Developed by the BC Provincial Nursing Skin & Wound Committee in collaboration with NSWOCs/ Wound Clinicians from:

Title	**Hypergranulation Tissue: Guideline**
Endorsement **British Columbia & Yukon**	• Endorsement done: Yukon • Endorsement pending: FNHA, FHA, IHA, Island, NHA, PHSA, VCH/PHC; until endorsement has been granted by your HA please follow your HA's current document.
DST Indications for Use	• This Decision Support Tool (DST) guides nurses to determine appropriate care plans for the prevention and treatment of hypergranulation tissue for clients (adult and children) across all care settings. • This DST does not cover the prevention and management of hypergranulation tissue that occurs with Ventricular Assist Devices, please refer to health authority (HA)/ agency specific guidelines for this device.

Practice Level
British Columbia & Yukon
	• British Columbia as per their Health Authority/agency policy:
	  ○ Registered Nurses (RNs) and Registered Psychiatric Nurses (RPNs) may determine basic wound treatment plan for the prevention and treatment of hypergranulation tissue.
	  ○ Licensed Practical Nurses (LPNs) may implemented basic strategies for the prevention of hypergranulation tissue (see pg.5). LPNs follows an RN/RPN established wound treatment plan for the assessment/ treatment of hypergranulation tissue should it occur.
	  ○ RNs/RPNS may determine the need for and apply Sliver Nitrate, an advanced treatment of hypergranulation tissue, as per their HA/agency policy.
	  ○ LPNs may apply Silver Nitrate as per an established wound treatment plan.
	• Yukon: Registered Nurses, Registered Psychiatric Nurses and Licensed Practical Nurses refer to organizational policy and practice in accordance with regulatory bodies.

Background	• Hypergranulation tissue, also called proud flesh, over-granulation, or hyperplasia tissue, is a common condition resulting from an overgrowth of granulation tissue from the dermis resulting from one, or a combination, of the following causes:
	  ○ Excessive moisture
	  ○ Friction and/or pressure
	  ○ Prolonged inflammation
	  ○ Colonization/infection
	Prevention of these causes is the key intervention.
	• Hypergranulation tissue may occur in, or around, the following areas:
	  ○ Wounds, incisions or graft sites.
	  ○ Tubes/drains including medication specific tubes.
	  ○ Stomas including tracheostomy.
	  ○ Enterocutaneous fistula (ECF) or mucous fistula.
	  ○ Finger or toenail.
	• Hypergranulation tissue is unhealthy, raised tissue, appearing moist, shiny pink to beefy red or purple (vascular-like) in colour. It can be regular or irregular in shape, is friable (bleeds easily) and sometimes painful.
	• Identifying the correct cause is essential for determining the appropriate interventions to remove the tissue.
	• **Note**: **Malignant tissue and a developing/new-formed fistula can be mistaken for hypergranulation tissue** due to the similarity in the appearance of the tissue**.**
	  ○ If the above-mentioned causes are not present, or if there is no improvement within 14 days with advanced interventions, notify Most Responsible Provider (MRP) as investigations may be needed regarding the possibility of a malignancy or a fistula.

Assessment and Determination of Care Strategies

Nursing Assessment

1. Assess for client concerns related to the development of hypergranulation tissue:
   a. Client's quality of life issues; delayed wound or incision healing, pain around feeding tubes, irritation at surgically placed tube/drain sites, poor fit of ostomy or ECF appliances, potential infection and pain due poor nail care practices.
   b. Effect of client's environment, (e.g., humidity, seat belt use, footwear) which may contribute to one or more of the causes.
   c. Client's goal of care, preferences for prevention and treatment.
   d. Client's ability and motivation to comprehend and participate in the care plan.
   e. Client's culture and traditions that need to be considered when planning care.

2. Assess client's medical conditions for risk factors for the development of hypergranulation tissue:
   a. The presence of a wound/incision/graft/ostomy, feeding tube, surgically placed tube/drain, an enterocutaneous or mucous fistula or a nail condition.
   b. Diabetes mellitus and other immuno-compromised conditions, critical illness with multiple co-morbidities, allergies and/or sensitivities that can produce a prolonged inflammatory response.
   c. Heart failure, renal failure, thyroid disorders, venous insufficiency, lymphedema or lipedema that can predispose client to risk of weeping edema.
   d. Conditions causing edema in the toes or fingers leading to a risk of ingrown nails.
   e. Hyperhidrosis (excessive sweating) leading to excessive moisture.
   e. A history of immunosuppression medication usage leading to prolonged inflammatory responses, (e.g., antifungals, cyclosporine and retinoids).

2. Assess for causes which can contribute to hypergranulation tissue:
   a. Wound, incision or graft
      - Excess Moisture:
        - Use of an occlusive (non-breathable) dressing.
        - Use of a dressing that is not absorbent enough to manage the exudate.
        - Not changing the dressings frequently enough.
        - Site is in contact with urine, stool, weeping edema, excessive sweating or in a skin fold.

- Friction/Pressure:
  - Improper securement of dressing; either too loose causing friction with the movement of the dressing; or too tight causing pressure.
- Prolonged Inflammation:
  - Dressing fibres/material, (e.g., lint, NPWT foam), retained sutures or staples/clips and/or foreign material, (e.g., retained hair and/or adhesive material).
- Colonization or infection, either bacterial or fungal.

b. Feeding tubes (G-tubes, J-tubes, G-J tubes)
- Excess Moisture:
  - Leaking or bypassing due to:
    - Incorrect tube length, either too long or too short.
    - Tube diameter too small for the opening causing a gap; may also cause friction.
    - Under-inflated balloon, if balloon present.
    - Lack of, or incorrect, stabilization of the tubing.
    - Too fast of an infusion rate and/or too large a volume.
    - Incorrect gravity, bolus or pump feeding method.
    - A break in the tube.
- Friction/Pressure:
  - Tube obstruction or bulging of tube.
  - Tube diameter too large for the opening.
  - Over inflated tube balloon causing pressure.
  - Under inflated balloon causing friction due to tube movement.
  - Incorrect placement of the external bumper, if present.
  - Stabilization device, (e.g., surgical zip-ties) causing pressure.
  - Incorrect use of securement device; either too loose causing friction or too tight causing pressure.
- Prolonged Inflammation:
  - Irritants such as sutures or adhesive material present in or around the feeding tube.
- Colonization or infection, either bacterial or fungal.

c. Surgically placed tubes/drains **(**post-op drains, suprapubic catheters, nephrostomy tubes, trach, medication tubes, (e.g., Duopa for Parkinson's))
- Excess Moisture:
  - Leaking or bypassing due to the diameter of the tube/drain being too small for the opening leading to moisture associated skin damage; may also cause friction.
- Friction/Pressure:
  - Tube diameter too large for the opening leading to pressure.
  - Incorrect use of securement device; either too loose causing friction, or too tight causing pressure.
- Prolonged Inflammation:
  - Irritants such as sutures or adhesive material.
- Colonization or infection, either bacterial or fungal.

d. Ostomy (stoma/peristomal junction)
- Excess Moisture:
  - Flange cut or sized too large for the stoma causing leakage of urine/feces.
- Friction/Pressure:
  - External friction on the area from ill-fitting clothing, seatbelts, occupation-related belts, etc.
  - Flange cut or sized too small for the stoma causing pressure.
- Prolonged Inflammation:
  - Peristomal hair, retained sutures or adhesive material.
- Colonization or infection, either bacterial or fungal.

e. Enterocutaneous fistula or mucous fistula
- Excess Moisture:

- Output causing erosion and/or ulceration of the skin.
- Difficulty pouching the fistula due to its location, (e.g., in a wound bed, beside a stoma, in the peri-anal or buttocks area) leading to excessive moisture the area.

- Friction/Pressure:
  - External friction from a pouching system, if present.
  - Friction due to in/out movement of fistula drains/catheters, if present.
- Prolonged Inflammation:
  - Peri-fistula hair, retained suture or adhesive material.
- Colonization or infection, either bacterial or fungal.

f. Finger or toenail
- Excess Moisture:
  - Weeping edema, prolonged or frequent soaking of hands/feet leading to maceration.
  - Fungal growth leading to excess moisture.
- Friction/Pressure:
  - Misalignment of digits causing pressure.
  - Ill-fitting footwear, inserts, digit braces and/or splints causing friction and/or pressure.
- Prolonged Inflammation:
  - Ingrown nail or foreign bodies, (e.g., thorn or wood splinter).
- Colonization or infection, either bacterial or fungal.

4. If hypergranulation tissue is present, assess the following:
   a. Location
   b. Size: 0.1cm to 2.5cm but can be larger.
   c. Shape: spongy or hard raised nodules that may appear elongated, irregular, or cauliflower-like. **Note**: the appearance of malignant tissue and a developing or newly formed fistula are similar to hypergranulation tissue.
   d. Colour: red to dark red/purple, shiny and moist.
   e. Friability: bleeds easily when touched, (e.g., with cleansing or with tube movement).
   f. Presence of irritants.
   g. Presence of bacterial colonization or local infection, see Wound Infection: Guideline, or fungal infection.
   h. Presence of pain.

Determine Prevention and Treatment Care Strategies

Based upon the assessments above:

1. If the causes for hypergranulation tissue are not present, assess for malignancy or for a fistula.
2. For the client at risk for developing hypergranulation tissue, implement interventions to prevent the situation (see below).
3. If hypergranulation tissue is present, implement interventions to correct the cause and treat the hypergranulation tissue (see below).

Interventions see Hypergranulation Tissue - Prevention & Basic Treatment Interventions: QRG

Prevention

1. The plan of care should account for the client's abilities, cultural considerations, concerns, preferences and motivation related to goals of care and treatment.
2. Support the client to manage any pre-existing illnesses, (e.g., autoimmune, renal, cardiac, venous or lymphedema) to minimize the effect of these conditions can have on the treatment of hypergranulation tissue. Consult MRP as needed.

3. Implement the following strategies to prevent the causes of hypergranulation tissue:
   - Manage excess moisture in the area; avoid prolonged soaking of feet/hands, assess the appropriateness of non-occlusion dressings, current dressing change frequency for the situation and location, the size and type of ostomy flange for the stoma; LPN to consult with RN/RPN as needed.
   - Prevent/minimize friction and pressure at the tube/drain site; consider appropriate securement device for the situation, as well as, correct positioning of securement device.
   - Minimize inflammation; ensure site and surrounding area is thoroughly cleansed to remove irritants, (e.g. exudate, dressing material, wound debris, hair, feeding solution, urine/stool, etc.).
   - Prevent local colonization of bacteria by thoroughly cleaning the site; prevent fungal infection by managing the moisture around the site.

Basic Treatment

1. Ensure appropriate prevention interventions are done to remove the cause of the hypergranulation tissue.
2. If hypergranulation tissue is associated within an enterocutaneous fistula or mucous fistula, consult NSWOC/MRP for treatment.
3. If suture materials or foreign bodies are the irritant, consult physician/surgeon regarding removal or NSWOC if ostomy-related.
3. If site shows signs & symptoms of local bacterial colonization or infection, use an absorbent antimicrobial dressing or powder; improvement should be seen in 7-10 days. See HA/site specific Dressing Selection Quick Reference Guide and/or consult NSWOC/wound clinician.
4. If site shows signs & symptoms of fungal infection, consult MRP.
5. Remove the hypergranulation tissue. Depending upon the location of the hypergranulation tissue, consider
   one or both of the following:
   - A **non-silicone,** non-bordered foam dressing, (e.g., Biatain Non-Adhesive) applied with firm, but gentle, pressure over the site of the hypergranulation tissue area. Secure with tape. Change dressing at least every second day to assess effectiveness of the pressure in reducing the size of the hypergranulation tissue. The non-silicone foam will wick and absorb the excess moisture from the area more effectively then a silicone foam.
   - Use sodium chloride (salt) to dry out the hypergranulation tissue:
     - White table salt; see Appendix A for procedure.
       or
     - A sterile dry hypertonic sodium chloride impregnated dressing, (e.g., Mesalt) over the tissue.

   If basic treatment(s) do not eliminate or reduce the hypergranulation tissue within 7 days, then consider advanced treatments.
6. If the cause cannot be removed, develop a care plan to minimize the growth of hypergranulation tissue.

Advanced Treatment

1. Consider either of the following:
   a. Silver Nitrate, **as per HA/agency policy**, to cauterize the tissue. **Note**: Silver nitrate should not be used, unless directed by the MRP/NSWOC, on hypergranulation tissue associated with enterocutaneous fistula, exposed bowel within a wound, or on a burn or frostbite injury.
   b. Topical corticosteroid, as ordered by MRP, to treat the inflammation. Also, consider this option if:
      - The client has a sensitivity/allergy to silver
      - If based on previous hypergranulation tissue treatments, silver nitrate was not effective
      - Where discomfort from silver nitrate is a concern, (e.g., a child).

   If advanced interventions are not effective within 14 days, notify MRP, as investigations may be needed regarding the possibility of a malignancy or a fistula.

Client Education and Resources

1. Each HA/site should ensure their client education materials related to wounds/ incisions/skin grafts, tubes/drains, feeding/medication tubes, surgically placed tubes (all types), ECF, and nail care include a section on how to prevent hypergranulation tissue.
2. Document the specific written materials reviewed and provided to the client and/or family.

Discharge/Transition of Care

Communicate the client's hypergranulation tissue care plan to the receiving site. If client is receiving advanced treatment for hypergranulation tissue, receiving site must ensure they have the resources to provide this treatment, (e.g., a nurse competent doing silver nitrate treatment).

Client Clinical Outcomes

The outcomes are developed in collaboration with the interprofessional team, the client and/or the family.

1. Intended
   a. The client does not develop hypergranulation tissue.
   b. If hypergranulation tissue does develop, appropriate treatment initiated to resolve the situation within expected timeframe, (e.g., 7-14 days).
2. Unintended
   a. The client develops hypergranulation tissue within a wound/incision/graft, feeding/medication tube site, tube/drain site, ostomy, ECF/mucous fistula or a nail.
   b. The treatment of the hypergranulation tissue does not resolve the situation within expected timeframe, (e.g., 7-14 days).

Quality Assurance Indicators

To assess the quality of care, the following quality assurance indicators may be used by a HA or agency:

1. Interventions are implemented to prevent or mitigate the development of hypergranulation tissue.
2. If hypergranulation tissue develops, appropriate strategies are implemented to treat the situation and to prevent a re-occurrence.

Documentation

1. Document, as per HA or agency policy, the interventions provided as per the care plan, the clinical outcomes, and any revisions to the hypergranulation tissue care plan.
2. Document the client and/or family education given and written materials provided, (e.g., prevention of hypergranulation tissue in wound/incision/graft, feeding/medication tube site, tube/drain site, ostomy, ECF/mucous fistula, or nail).

Definitions

Bumper: An external device, (e.g., a disk), on the long shaft feeding tube which is positioned at the entrance of the tract; used to decreased migration of the tube in and out of the tract.

Client: generic term used to describe a recipient of care regardless of care setting; patient in the hospital, client in community; resident in long-term care.

Hygergranulation Tissue (also called proud flesh, over-granulation, or hyperplasia tissue) - an overgrowth of granulation tissue (fibroblasts & endothelial cells) due to an imbalance in the wound's matrix metalloproteinases (MMPs) resulting from one, or a combination of, the following causes; excessive moisture, friction and/or pressure, prolonged inflammation and/or infection.

MRP: Most Responsible Provider, (e.g., physician, surgeon, nurse practitioner).

QRG: Quick Reference Guide

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Document Creation/Review

This guideline is based upon the best evidence-based information available at the time it was published and avoids opinion-based statements, where possible. It was developed by the Provincial Nursing Skin & Wound Committee and has undergone provincial stakeholder review.

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Appendix A:

Procedure: Use of Table Salt for Removal of Hypergranulation Tissue

Use this procedure as per health authority/agency policy. A NSWOC/Wound Clinician consult may be needed. Inform client there may be slight discomfort with treatment.

Use a small box of white table salt, label it with client's name and store it for treating hypergranulation tissue or use small packet of white table salt, if available.

Method 1 Dry Salt: Sprinkle 1-2 tsp of white table salt on the area, leave for 8-10 minutes. Rinse area with tap water and dry area as needed. Repeat daily as needed.

Method 2 Salt Compress: Add 2 teaspoons of white table salt to 1 cup (250 mL) body temperature water. Choose a smallest size of gauze to fit the area; for tubes/drains, make a Y-cut if needed. Soak the gauze in the solution and place over the hypergranulation tissue and surrounding area. Leave in place 5-10 minutes then remove; do not rinse the area. Dry the area as needed. Repeat compress at least daily; may be done up to four times per day.

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