Clinical Task Instruction

Delegated Task

D-FC04: Doppler ultrasound of the foot and ankle

Scope and objectives of clinical task

This CTI will enable the Allied Health Assistant to:

- accurately and safely measure arterial flow of the foot and ankle using Doppler ultrasound
- identify if the sound is triphasic, biphasic, monophasic or venous reflux
- use Doppler findings to support risk categorisation from the implementation of CTI D-FC01: Foot screening including pedal pulses and monofilament testing.

VERSION CONTROL

Version: 1.0

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The CTI reflects best practice and agreed process for conduct of the task at the time of approval and should not be altered. Feedback, including proposed amendments to this published document, should be directed to the Office of the Chief Allied Health Officer (OCAHO) at: allied_health_advisory@health.qld.gov.au

This CTI should be used under a delegation framework implemented at the work unit level. The framework is available at: https://www.health.qld.gov.au/ahwac/html/ahassist

Prior to use please check https://www.health.qld.gov.au/ahwac/html/clintaskinstructions for the latest version of this CTI.

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Requisite training, knowledge, skills and experience

Training

- Completion of CTI D-WTS01 When to stop.
- Completion of CTI D-FC01: Foot screening including pedal pulses and monofilament testing.
- Mandatory training requirements relevant to Queensland Health clinical roles are assumed knowledge for this CTI.
- If not part of mandatory training requirements, complete patient manual handling techniques including competence in assisting clients with standing transfers.
- Completion of the following Queensland Health allied health assistant training modules (or corresponding units of competency in HLT43021 Certificate IV in Allied Health Assistance) or equivalent work-based learning:
  - Assist with basic foot hygiene. Section 2.3 Treatment, p59-61.

  Access the module/s at: https://www.health.qld.gov.au/ahwac/html/ahassist-modules

Clinical knowledge

- The following content knowledge is required by an allied health assistant delivering this task:
  - the purpose of undertaking a Doppler measure of the arterial blood flow to the ankle and foot, including contraindications, precautious and limitations
  - Doppler ultrasound unit features and the application process including bony landmarks for probe placement and orientation of the ankle and foot, client position and skin preparation
  - basic foot anatomy to the extent required to undertake this CTI including names and locations of bony landmarks and areas of the foot and lower leg and the location of pedal pulses
  - recognition of common signal and wave forms and technique errors and adaptations to the procedure that may be required to improve the accuracy of findings.
- The knowledge requirements will be met by the following activities:
  - completing the training program/s (listed above)
  - reviewing the Learning resource.
  - receiving instruction from an allied health professional in the training phase.

Skills or experience

- The following skills or experience are not identified in the task procedure but support the safe and effective performance of the task and are required by an allied health assistant delivering this task:
  - Nil

Safety and quality

Client

- The allied health assistant will apply CTI D-WTS01 When to stop at all times.

- In addition, the following potential risks and precautions have been identified for this clinical task and should be monitored carefully by the allied health assistant during the task:
  - if the client is wearing tight or close-fitting trousers, determine if they need to be removed. Generally, pants or trousers can be rolled up to allow inspection of the ankle and calf, however if clothing is firm or tight this will restrict blood flow and make examination difficult. If clothing removal is required, ensure modesty is maintained e.g. a gown to wear or a towel to drape across the lap. Where clothing removal to support examination cannot occur, cease the task and inform the delegating health professional
  - if the client has a foot ulcer at the site where the Doppler ultrasound will be placed cease the task and inform the delegating health professional.

Equipment, aids and appliances

- As this assessment includes the use of electrical equipment, all equipment should be examined to ensure it is in good working order e.g. cords not frayed, switches are working properly and if in a Queensland Health facility, test and tag is in situ and current. If the equipment is not in working order, cease the task. Locate alternative equipment if available. If no alternative equipment is available inform the client (and carer where relevant) and re-schedule the task and implement local processes to have the equipment fixed/replaced.
- Doppler probes are designed to be used with ultrasound gel.
  - The use of KY jelly or other lubricants can damage the crystals in the probe head and should not be used. If ultrasound gel is not available, cease the task and liaise with a health professional with expertise in the task.
  - Whilst in use the probe should be immersed and in contact with the gel against the client's skin. Excessive pressure may disperse the gel, introduce air and/ or cause the vessel to compress, reducing the sound quality.

Environment

- To reduce background noise, clinician headphones are available for some units and may be beneficial.

Performance of clinical task

1. Delegation instructions

- Receive the delegated task from the health professional either directly or as part of a protocol.
- The delegating allied health professional should clearly identify parameters for delivering the clinical task to the specific client, including any variance from the usual task procedure and expected outcomes. This may include:
  - site of any wounds and actions to be taken
  - client specific adaptations required for the task e.g. positioning, communication, etc.

2. Preparation

- Equipment should be cleaned with alcohol wipes prior to use, including the probe.

3. Introduce task and seek consent

- The allied health assistant introduces themself to the client.
- The allied health assistant checks three forms of client identification: full name, date of birth, plus one of the following: hospital unit record (UR) number, Medicare number, or address.
- The allied health assistant describes the task to the client. For example:
  - "I am going to use this probe and gel, to listen to the sound of the pulses in your feet and ankle".
- The allied health assistant seeks informed consent according to the Queensland Health Guide to Informed Decision-making in Health Care, Version 2.6 (2025).

4. Positioning

- The client's position during the task should be:
  - seated on the bed/plinth or couch with leg supported. The client should be comfortable and relaxed.
- The allied health assistant's position during the task should be:
  - seated, or standing, near the client's lower limb at mid trunk level.

5. Task procedure

- Explain and demonstrate (where applicable) the task to the client.
- Check the client has understood the task and provide an opportunity to ask questions.
- The task comprises the following steps:
  1. Ask the client to remove their shoes and clothing around the ankle. See the 'Safety and quality' section.
  2. Explain the procedure to the client including the probe placement, use of gel and sounds that will be heard. If required, provide a demonstration.
  3. Palpate the dorsalis pedal pulse area with the fingers and place the ultrasound gel over the pulse area.
  4. Place the head of the probe into the gel, pointing towards the heart/blood flow at an angle of 40-60 degrees. This angles the probe to present the sound wave to the largest cross-section of the vessel.
  5. Turn on the Doppler machine. The machine will demonstrate that it is working with an audible noise (squelch).
  6. Identify the sound wave.
  7. Determine if the sound wave is triphasic, biphasic, monophasic or venous reflux. If the waveform is not able to be identified liaise with delegating health professional.
  8. Palpate the posterior tibial pulse with the fingers and place the ultrasound gel over the pulse area. Repeat steps 4-7.
  9. Turn off the machine, remove the probe from contact with the client. Gently wipe any excess gel off the client's skin using a tissue and clean the probe with alcohol wipes.
  10. Record the findings on the local recording form.
- During the task:
  - provide feedback and correct errors in the performance of the task including:

    - clients who are tense may contract their muscles which will compress the underlying vessels, making the pulse more difficult to find due to a smaller cross section. Tension can be reduced by ensuring that the client is positioned comfortably, understands the procedure and has the opportunity to ask questions. Clients who are tense should be encouraged to relax their muscles.
    - if the client complains of pain with the probe placement and/ or movement, check the probe pressure (see Safety and quality). If pain continues cease the task.
    - if the client has absent pulses, place the probe in the general area of the anatomical reference and expand out slowly to account for any anatomical anomalies. If the audible sound of the pulse is not heard, use a slow gentle circular movement in a zig-zag pattern
    - if the signal quality is poor, maintain the probe head in contact with the skin and move the base of the probe in an arc to re-orientate the probe to improve the sound quality
    - signal quality is affected by air. If gaps are present, add more gel and check the probe pressure. See Safety and quality.
  - monitor for adverse reactions and implement appropriate mitigation strategies as outlined in the Safety and quality section above including CTI D-WTS01 When to stop.
- At the conclusion of the task:
  - encourage feedback from the client on the task.
  - provide summary feedback to client, and if part of the service model, inform the client of implications of observations, including the need for follow up
  - ensure the client is comfortable and safe.

6. Document

- Document the outcomes of the task in the clinical record, consistent with relevant documentation standards and local procedures. Include observation of client performance, expected outcomes that were and were not achieved, and difficulties encountered or symptoms reported by the client during the task.
- For this task, the following specific information should be presented:
  - location - Left/ Right. Dorsal pulse (DP), Tibial pulse (TP)
  - finding - triphasic, biphasic, monophasic, venous reflux or other
  - if relevant for the service model, the outcome of the Doppler ultrasound finding and any actions taken e.g. local service model for implementation of a Toe Pressure.

7. Report to the delegating health professional

- Provide comprehensive feedback to the health professional who delegated the task.

References and supporting documents

- Queensland Health (2015). Clinical Task Instruction D-WTS01 When to stop. Available at: https://www.health.qld.gov.au/ahwac/html/clintaskinstructions.
- Queensland Health (2025). Guide to Informed Decision-making in Health Care. Version 2.6. Available at: https://www.health.qld.gov.au/consent/clinician-resources/guide-to-informed-decision-making-in-healthcare.

Assessment: performance criteria checklist

D-FC04: Doppler ultrasound of the foot and ankle

Name: **Position:** **Work Unit:**

Performance criteria	Knowledge acquired	Supervised task practice	Competency assessment
	Date and initials of supervising AHP	*Date and initials of supervising AHP*	*Date and initials of supervising AHP*
Demonstrates knowledge of fundamental concepts required to undertake the task.			
Obtains all required information from the delegating health professional, and seeks clarification if required, prior to accepting and proceeding with the delegated task.			
Completes preparation for the task including checking the machine is in working order and clean..			
Introduces self to the client and checks client identification.			
Describes the purpose of the delegated task and seeks informed consent.			
Positions self and client appropriately to complete the task and ensure safety.			
Delivers the task effectively and safely as per delegated instructions and CTI procedure. a) Clearly explains the task, checking the client's understanding. b) Ensures the client removes shoes and clothing around the ankle. c) Locates the dorsalis pedal pulse and correctly places the ultrasound gel and probe over the pulse area. d) Correctly turns on the Doppler machine. e) Identifies the sound wave and determines type. f) Locates the posterior tibial pulse and correctly places the ultrasound gel and probe over the pulse area. Repeats task procedure steps 4-7. g) Turns off the machine, removes the probe from contact with the client, safely removes gel off the client's skin and cleans the probe. h) Records the findings on the local recording form. i) If part of the service model identifies and implements any relevant protocol driven actions. j) During the task, maintains a safe clinical environment and manages risks appropriately. k) Provides feedback to the client on performance during and at completion of the task.			
Documents the outcomes of the task in the clinical record, consistent with relevant documentation standards and local procedures.			

Provides accurate and comprehensive feedback to the delegating health professional.			

Comments:

Record of assessment competence:

Assessor name:		Assessor position:		Competence achieved:	/ /

Scheduled review:

Review date:	/ /	

Doppler ultrasound of the foot and ankle: Learning resource

Background

Medical ultrasound is a diagnostic imaging technique that uses very high frequency sound waves to examine internal body structures. The sound waves have a pitch too high for the human ear to hear.

When the sound waves originate or are reflected from a moving object their wavelength and frequency changes. This is called the “Doppler effect” and is the audible sound that is heard when the Doppler picks up the blood flow.

Required reading

- Ultrasoundpaedia™ (n.d.). Leg arterial normal. Available at: https://ultrasoundpaedia.com/leg-arterial-normal/
- Manufacturer’s instructions for the machine to be used in the local service.

Required viewing

- Gregory Weir (2015). Vascular, hyperbaric, wound care. Triphasic Doppler Flow. Available at: https://www.youtube.com/watch?v=g2qxWzBSbUQ
- JAMA (2014). Doppler Auscultation of the Posterior Tibial Artery. Available at: https://www.youtube.com/watch?v=9rs9eZQx2Gw
- Philip Mann (2015). Doppler Assessment for Arterial Blood Supply to the feet. Available at: https://www.youtube.com/watch?v=in6di4s6Q28

Optional reading

- Young M, Birch I, Potter CA, Saunders R, Otter S, Hussain S, Pellett J, Reynolds N, Jenkin S, Wright W (2013). A comparison of the Doppler ultrasound interpretation by student and registered podiatrists. Journal of Foot and Ankle Research 6:25. Available at https://jfootankleres.biomedcentral.com/articles/10.1186/1757-1146-6-25