household ambulator.
K 2:	The patient has the ability or potential for ambulation with the ability to traverse low-level environmental barriers such as curbs, stairs, or uneven surfaces - typical of the limited community ambulator.
K 3:	The patient has the ability or potential for ambulation with variable cadence - typical of the community ambulator who has the ability to traverse most environmental barriers and may have vocational, therapeutic, or exercise activity that demands prosthetic utilization beyond simple locomotion.
K 4:	The patient has the ability or potential for prosthetic ambulation that exceeds basic ambulation skills, exhibiting high impact, stress, or energy levels - typical of the prosthetic demands of the child, active adult, or athlete.



Sidebar J: Follow-Up Assessment

1. Patient's goals
2. Functional Assessment
 - Gait and mobility
 - Residual limb
 - Contralateral limb
 - Socket fit or residual limb volume
 - Strength/ROM
 - Changing needs for DME
 - Activities of daily living
3. Secondary complications
 - Pain control
 - Skin integrity
 - Associated musculoskeletal conditions
4. Prosthetic assessment (repair, replacement, mechanical adjustment, new technology)
5. Vocational and recreational needs

**REVIEW
OF THE
NEW SOUTH WALES
ARTIFICIAL LIMB SERVICE**

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SUMMARY OF RECOMMENDATIONS

CARE AND TREATMENT PATHWAYS

Following review of current practice in NSW amputee services, we recommend that:

1. the Guidelines for the Accreditation for Amputee Clinics be extended to require the clinic to demonstrate an operational protocol for the effective integration of surgical and rehabilitation services.
2. the craft groups of the Royal Australasian College of Surgeons relevant to amputation – vascular, orthopaedic and plastic surgery – be approached by the Department for support in the development of such protocols.
3. the use of rigid dressings (fixed or removable) in the management of the residual lower limb be encouraged as standard practice in NSW (adult) amputee services.
4. the provision of mechanical interim prostheses (manufactured by a prosthetist) be implemented as standard practice in NSW amputee services.
5. staff prosthetist positions be established in NSW amputee services. (This recommendation is made in the context of the consolidated service structure recommended below).
6. NSW amputee services and the ALS adopt a more systematic approach to quality management, particularly in respect of benchmarking amputee services and surveying patient experience of care and adapting practice in light of the information obtained.
7. a review of current ALS guidelines for the supply of prosthetic components be undertaken by the Components Committee of the ALS, with the objective of developing prioritised funding proposals to enable greater flexibility in prescribing prosthetic componentry suited to individual client needs.

Following review of the current model for the delivery of amputee services in NSW, we recommend that:

8. amputee and artificial limb services (ALS) in NSW should be provided within the framework of a limited number of comprehensive 'amputee services'. This report is not prescriptive with regard to the number of such services, but at a maximum there should be one service per Area Health Service. The number of services should be determined by the Department of Health after further consultation with Area Health Services and involved clinicians.

9. each service should include or have access to the following clinical staff:

1.Rehabilitation Physicians

2.Physiotherapists

3. Prosthetists

4.Nurses

5.Occupational Therapists

6.Psychologists

7.Affiliated surgeons

8.A range of other providers – Podiatrists, Social

Workers, Dieticians..

10. amputations should be carried out by senior surgeons experienced in amputation surgery, at a hospital designated by the particular service for this purpose.

11. discussions should be held with the Royal Australasian College of Surgeons and relevant craft groups to obtain their support for this service model.

12. each service should have a Clinical Director who is an appropriately qualified, experienced clinician. This will commonly be a rehabilitation physician.

13. before any planned amputation, the Clinical Director or a suitably experienced Rehabilitation Physician nominated by him/her should be consulted, ideally together with a prosthetist and physiotherapist who will be involved in rehabilitation after the surgery.

14. each service should hold outpatient amputee clinics at a number of different centres as required to enhance access for people with amputations.

Outcome Confounders

- ▣ Post-op pain
- ▣ Physical Health
- ▣ Function (dc FIM)
- ▣ Psych Well-being
- ▣ Pt Satisfaction
- ▣ Reintegration (dc Dest)
- ▣ Healthcare Utilisation (LOS, FIM effic)
- ▣ Pain service availability
- ▣ Lack of AHP in acute
- ▣ Deconditioning +++, post-op Cxs: contractures, PAs, Cognition
- ▣ Social isolation, Psych services
- ▣ Adjustment, PreM Hx
- ▣ Alone, unsuitable accomm, home mods
- ▣ Wound healing, Co-morbids: DM, IHD, CCF...

Problem areas

- ▣ Consequences of prolonged immobility
- ▣ Medical co-morbidity
- ▣ Delayed wound healing
- ▣ Cognitive impairment
- ▣ Adjustment issues
- ▣ Learning capacity
- ▣ Inappropriate accommodation
- ▣ Intransigent attitudes

