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

Title	**Monofilament Testing for Loss of Protective Sensation (LOPS): Procedure**
DST Indications for Use	• This decision support tool (DST) is to be used by health care professionals to determine an adult or child client's loss of protective sensation (LOPS) using monofilament testing. • This document does not address the use of a tuning fork for sensory testing. A tuning fork may be used if a client declines monofilament testing.

British Columbia Practice Level	• Health care professionals may carry out monofilament testing for LOPS procedure if this procedure was as part of their entry to practice and within their scope of practice. To may carry out monofilament testing the following must be in place:
	  ○ Health Authority (HA)/agency policy in place to support their professional designation to perform monofilament testing.
	  ○ A HA/agency approved monofilament testing procedure decision support tool.

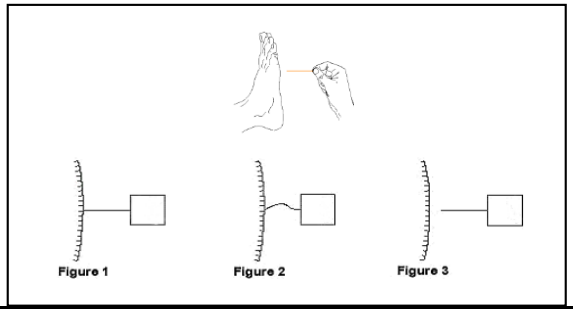
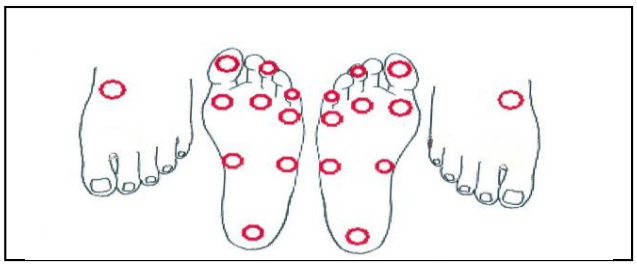
Education Requirements/ Competency	• For health care professionals who have not gained, through their entry to practice education program, the knowledge and skill to perform monofilament testing for LOPS, see Monofilament Testing for LOPS Education Requirements/ Competency.

Background	• The Semmes – Weinstein 5.07 monofilament is calibrated to take 10 grams of force to bend the monofilament one centimeter when applied for two seconds to the foot. If the client cannot feel this degree of force, a loss of protective sensation is noted in that area of the foot.
	• Neuropathy leads to the loss of protective sensation of the foot and is a major risk factor for the development of diabetic or neuropathic-related foot complications, (e.g., ulcers and infection leading to amputation and/or early mortality).[1, 2, 3] Screening and early detection of LOPS helps to identify clients who need preventative treatment, thereby lowering the incidents of these complications.
	• Monofilament testing is to be conducted for clients who have any of the following:
	  ○ A diagnosis of diabetes with or without a diabetic foot ulcer.
	  ○ A diagnosis of a neuropathic condition with or without a neuropathic ulcer.
	  ○ Numbness, tingling, burning or a "crawling" sensations in one or both feet.
	• A lower limb assessment, including monofilament testing, is a crucial assessment for those at risk of developing diabetic or neuropathic foot ulcers and should be done at least once a year.

Bookmarks	Equipment & Supplies Procedure Interpretation of Results Frequency of Testing Documentation Definitions Bibliography/References Date of Creation Appendix A: Worksheet for Monofilament Testing
Related Documents	Guideline: Assessment & Treatment of Diabetic and Neuropathic Ulcers in Adults Education Requirements/Competency: Monofilament Testing for LOPS Learning Module: Monofilament Testing Assessment: Basic & Advanced Lower Limb Assessment (under revision)

Equipment & Supplies

- 1 Semmes – Weinstein 5.07 (10 gram) monofilament
- Clean gloves and other PPE as per Point of Care Risk Assessment, (e.g. gown or apron).

Procedure: Monofilament Testing for Loss of Protective Sensation (LOPS)	
Steps	**Key Points**
1. Set up for the procedure: • Remove shoes and socks/stockings. • Ensure a quiet/relaxed environment. • Perform hand hygiene; put on clean gloves.	Monofilament testing must be carried out in a quiet/relaxed setting to allow the client to fully participate in the test.
2. Prepare the client for the test: • Explain the procedure to the client. • Demonstrate the monofilament test on a gloved hand to show how the test is done. • Perform the test on the client in an area where normal sensation is expected, (e.g., hand).	Doing the demonstration n the client's hands allows the client to experience the feeling before the test is done on their feet.
3. Perform the test on each foot separately: • Have the client close their eyes. • Of the 10 possible tests (see Image A), randomly select the sites and change the time frequency between each test: ○ Hold the monofilament perpendicular to the foot (Fig.1) and with a smooth, steady motion, touch the skin until the mono-filament bends approximately 1 cm (Fig. 2). Hold the monofilament against the skin for approximately 2 secs then release (Fig.3). Do not allow the monofilament to slide across the skin surface. ○ Ask the client to verbally say "yes" when they feel the touch of the monofilament. ○ Test each site once unless the client does not respond with 'yes' when a site was touched. If the client does not say 'yes' repeat the test up to 3 times on that site.  	Use the Appendix A worksheet to document test results as the test is performed. If the client has toe(s) or foot amputations, test remaining sites. Random selection of the test sites and using unpredictable timing prevents the client from guessing or anticipating the next test area. If there is an ulcer, callus, corn, or scar on the foot, apply the monofilament on an area adjacent to these rather than directly over them. Note: should the client say 'yes' without being touched with the monofilament, document this finding as this may also indicate LOPS.  **Image A**
4. Repeat the procedure on the other foot.	
5. Clean up work area: • Remove gloves and perform hand hygiene. • If saving the monofilament, cleanse it with an alcohol swab and label it with the client's name and the date. Store in a clear plastic bag away from the sunlight and at room temperature.	

Interpretation of Results

1. For each foot, the score is calculated by the number of sites felt by the client, in relation to the number of sites tested, e.g.,
    - 10/10 – all 10 sites felt; all 10 sites tested
    - 9/9 – 9 sites felt; 9 sites tested with one site not tested due to amputation, e.g., the great toe
    - 8/10 – only 8 sites felt; all 10 sites tested

Documentation

1. Record the number of sites felt out of the total number of sites tested as per above.
2. If the monofilament was not felt in a particular site on the foot, this loss of protective sensation finding is to documented and communicated to the client's care team.

Frequency of Testing

Repeat monofilament testing as part of an overall lower limb assessment at least once a year or when a new foot ulcer occurs.

Definitions

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.

References/Bibliography

1. Diabetes Canada. (2018). Appendix 12: Monofilament testing in the diabetic foot. https://guidelines.diabetes.ca/cpg/appendices/appendix12
2. Schaper, N. C., Van Netten, J. J., Apelqvist J, et al. (2016). Prevention and management of foot problems in diabetes: A summary guidance of daily practice. Based on the IWGDF Guidance documents. *Diabetes Metab Res Rev, 32(*Suppl. 1): 7-15.
3. US Department of Health and Human Services, Health Resources and Service Administration. (2009). Lower Extremity Amputation Prevention (LEAP). How to use the LEAP monofilament. Retrieved from http://www.hrsa.gov/hansensdisease/leap/
4. Medical Monofilament. (2014). Why use monofilaments? https://medicalmonofilament.com/monofilaments/what-is-a-monofilament/

Document Creation/Review

This procedure is based on 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.

Created By	British Columbia Provincial Nursing Skin & Wound Committee in collaboration with the NSWOCs/Wound Clinicians from all Health Authorities.
Publication Date	May 2011
Review Date(s)	May 2014
Revision Date(s)	March 2022

Appendix A: Worksheet for Monofilament Testing

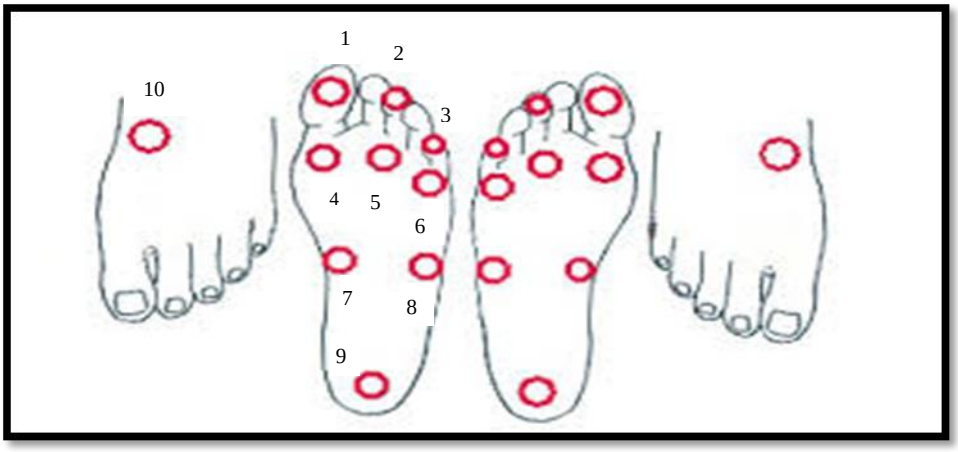
Monofilament Testing For Loss of Protective Sensation Worksheet	Client Information

Date of Testing:

Test the 10 sites using a 5.07g monofilament.
Document each site felt by the client as Y or N.
If site not tested (amputated) then document as Not Applicable **X**.

Client's Right Foot			Client's Left Foot		
Site	**Client's Response Yes or No**	**Not Applicable X**	**Site**	**Client's Response Yes or No**	**Not Applicable X**
1			**1**		
2			**2**		
3			**3**		
4			**4**		
5			**5**		
6			**6**		
7			**7**		
8			**8**		
9			**9**		
10			**10**		
Score _____ / _____ **Felt / Tested**			**Score** _____ / _____ **Felt / Tested**		

Right Foot **Left Foot**



1. Plantar aspect of first toe (great toe)
2. Plantar aspect of third toe
3. Plantar aspect of fifth toe
4. Plantar aspect of first metatarsal head
5. Plantar aspect of third metatarsal head
6. Plantar aspect of fifth metatarsal head
7. Plantar aspect of the midpoint of the medial longitudinal arch
8. Plantar aspect of fifth metatarsal tuberosity
9. Plantar aspect of calcaneal tuberosity (heel)
10. Dorsal aspect of mid-foot (dorsal)