

HIGH RESOLUTION ANORECTAL MANOMETRY - SCH

PRACTICE GUIDELINE[®]

DOCUMENT SUMMARY/KEY POINTS

- This document is used to facilitate safe, efficient, and effective high resolution anorectal manometry for paediatric patients.
- Patients should be assessed by a Gastroenterologist prior to referral for manometry

CHANGE SUMMARY

- Document due for mandatory review. Minor changes made.

READ ACKNOWLEDGEMENT

Clinical Nurse Consultants, Registered Nurses and Paediatric Gastroenterologists, must have a clear understanding of this guideline.

Prior to undertaking procedures outlined in this guideline registered nurses must undertake local training

Mandatory Read Acknowledgement

- All Paediatric Gastroenterology nurses will read and acknowledge this document

Discretionary Read Acknowledgement:

- Head of Department *Gastroenterology* to determine which staff are to read and acknowledge the document.

This document reflects what is currently regarded as safe practice. However, as in any clinical situation, there may be factors which cannot be covered by a single set of guidelines. This document does not replace the need for the application of clinical judgement to each individual presentation.

Approved by:	SCHN Policy, Procedure and Guideline Committee	
Date Effective:	1 st November 2023	Review Period: 3 years
Team Leader:	Clinical Nurse Consultant	Area/Dept: Gastroenterology SCH

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1 Purpose

The purpose of this document is to facilitate performance of safe, efficient, and effective high resolution anorectal manometry in paediatric patients.

2 Scope

This work instruction applies to all clinicians performing anorectal manometry including nursing and medical staff.

3 Indications

Constipation and faecal incontinence are very common defecation disorders, ultimately impairing personal and social life of children.⁽¹⁾ Abnormal anal sphincter function, decreased ability of internal sphincter to relax during rectal distension, abnormalities in rectal and/or colonic sensitivity, and weak muscle contractions during defecation have been suggested as possible pathogenic mechanisms involved in this process.^(1,2) High resolution anorectal manometry with anorectal pressure topography gives valuable information about anal sphincter length, tone, function, reflexes and defecation dynamics.⁽²⁾ It is indicated in children:

- To assess the presence of a Rectoanal Inhibitory Reflex (RAIR) to exclude Hirschsprung's Disease where full thickness biopsies are inconclusive.
- The evaluation of patients with anorectal malformations and persistent defecation problems after surgical repair
- Defecation dynamics in patients with chronic difficult to treat constipation

Patients should be assessed by a Gastroenterologist or Paediatric Surgeon prior to referral for HRAM. An information leaflet and education should be provided to the patients and families prior to attendance outlining the preparation required, what to expect, risks and post procedure advice.

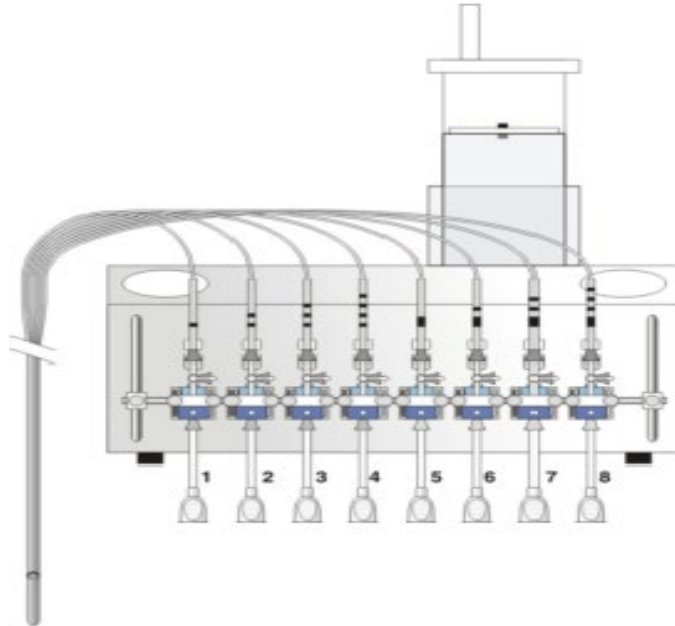
4 Equipment

- Personal protective equipment (PPE) including clean gloves as well as goggles and gown
- Clean towel or Bluey
- Lubricating gel
- Tape (hypoallergenic tape such as hypafix)
- Scissors
- 3 Way Tap
- 2x 50ml Syringe
- Manometry Perfusion System – Water Pump, TNF-R pressure transducers (24)
- Appropriate size paediatric anorectal manometry catheter 24 Channel 150ml Balloon – single use or Multi-use
- Water for Irrigation 1000mls
- Hydrogen Peroxide 3%
- Two-person procedure: One clinician performs the investigation including intubation and administering boluses. The other clinician documents.



4.1 Set up of the manometry system

1. Open the 'MMS database' program on the desktop
2. Open Water Canister and Add 1000mls Water of Irrigation (distilled/deionised water).
Add 10ml of Hydrogen Peroxide 3%
3. Attach the catheter lumen ending to the correct transducer. (P1=P1, P24=P24)
4. Click on 'File', 'Utilities', 'Hardware test USB', 'Module 3' and Turn Pump On. Ensure the pump reaches 1000 psi/mmHg and that there is no air/pressure leak. Once confirmed, turn pump off and resume to main screen.



5. Click 'New' on the toolbar and enter the patient's details. Alternatively, search through the patient database for the patient details if they are already registered
6. Once entered, select the patient and click 'New Investigation' on the taskbar. In the pop-up window click 'Stationary'.
7. In the left column, tick the box for Study Name and in the right panel, tick Anorectal HRAM manometry.
8. Allow Catheter to prime for 5 minutes – this is assessed by water dripping at the distal end of the catheter.
9. Once the screen is reading pressures, begin to press along the length of the catheter. If each sensor is working, a corresponding colour band will appear on the screen (this can also be assessed in clinical utilities).
10. Have the patient lay laterally and zero the catheter 0-axis with the back of the patient. Click the 'Zero all' button on the screen.



5 Consent

- Consent for the procedure should be obtained
- Consent must be freely given, be specific to the procedure, informed and the patient must have the capacity to consent
- Parental consent must be in writing and adhering to [SCHN Consent to Medical and Healthcare Treatment Manual](#)

6 Fasting

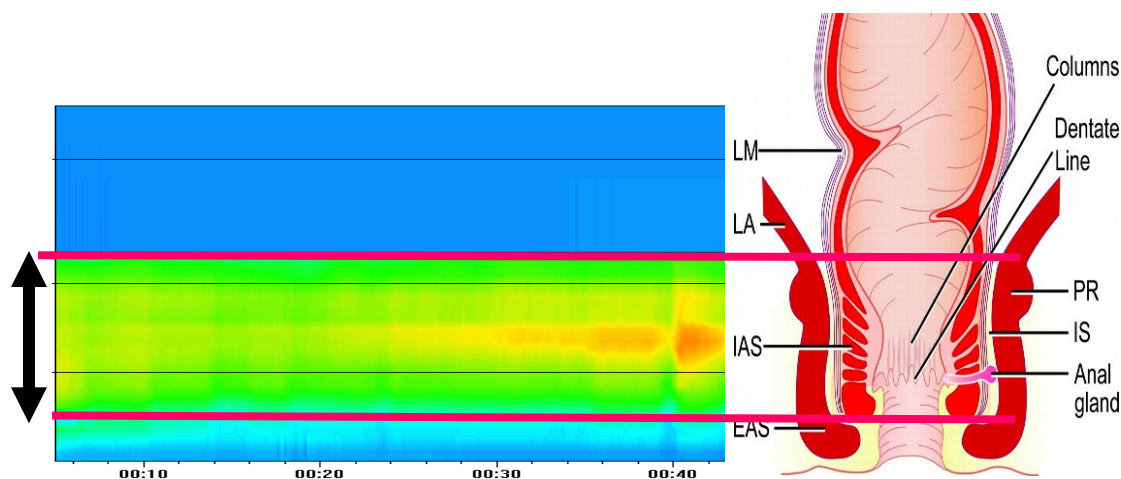
- Fasting is not required
- It is preferable the patient passes a bowel motion the night before / morning of. If they have not passed a stool the day before the procedure please consult Gastroenterologist for advice.

7 Documentation

- The referral must be reviewed by a Paediatric gastroenterologist with motility training prior to the study
- Parental consent for the procedure should be obtained verbally and documented in EMR notes Please refer to [Consent For Medical Treatment Policy](#)
- The child's current height and weight should be documented in the Growth Chart in EMR
- Following the procedure additional documentation is required (see Post study below).

8 Intubation

- Explain the procedure to the patient, including expected sensations during intubation, length of time for the study, and the steps of the procedure as age and developmentally appropriate. Child life therapists or the Starlight team may be helpful for some children during the procedure.
- Lubricate the end of the catheter with lubricating gel
- The depth of the probe is established using the proximal and distal margins of the high pressure zone.



- Have the patient lay laterally and zero the catheter 0-axis with the back of the patient.
- Gently advance the catheter until the depth of the probe is established. If resistance is felt during insertion, pull back the catheter before attempting to re-advance. If the catheter placement is problematic or causing severe discomfort, discontinue the procedure
- Once the catheter is in the desired location, tape the catheter to the patient's leg or bottom.

9 Manometry Study

Once satisfied that the catheter is in the correct position and secure, press 'Start Recording' on the computer. The catheter depth should be documented on MMS software

Standard anorectal motility tests as below. These are subject to change at the discretion of the Paediatric Motility Gastroenterologist depending on the specific patient and suspected motility problem.

- **Familiarisation:** a 3-5 minute familiarisation should be allowed. The patient should be asked to lie still, relaxed. This is important to be able to mark the limits of the anal canal for future reference.

- **Resting Period:** a 1 minute period of rest should be taken, again with minimal movement.
- **Squeeze Manoeuvre:** 2 squeezes at 5 second duration separated by 30 seconds of rest.
- **Endurance Squeeze:** a single 30 second endurance squeeze should be performed for the entire length of time or until the patient can no longer hold. A 30 second rest period should follow post this manoeuvre
- **Push Manoeuvre:** 2 pushes at 5 second intervals separated by a 30 second rest period. This should simulate defecation.
- **Coughing Manoeuvre:** 2 single coughs separated by 30 seconds of rest
- **Sensory Testing:** Inflate the balloon at a rate of 2mls per second. It should be reported first sensation volume and maximum volume tolerated. A 30 second rest period should follow
- **Rectoanal Inhibitory Reflex (RAIR):** Inflate balloon to the desired age appropriate volume (maximal volume of 100mls) , allow this to stay inflated for 5 seconds before deflating. Continue this and incrementally increase volume until the reflex is observed and sustained.
- **Rest Period:** a 30 second post procedure should be performed. The catheter should then be removed from the patient and a short period of recording should continue to ensure no pressure drift has occurred.

9.1 Post Study

At the completion of the study the balloon is to be deflated and the catheter may be gently removed. For all single use catheters these may be immediately discarded in the appropriate clinical waste bin.

10 Cleaning

Daily procedure: (continuously use an antimicrobial agent) Add 10 ml hydrogen peroxide 3% per 1 litre water. Check the concentration level (300 mg/l H₂O₂) with a suitable test strip. A test sample of water can be tapped of conveniently with the flush tube.

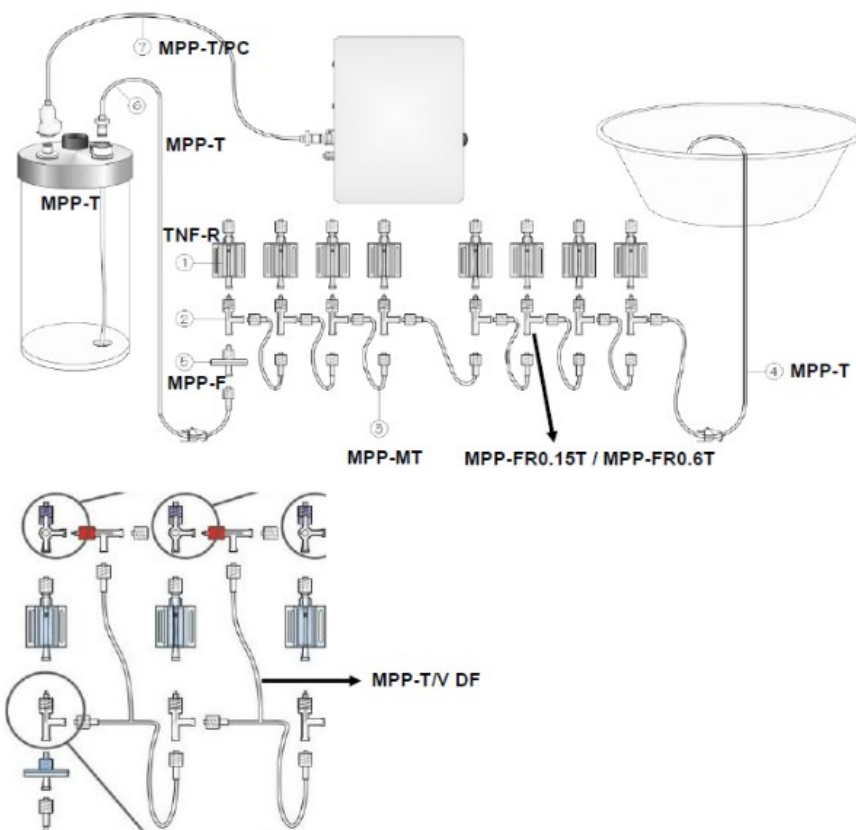
Weekly procedure: After the last manometry of the week or if the system is not being used for the next 7 days. It is advised to blow off the standing water from the tubing, flow resistors and pressure transducers and to clean/disinfect the water container.

1. Disconnect the tubes from the water container lid.
2. Empty the water container and close the lid.
3. Remove the 5um water filter (Remark: Always remove the filter before blowing off the system).
4. Reconnect the tubes to the (empty) water container.

5. Start the compressor in a dummy or test investigation. Let the pump run until the water is removed and the transducers and tubing are free from water. Each individual transducer should be checked by tapping gently and assessing for water bubbles. Also remove the water from the flushing tube.
6. Stop the perfusion pump and release the pressure.
7. Use a soft cloth to wipe dry all exposed surfaces of the pump.
8. Place a new 5um water filter.
9. Cover the pressure transducers with a soft, clean cloth; do not place caps on the pressure transducers.
10. Send water container to CSSD (with float, lid, gasket and refill plug)
11. The water container and lid should be stored dry with lid off.

Six months procedure: Replace the following parts

- Connection tubes (**MPP-MT**).
- Tubes: flushing tube, tube from water container to water filter and container tube (**MPP-T**).
- Silicone gaskets of the water container lid and the refill cap (**MPP-T**).
- Flow resistors (**MPP-FR0.6T** or **MPP-FR0.15T**).
- TNF-R pressure transducers (**TNF-R**).
- If applicable: Dual flow set for MPP (**MPP-TV DF**).



11 References

1. Alessandrella, A., Turco, R., Russo, M., Poziello, A., Miele, E., Staiano, A. (2020). High-resolution anorectal manometry in children with functional constipation with or without fecal incontinence. *Neurogastroenterology & Motility*, 00:e13882. <https://doi.org/10.1111/nmo.13882>
2. Carrington, E.V., Brokjar, A., Craven, H., Zarate, N., Horrocks, E.J., Palit, S., Jackson, W., Duthie, G.S., Knowles, C.H., Lunniss, P.J., Scott, S.M. (2014) Traditional measures of normal anal sphincter function using high-resolution anorectal manometry (HRAM) in 115 healthy volunteers. *Neurogastroenterology and Motility*. doi: 10.1111/nmo.12307

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