SCOPE: Western Australia

CLINICAL PROTOCOL 1 - WOUND DIAGNOSTICS AND TREATMENT

The following protocol outlines the sequence of events in the assessment, investigation, diagnosis and management of a client with a wound and forms the basis for the protocols which follow.

Process	Action	Guidance
Referral Criteria	Referrals can be received from: • Clinical Nurse Co-ordinators • Clinical Nurse Consultant Managers ***NB:** if referral/assessment requests are received from external providers, it may be appropriate that NP arranges for the clinical nurse assessor to conduct the initial assessment to determine if NP involvement is necessary.	• Wound present for >6weeks despite optimal treatment interventions and/or • Wound aetiology does not complement clinical assessment.
Assessment	A complete history is taken. Assess for correctable factors that may delay or inhibit wound healing	**Patient History** • Medical, surgical, allergy history • Wound history • Current medications (prescribed and over the counter [OTC]) • Previous Diagnostic investigations • Social and occupational history • Activities of daily living/carer support
Examination	Physical examination of the wound and associated area/limb. More generalised assessment as needed. Explore differential diagnosis.	• Physical Examination • Clinical features of the wound and skin • Presence of other wounds/lesions • Pain assessment • Vascular assessment • Peripheral perfusion • Peripheral neurological examination (eg using Semmes Weinstein 10g monofilament, tendon reflexes, vibration) • Signs and symptoms of infection • Signs of autoimmune disease • Exclude neoplastic disease. • Footwear (neuropathic, lower limb wounds). • Physical and joint mobility.
Investigations	Determine which investigations may be required to assist in a diagnosis or provide a baseline health assessment	**Pathology** Haematology • FBP, ESR, CRP, INR Biochemistry • U&Es • LFT (Total Protein, Albumin), pre-albumin • Glucose, HbA1c • Lipids • Thyroid Function

Process	Action	Guidance
		Microbiology and Histology • Wound fluid/swabs – microscopy, culture and sensitivity (MC&S) • Tissue biopsy – MC&S and histopathology • Skin scraping, immunoflurorescence **Biopsy** This may be required if the wound has been non-healing, despite optimal treatment, for greater than 4 weeks; or the wound duration is greater than 6 months; and/or is assessed as atypical.
	Referral for: **Arterial Duplex Scan:** To determine presence and/or severity or arterial disease in the lower limb **Venous Duplex Scan:** To determine disease or impairment of superficial, deep, and perforating veins and valves. **Bone Scan/MRI** If there is a suspicion of osteomyelitis, or underlying structural damage then client will be referred to General Practitioner and/or appropriate Medical Specialist for further investigations/interventions which may include bone scan/MRI	**Radiology/Medical Imaging** • Ankle Brachial Pressure Index (ABPI) • Toe Doppler Pressures/Index • Duplex Scan (Arterial and Venous) • Photoplethysmography (PPG) • X-Ray **ABPI** performed on all clients with a leg ulcer. If the ABPI does not complement the clinical assessment or is inconclusive then further diagnostic investigation may be required. **Toe Doppler Pressure Index** Performed on clients with incompressible arteries due to calcification to measure arterial perfusion in the toes and feet as seen in clients with diabetes, renal disease or with ABPI of greater than 1.2mmHg. **Arterial/Venous Duplex Scan** Non-invasive investigation is recommended for initial diagnosis **X-Ray** If there is a suspicion of osteomyelitis, sinus, fistula, significant undermining or foreign body, then an x-ray may be ordered.
Diagnosis	Make provisional diagnosis	On clinical picture, available assessment data and results of investigations.
Management	**Urgent Referrals:** • Life/limb threatening infection • Acute ischaemic changes • Abnormal test results that require medical intervention • Treatment required outside the NP scope of practice • Acute DVT • New client with an ABPI <0.7 or ankle systolic <80mmHg or TBPI <60mmHg • Client that requires surgical intervention	Notify medical practitioners of investigations ordered and referrals organised. **Referrals** If the wound fails to heal despite optimal therapy then consultation with other health care practitioners and further investigations may be required at that time.

Process	Action	Guidance
	• Ulcers on a high risk foot have immediate referral to MDFU Clinic • Significant deterioration in wound since last review	
	Nurse Practitioner: Non-pharmacological treatment	**Non-pharmacological treatment** • Appropriate dressings and/or compression therapy based on diagnosis and client assessment. • Cleansing and debridement of wound (conservative sharp wound debridement and/or ultrasonic wound debridement).
	Client education for self-care	**Client/Carer education for self care** • Disease process and health maintenance • Treatment regimes • Skin care regimes • Diet (the importance of essential vitamins and minerals as required). • Indications to seek medical assistance • Lifestyle changes • Prevention of recurrence
	Pharmacological treatment	• Pain management • Medication management (includes relevant consumer handouts) **Pharmacological Treatments** • Analgesics • Topical antimicrobials • Topical anaesthetics • Local anaesthetics • Topical corticosteroids • Topical antibiotics/antifungals • Oral antibiotics • Oral Nutritional supplements • Moisturisers/barrier ointments/creams • Skin cleansers
	Refer to other clinical practice protocols	Minor surgical procedures
Management Partnerships	Appropriate referrals to assist in overall client management	Other Health Care Professionals as required: **Medical** • General Practitioner • Vascular Surgeon • Plastic Surgeon • Dermatologist • Infectious Diseases Physician • Endocrinologist • Orthopaedic Surgeon • Colorectal Surgeon • Palliative Care **Allied Health** • Podiatrist • Diabetic Educator • Occupational Therapist • Physiotherapist

Process	Action	Guidance
		• Pharmacist • Lymphoedema Specialist Services • Dietician • Mental Health Team **Community Care Providers** • Silver Chain Nurses • Silver Chain Home Support Service • Other Home Care Providers • Aged Care Assessment Team • Community Aides and Equipment Program
On-going Management	Follow-up	Review as appropriate: • Adjust treatment plan in accordance with investigative results • Wound debridement treatments according to client response
Separation	Discharge from Nurse Practitioner Service	• Referral to Silver Chain Nurses for management • Referral to Specialist Care

CLINICAL PROTOCOL 2 - MINOR SURGICAL PROCEDURES

Introduction

To provide appropriate management of wounds, there are occasions where either wound biopsy or sharp debridement procedures are required. Both of these are considered minor surgical procedures.

Biopsy

Skin and wound biopsy are used for diagnosis and may identify the presence (or absence) or various skin conditions or diseases. In addition, biopsy may be performed for semi-quantitative bacteriology where surface swabs are inadequate. Wounds considered for biopsy may include long-standing wounds, those that are atypical in location or appearance, or those that have not responded to treatment (Trent, Federman and Kirsner, 2003).

Biopsy may be considered for lesions suspicious of malignancy where there is increase size, malodour and pain, have excess granulation tissue, bleeding, or drainage, are exophytic, or have an irregular base or margin. The procedure involves prior assessment of the wound or lesion, preparation of the client, cleansing of the area and anaesthetisation with local anaesthetic. There are various methods of biopsy and in this instance the preferred options are incisional or punch biopsy.

Debridement

Debridement is the removal of devitalised (non-viable) tissue, particulate matter and foreign material. It may be undertaken to remove contaminated, dead and damaged tissue that may inhibit healing or contribute to infection in the wound. In addition, debridement is considered to prepare a wound for skin grafting, application of skin substitutes, or topical negative pressure therapy.

The ultimate aim of debridement is to obtain a clean healthy wound bed to allow rapid and effective healing. The decision to undertake this procedure requires consideration of both local and systemic factors. These include but are not limited to knowledge of underlying anatomical structures, local tissue perfusion, the presence of active inflammatory disease, the presence of impaired clotting or use of anticoagulation medication, and the presence of malignancy (Vowden and Vowden, 2011; Carville, 2012).

The outline of assessment process, investigations and management are outlined in Table 2.

Table 2: Assessment and Management: Minor Surgical Procedures

Process	Action	Guidance
History	A complete history is taken	As per protocol 1
Examination	Physical examination of the wound and associated area/limb More generalised assessment as necessary	Findings from assessment of complex, infected wounds, leg ulcers and neuropathic foot ulcers. Abnormal clinical presentation • Raised/unusual clinical features • Suspicion of neoplastic disease • Senescent tissue • Hypergranulation tissue • Non healing despite optimal treatment Presence of: • Infection not responding to antibiotic treatment • Contaminated/non-viable material • Foreign bodies
Investigations	Biopsy of wound for histology and/or microbiology	Histology • To confirm wound aetiology Microbiology • To identify organisms and sensitivities
Diagnosis	Make a provisional diagnosis	On clinical picture, available assessment data and results of investigations
Management	In addition to clinical protocol 1 **Pharmacological treatment** **Conservative Sharp Surgical or Low Frequency Ultrasonic Debridement (LFUD).** **LFUD** Requires at least weekly debridement for period of 4-6 weeks subject to individual response of treatment	 • Analgesics • Topical anaesthetics • Local anaesthetics • Oral antibiotics To remove • Contaminated material • Foreign bodies • Non-viable, colonised tissue To stimulate • Wound healing • Bactericidal effects To prepare wound environment for: • Topical negative therapy • Surgical closure

Process	Action	Guidance
		• Healing by secondary intention • Skin grafts • Substitutes to accelerate the healing process
Management Partnerships	Appropriate referrals to assist in overall management	As per clinical protocol 1
On-going Management	Follow up	Review as appropriate • Test results • Review treatment plan in accordance with investigative results • Monitor response to treatment
Separation	Discharge from NP service	As appropriate: • Wound healing achieved • Referral to Silver Chain Clinical Nurses for management • Referral for Specialist care

CLINICAL PROTOCOL 3 - OSTOMY DIAGNOSTICS AND TREATMENT

Process	Action	Guidance
Referral Criteria	Referrals can be received from: • Silver Chain Nurses • Stomal Therapy Nurses • Medical Practitioners *NB: It may be appropriate that when a referral is received other than from a Silver Chain Stomal Therapy Nurse, that the NP arranges a Silver Chain Stomal Therapy Nurse to conduct initial assessment to determine if NP involvement is necessary.	• Complex high output fistula/stoma • Presentation of atypical stoma/peri-stoma lesions • Request from Silver Chain Stomal Therapy Nurses when current management plan ineffective despite optimal treatment interventions.
Assessment	A complete history is taken	**Patient History** • Medical, surgical, allergy history • Stoma history • Current medications • Social and occupational history • Activities of daily living/carer support • Previous diagnostic investigations
Examination	Physical examination of the stoma, mucocutaneous junction and peristomal area. More generalised assessment as needed Explore differential diagnosis	**Physical Examination** • Clinical features of the stoma, mucocutaneous junction and skin • Presence of other wounds/lesions • Stoma/Wound Assessment • Signs and symptoms of dehydration • Signs and symptoms of infection

Process	Action	Guidance
Investigations	Determine which investigations may be required to assist in a diagnosis or provide a baseline health assessment	**Pathology** Haematology • FBP, ESR, CRP • Biochemistry • UECs • LFT (Total Protein, Albumin), pre-albumin • HbA1c Microbiology and Histology • Urine M/C/S • Stool Culture • Wound swabs – microscopy, culture and sensitivity (MC&S) • Wound/tissue biopsy – MC&S and histopathology • Skin scraping **Radiology/Medical Imaging** • Abdominal ultrasound • X-Ray
Diagnosis	Make provisional diagnosis	On clinical picture, available assessment data and results of investigations.
Management	**Urgent Referrals:** • Abnormal test results that require medical intervention • Treatment required outside the NP scope of practice • Client that requires surgical intervention • Significant deterioration in stoma/peristomal wound since last review	**Referrals** If the stoma/peristomal condition fails to respond despite optimal therapy then consultation with other health care practitioners and further investigations may be required at that time
Management Interventions	**Nurse Practitioner:** Non-pharmacological treatment Client education for self-care Pharmacological Treatment – based on diagnostic investigations, clinical assessment and Therapeutic guidelines	**Non-pharmacological treatment** • Appropriate dressings and/or appliance systems based on client assessment **Client/Carer education for self-care** • Disease process and health maintenance • Treatment regimes • Skin care regimes • Diet/fluid intake • Indications to seek medical help • Lifestyle changes • Pain management • Medication (includes relevant consumer handouts) **Pharmacological Treatments** • Analgesics • Topical antimicrobials • Topical anaesthetics • Local anaesthetics (for biopsy) • Topical corticosteroids • Topical antibiotics/antifungals • Oral antidiarrhoeals

Process	Action	Guidance
		• Apperients • Oral antibiotics • Oral Nutritional supplements • Oral and subcutaneous rehydration therapy
Management Partnerships	Appropriate referrals to assist in overall client management	Other Health Care Professionals as required: **Medical** • General Practitioner • Colorectal Surgeon • Urologist • Gastroenterologist • Gynecologist • Dermatologist • Infectious Diseases Physician • Palliative Care **Allied Health** • Diabetic Educator • Occupational Therapist • Physiotherapist • Pharmacist • Dietician **Community Care Providers** • Silver Chain Nurses • Silver Chain Home Support Service • Other Home Care Providers • Aged Care Facilities • Aged Care Assessment Team
On-going management	Review as appropriate	• Adjust treatment plan in accordance with clinical assessment review and investigative results
Separation	Discharge from Nurse Practitioner Service	• Issue resolved/client self-managing • Referral to Silver Chain Nurses for further management • Referral to Specialist Care

DRUG FORMULARY – WOUND MANAGEMENT

The following table outlines the potential medications that can be prescribed by Nurse Practitioner following assessment, investigation, diagnosis and management of a client with a wound or stoma. For safe practice it is recommended that the NP discusses any initiation/changes of medications with clients Medical Practitioner.

Classification	Drugs	Route	Considerations
Analgesics	Paracetamol	Oral	For more severe pain, review causative factors and refer to Medical Practitioner
	Paracetamol with Codeine	Oral	
	Tramadol	Oral	
Anaesthetic	Lignocaine/Adrenaline	SC	For purpose of biopsy. Lignocaine with Adrenaline should not be used on an extremity such as a digit especially in the presence of PAD
	Lignocaine 4% cream	Topical	
	Lignocaine-prilocaine 5% cream		
Antibiotics	Silver Sulfadiazine 1%	Topical	Alternatives to consider include silver, povidone iodine and cadexomer iodine dressing products
	Chlorhexidine 0.2% cream	Topical	
	Metronidazole gel 0.75%	Topical	
Antibiotics	Flucloxacillin	Oral	Antibiotic susceptibilities of gram negative organisms should be reviewed and advice obtained from ID Physician Approval is required from ID physician for Ciprofloxacin and Clindamycin use
	Cephalexin	Oral	
	Amoxycillin with Clavulanic Acid	Oral	
	Metronidazole	Oral	
	Ciprofloxacin	Oral	
	Clindamycin	Oral	
	Trimethoprim	Oral	
	Doxycycline	Oral	
	Cephazolin	IV	Refer to HATH protocol
Adjunct Therapy	Probenecid	Oral	Refer to HATH protocol
Antifungal	Terbinafine 1%	Topical	
	Clotrimazole 1%	Topical	
Aperients	Microlax Enema	PR	
	Glycerine Suppositories	PR/End Colostomy	
	Polyethylene Glycol Laxative Sachets	Oral	
	Osmotic Laxatives	Oral	
Anti-diarrhoeal	Loperamide	Oral	
Corticosteroids	Hydrocortisone 1%	Topical	
	Hydrocortisone Acetate 1%	Topical	
	Betamethasone 0.05%	Topical	
Corticosteroids with Other Agents	+ nystatin, neomycin, gramicidin	Topical	For recalcitrant vasculitic lesions or pyoderma gangrenosum only when

	other topical treatments ineffective.

References

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ACKNOWLEDGEMENTS

L Linacre, Fremantle Hospital and Health Service, Western Australia
P Morey, Sir Charles Gairdner Hospital, Western Australia
M Asimus, Hunter New England Health (the Maitland Hospital), New South Wales
D Angel, Royal Perth Hospital, Western Australia
L MacLellan, G. Gardner, A. Gardner, Canberra Hospital
T Swanson, J.Smart, S. Morrison, South West Healthcare, Warnambool, Victoria

Approved By: Nurses Practice Committee (7 February 2013)
Dr Shirley Jansen, Vascular Surgeon
Medical Safety and Quality Committee (27 May 2015)