



Videofluoroscopy Swallow Study Procedure

1. Guiding Principles

Videofluoroscopy Swallow Study (VFSS) is an instrumental assessment that may be used by Speech Pathologists to identify normal versus abnormal swallowing anatomy and physiology (Speech Pathology Australia, 2013). It can provide information about the aetiology and symptoms of dysphagia and the effectiveness of compensatory strategies and rehabilitative techniques which cannot be established in a clinical bedside swallowing assessment.

There are risks associated with the procedure for both patients and healthcare professionals who can be exposed to radiation. Patients are additionally at risk of aspirating contrast material.

The purpose of this document is ensure the safe delivery of VFSS to adult patients, including competency, procedural and reporting requirements.

It is currently not within scope for WACHS to offer paediatric (0 – 16 years of age) VFSS in WACHS because of the high degree of risk and complexity in skill level required from the speech pathologist leading the VFSS procedure. Paediatric clients are required to be referred to Perth Children's Hospital (PCH) for the appropriate instrumental swallowing assessment.

2. Procedure

2.1 Pre-Requisite Guidelines

2.1.1 Determining Site Eligibility for VFSS

Decision making within WACHS as to whether or not the site will offer the VFSS service is to be made by the relevant clinical service leadership team. Factors that will determine the feasibility of VFSS for a site include the:

- availability of equipment (see Appendix 1 for the list of WACHS sites with VFSS equipment)
- access to radiologists and radiographers
- frequency of VFSS completion
- competency requirements of Speech Pathologists directing the procedure.

2.1.2 Staffing Requirements

The following staffing are required to conduct a VFSS

- VFSS competent Speech Pathologist to direct the procedure and interpret results
- second Speech Pathologist to provide assistance during the procedure (does not need to be VFSS competent)
- radiology nurse (optional)
- Medical Imaging Technologist (MIT) to operate the fluoroscopy unit.

A Radiologist must be present at the site and available to offer support as required. It is not essential that the Radiologist is present in the suite during the procedure but must be consulted if there is a suspicion of anatomical abnormality.

All Staff are required to work within policies and guidelines to make sure that WACHS is a safe, equitable and positive place to be.

2.1.3 Skills for Speech Pathologists

In order to direct and interpret a VFSS study, the Speech Pathologist must have:

- completed a WACHS recommended competency procedure (or equivalent) including the commencement of the Modified Barium Swallow Impairment Profile (MBSimp)
- completed the online **Ionising Radiation Tutorial** training available through the WA Department of Health at <http://imagingpathways.health.wa.gov.au/index.php/about-imaging/ionising-radiation>.
- have at least one year clinical dysphagia management experience prior to conducting VFSS
- it is recommended that the Speech Pathologist conducts a minimum of 10 studies per year to maintain competency with adult patients.

2.1.4 Equipment Requirements

Medical Imaging equipment

- Fixed fluoroscopy unit.

Personal Protective Equipment

- Lead apron
- Thyroid protector
- Lead Gloves.

Accessory Equipment

- Chair or wheel chair (dependent on the postural needs of the client).
- Use of a suitable non-ionic contrast agent.
- Food and fluid samples of various consistencies.
- Feeding equipment (ie. Cups, spoons, straws, cut away cups, etc)
- Suctioning equipment.
- Other specialized equipment as required (ie. Measuring cups, tongue depressor, torch, tissues/wipes, emesis bags, swabs, etc).

2.1.5 Safety

- The SP's must wear a lead apron and lead thyroid cover throughout the examination.
- The Radiographer will minimise radiation exposure for the patient during the procedure by following standard Medical Imaging Guidelines (as per WACHS Imaging Clinical Practice Standard).
- The SP will minimise radiation exposure for the patient during the procedure by clearly directing the Radiographer when to commence and cease screening.

- A SP who is, or may be, pregnant must remain behind the screen at all times during the examination.

2.2 Clinical Indications for VFSS

2.2.1 Indications for VFSS

- Oropharyngeal dysphagia is suspected as part of a clinical examination but the nature of the dysfunction has not been accurately defined.
- To assist with decision making process regarding oral versus non-oral feeding.
- To assess the presence of and severity of aspiration.
- To objectively assess the effectiveness of compensatory strategies.
- To obtain an objective baseline measure of swallow function prior to dysphagia rehabilitation and post rehabilitation as an outcome measure.
- A VFSS is only indicated if the results are likely to change the patient's management.

2.2.2 Contraindications for VFSS

- Pregnancy.
- Medical instability.
- Patient unable to maintain alertness for at least 30 minutes.
- Difficulty maintaining an appropriate stable position.
- Difficulty co-operating with the procedure.
- Known or suspected adverse reaction to the contrast media.
- Nil by mouth for reason other than dysphagia.
- Appropriately trained staff are not present to support suctioning or ventilation/oxygenation needs for tracheostomised patients.

2.3 Procedure

2.3.1 Examination Procedure Request

The patient must have a valid imaging request from a medical officer for the procedure to occur, as per local imaging request procedures. The timeliness of completion of the VFSS is dependent on:

- Policies and procedures of the service provider i.e. prioritisation protocols.
- Practice constraints.
- Staffing.
- Procedure/equipment availability (eg. clinic booking times, mechanical resources, appropriate fluoroscopic and recording equipment, VFSS patient chair).
- Appropriateness of the client for the procedure (see section 3 and 4).

2.3.2 Consent

The patient must provide consent for the procedure in line with the Operational Directive OD 0657/16 WA Health Consent to Treatment Policy

2.3.3 Clinical Swallowing Assessment

A Clinical Swallowing Assessment (CSE) must be conducted by a Speech Pathologist prior to VFSS for all inpatient and outpatients. Referral for CSE is as per local referral procedure.. The CSE is to include the following:

- confirmation of a valid rationale for the procedure and identification of any contraindications
- completion of the WACHS Speech Pathology Adult Swallow Assessment MR64A WACHS Dysphagia Speech Pathology Swallow Assessment
- explanation of the VFSS procedure to the patient prior to the examination. Written information may include [WACHS VFSS Patient Information Pamphlet](#).

2.3.4 Preparation of Food and Fluid Consistencies

The Speech Pathologist is responsible for:

- identifying the types and order of presentation of food/fluids trialled. It is recommended that the WACHS VFSS Protocol be followed to guide oral trials (refer to Appendix 2)
- preparation of food/fluid is to occur immediately prior to the procedure and be in accordance with food safety practices
- any specific metabolic, dietary or allergy requirements must be identified prior to the procedure
- the food/fluid is mixed with a contrast agent to ensure radio-opacity
- ensure addition of the contrast agent does not alter the viscosity of the food or fluid being trialled. A barium calculator can be used to determine the amounts of barium, water and thickener required to achieve specific barium concentrations and liquid consistencies:
<https://steeleswallowinglab.ca/srll/best-practice/barium-recipes/iddsi-barium-calculator/>.

2.3.5 Contrast Agents

50-100mL of undiluted iohexol solution at concentration of 350mg I/mL is preferable for thin fluid trials as it maintains viscosity. A low-density barium sulphate mixture of 20%-40% weight to volume concentration should be used for all other trials. Barium is generally used with clients who are at risk of aspiration as it is relatively benign if aspirated in small amounts. Its use is contraindicated where there is suspicion of tissue perforation as it can cause mediastinitis.

Commonly used products are:

- X Opaque-HD powder
- E-Z-HD powder
- Polibar liquid
- Liquibar liquid
- Omnipaque
- Vispaque.

Note: Gastrograffin – is contraindicated for use in VFSS as if aspirated it may contribute to pulmonary oedema and aspiration pneumonia.

2.3.6 VFSS Pulse and Frame Rate

The video or digital recording of the VFSS is to be captured and archived at a minimum temporal resolution of 25-30 frames per second without compression so that adequate information regarding the swallow is available for later review. Image acquisition for patient positioning purposes prior to commencement of swallowing should be performed at a low frame rate to minimize radiation dose to the patient and staff.

Optimum fluoroscopy pulse rate: 25-30 pulses/sec (www.steeleswallowinglab.ca).

2.3.7 Positioning of Client

- The patient needs to be sitting upright in a stable, well supported position that enables adequate posture and position of trunk, limbs and head for swallowing.
- Patients may be examined in their wheelchair if the fluoroscopy unit can accommodate the wheelchair size.
- Ideally patients should be examined in lateral, anterior –posterior (AP) and occasionally oblique views. Seating should be able to accommodate each view.

2.3.8 Sequence of Bolus Presentation

- A standardised protocol is to be followed to allow for comparison of repeat studies and assist interpretation.
- Information obtained from the clinical swallowing assessment should guide the progression of bolus presentation during the VFSS.
- WACHS recommends following the SCGH VFSS Protocol, based on MBSImp (refer to Appendix 1).
- During the procedure the Speech Pathologist is to document the sequence of bolus presentation and manoeuvres trialled

2.3.9 Ceasing the VFSS

The Speech Pathologist may choose to cease the VFSS at any time. This may occur due to:

- Aspiration risk.*
- Equipment failure.
- Deteriorating patient's medical condition.
- Aspiration risk.
- Reduced patient compliance.
- At the patient's request.

- * Ceasing a procedure due to evidence of aspiration must also consider:
 - the degree of aspiration
 - trial of compensatory strategies to avoid further aspiration
 - presence and effectiveness of a cough response to the aspiration.

2.3.10 Following the Procedure

If significant aspiration has occurred during the procedure:

- For outpatients, inform the Radiologist onsite or hospital medical practitioner and request an assessment of the patient. Clinical decisions regarding the further medical management of the patient is to be the responsibility of the attending medical practitioner.
- For inpatients, inform the managing medical team. Consult with physiotherapy for management of chest status if required.
- Follow local procedures for significant medical events/deterioration.

2.3.11 Reporting and Documentation

- The Speech Pathologist is to log in to PACS (or other storage of footage) and analyse and interpret each set of images.
- An immediate summary is to be documented in the patient's medical record.
- A VFSS detailed report is to be written and included in the patients' medical record and/or a copy forwarded to the referral source. Refer to [WACHS VFSS Swallow Evaluation Report Template](#).
- A radiologist is to provide a brief report on the VFSS procedure, stored on PACS, however this will not provide functional information.

The minimum speech pathology reporting standards are:

- Views obtained.
- Anatomical features/abnormalities.
- Consistencies evaluated.
- Oral swallowing phase.
- Pharyngeal swallowing phase.
- Oesophageal scan.
- Results of interventions attempted (ie manoeuvres/postures).

3. Definitions

Videofluoroscopy Swallow Study (VFSS)	A radiographic instrumental assessment of swallowing
Dysphagia	Difficulty swallowing
Barium	Barium is a chemical element used in the form of Barium meal for the purpose of an xray contrast medium.

4. Roles and Responsibilities

Speech Pathologist

A VFSS-competent Speech Pathologist is to direct the procedure and interpret results. A second Speech Pathologist is to provide assistance during the procedure (does not need to be VFSS-competent).

Medical Imaging Technologist is required to operate the fluoroscopy unit.

Radiologist is required to be present at the site and available to offer support, as required.

All Staff are required to work within policies and guidelines to make sure that WACHS is a safe, equitable and positive place to be.

5. Compliance

Failure to comply with this policy may constitute a breach of the WA Health Code of Conduct (Code). The Code is part of the [Integrity Policy Framework](#) issued pursuant to Section 26 of the [Health Services Act 2016](#) (WA) and is binding on all WACHS staff which for this purpose includes trainees, students, volunteers, researchers, contractors for service (including all visiting health professionals and agency staff) and persons delivering training or education within WACHS.

WACHS staff are reminded that compliance with all policies is mandatory.

6. Records Management

[Health Record Management Policy](#)

7. Evaluation

Evaluation, audit and feedback processes are to be in place regionally to monitor compliance with this procedure.

WACHS staff are reminded that compliance with all policies is mandatory.

8. Standards

[National Safety and Quality Health Service Standards](#): 5.11, 5.12, 5.28

9. References

1. Somerset Partnership NHS, Video-fluoroscopic Evaluation of Oropharyngeal Swallowing Disorders in Adults Policy, November 2014
2. Speech Pathology Australia, Videofluoroscopic Swallow Study Clinical Guideline, 2013
3. American Speech Language Hearing Association, (2004). Knowledge and skills needed by speech-language pathologists performing videofluoroscopic swallowing studies, *ASHA Supplement 24*, 178 -183
4. American Speech –Language hearing Association. (2004) Guidelines for speech-language pathologists performing videofluoroscopic swallowing studies. *ASHA Supplement 24*, pp 77-92.
5. Steele, C. 2015. www.steeleswallowinglab.ca
6. Modified Barium Swallow Impairment Profile (MBSimp), Northern Speech Services <https://www.northernspeech.com/mbsimp/>
7. Practice Standards and Guidelines for Dysphagia Intervention by Speech-Language Pathologists, College of Audiologists and Speech-Language Pathologists of Ontario, November 2018

10. Related Policy Documents

WACHS [Imaging Clinical Practice Standard](#)
WACHS [Shift to Shift Bedside Clinical Handover Nursing Process](#)

11. Related Forms

Nil

12. Related WA Health System Policies

[OD0611/15 Clinical Incident Management Policy](#)
[OD0651/16 Clinical and Related Waste Management Policy](#)
[OD0657/16 WA Health Consent to Treatment Policy](#)
[MP0095/18 Clinical Handover Policy](#)
[MP0086/18 Recognising and Responding to Acute Deterioration Policy](#)
[WA Pressure Injury Prevention and Management Clinical Guideline](#)

13. Policy Framework

[Clinical Services Planning and Programs](#)

14. Appendices

Appendix 1: [WACHS sites with VFSS equipment](#)

Appendix 2: [WACHS VFSS protocol](#)

This document can be made available in alternative formats on request for a person with a disability

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Appendix 1: WACHS sites with VFSS equipment

- Broome Health Services
- Carnarvon Regional Hospital
- Esperance District Hospital
- Geraldton Health Service
- Hedland Health Campus
- Kalgoorlie Regional Hospital
- Karratha Health Campus
- Northam Regional Hospital
- Narrogin Regional Hospital

Appendix 2: WACHS VFSS protocol

Lateral View

Volume	Consistency	Instructions	Notes
5ml	Thin fluids	Small cup, "Take it all at once"	Not for analysis
5ml	Thin fluids	Small cup, "Take it all at once"	
20ml	Thin fluids	Small cup, "take it all at once but hold it in your mouth until I tell you to swallow"	Oral control Swallowtail
Consecutive sips	Thin fluids	Normal cup or straw (whatever is normal for the patient) "Drink as you normally do" or "Drink as quickly as you can" for stress test	
5ml	Subsequent Fluid*	Small cup or teaspoon "Take it all at once"	*Subsequent fluid as clinically indicated (mildly thick, moderately thick, extra thick)
20ml	Subsequent Fluid*	Small cup or Tablespoon (Extra thick)	
Consecutive sips	Subsequent Fluid*	"Drink as you normally do" or "Drink as quickly as you can" for stress test	
Teaspoon	Puree diet		Residue measures
Diet progression as clinically indicated			
Further trials/compensatory strategies as clinically indicated			

Anterior-Posterior View

20mls	Safest fluid consistency	Normal cup	Pharyngeal contraction
Teaspoon	Puree diet	Ask radiographer to scan down the oesophagus	Pharyngeal contraction, oesophageal retention and retrograde flow

Acknowledgement: Sir Charles Gairdner Hospital, VFSS protocol