Children's Health Ireland

Crumlin | Temple Street | Tallaght | Connolly

Children's Health Ireland Nursing Practice Guidelines on Small Bowel Capsule Endoscopy

Area of use:	All of organisation ☐	CHI at Connolly ☐	CHI at Crumlin ☒
		CHI at Tallaght ☐	CHI at Temple Street ☐
Lead author & title:	Gugulethu Matshazi CNM2 Endoscopy Capsule		
Approved by & title:	Nursing Documentation Approval Committee		
Version:	1	**Approval date:**	November 2023
Reference:	**CHINPGSBCE-GM-11-2023-V1**	**Revision due:**	November 2026

Version History

Version:	Date approved:	Summary of changes:	Author:

Please note practice variation
None

Contents

1.0 Guideline statement

A new national paediatric capsule endoscopy unit is being set up in CHI-Crumlin within the Gastroenterology department. Capsule endoscopy is in existence for over 2 decades with significant advances, it has been adapted for use among the Paediatric Gastroenterology population (Friedlander J. A et al (2017). This technology helps to bridge the diagnostic gap in the evaluation of the small bowel and was approved by the United States Food and Drug Administration (FDA) in 2003 and 2009 for use in children aged 10-18yrs and above 2 years respectively and more recently safe and successful passage in less than 1year old. The most popular, validated and researched system in use is PillCam but other commercially available options include MiroCam, OMOM, EndoCapsule and CapsoCam (Arguelles-Arias F. et al 2015).

2.0 Purpose/scope of the guideline

This guideline is intended to establish a standardized care pathway in small bowel capsule endoscopy for all staff caring for patients scheduled for capsule endoscopy. The expected outcome of this guideline is that staff can accurately and effectively provide uniform capsule endoscopy care as warranted thereby improving patients' satisfaction.

3.0 Applicable to

This guideline should be used by healthcare staff members participating in the capsule endoscopy procedure in the Gastroenterology department in CHI-Crumlin.

4.0 Guidelines/Procedure

Capsule Endoscopy is a less invasive method to visualise the entire small bowel and represents a significant advance in the investigation of intestinal disease.

Indications (Enns R. A. et al 2017)

1. Small bowel Crohns Disease diagnosis and extent evaluation.
2. OGIB/ ferropenic anaemia
3. Small bowel polyps (Familial and other polyposis)
4. Malabsorption and protein-losing enteropathies (celiac, eosinophilic and food-allergic enteropathies, intestinal lymphangiectasia)
5. Chronic abdominal pain
6. Small bowel tumours (Lymphoma, leiomyoma, carcinoid and other tumours.
7. Transplantation (Intestinal graft versus host disease in bone marrow transplant recipients).

Contra-indications (Friedlander J. A. et al 2017)

1. Inability to swallow
2. Suspected bowel obstruction
3. Bowel stricture

4. Bowel fistula
5. Known obstructing bowel tumour or lesion
6. Smaller size of patient
7. Allergy to the material
8. Presence of implanted devices (Medtronic 2022). ASGE and ESGE no longer deems them as a contra-indication (Rondonotti et al 2018).

Complications

1. Capsule retention - presence of the capsule in the bowel lumen for a minimum of 2weeks after ingestion.
2. Capsule Perforation – very rare, results from capsule retention. Crohn's Disease is the most frequent underlying pathology causing perforation.
3. Capsule interference - theoretical assumption that presence of implanted cardiac devices may interfere with the procedure.
4. Capsule aspiration - Very rare and usually resolves spontaneously and it is all achieved by thorough pre-assessment of the patient. Risk factors include aging, neurological or swallowing disorders and patient with weak/ absent cough (46/47).

Equipment

5. PillCam Software/ Computer
6. Cradle
7. Recorder and Bag
8. Sensor Belt
9. Small bowel capsule (SB3)
10. Cup and 50mls of water

Procedure

Use of Capsule endoscopy has a few limitation, main one being difficulty of younger children to swallow, which turns the procedure to an invasive method due to endoscopic placement.

Complications are only seldom reported even in infants.

Patency Capsule is useful in those children with obstructive symptoms or suspected bowel stenosis.

- Patient presents at the Medical Tower 2 Check in Desk at 0815hrs or at allocated time by Capsule Endoscopy nurse during Pre Assessment and is admitted.
- Equipment for procedure is prepared prior to bringing patient into the Endoscopy Capsule room.
- Patient will then be collected from the waiting area and patient is identified asking the parent/guardian to confirm.
- Nurse will reconfirm details from small bowel capsule document (see appendix 1).
- Confirm preparation (see appendix 2).

- Obtain an informed consent (see appendix 3 and 4).
- Nurse will check in patient by entering patient details into the capsule software.
- Patient details and capsule number will also be recorded in the capsule logbook (see appendix 5).
- The sensor belt is placed around the abdomen with top edge just below the sternum and over at least one article of clothing with the blue cable across the body.
- The recorder with the patient details should be placed in recorder holder with the strap and secure across the body. The recorder then can be connected to sensor belt.
- The capsule should then be opened and paired with recorder ensuring the white light on the top of the recorder changes to blue.
- The patient will then be asked to drink water with Simethicone added. Then proceed to swallow the capsule with water, whilst the nurse watches on the recorder to ensure the capsule enters the stomach. Simethicone https://www.medicines.ie/active-ingredients/simethicone-25309/ helps break up gas bubbles in the gut. Aluminum and magnesium antacids work quickly to lower the acid in the stomach. Liquid antacids usually work faster/better than tablets or capsules. This medication works only on existing acid in the stomach.
- The post procedure information sheet is given to the patient /parent/guardian (see appendix 5), and they are asked to return after 30minutes.
- On return to the unit the recorder is checked by the nurse to see if the capsule has entered the small bowel. If the capsule has not entered the small bowel after one hour a consultant is informed and endoscopic intervention may be required.
- Upon returning, the recorder is checked to ensure that the capsule is now in the large bowel. If not in the large bowel patient should be required to continue mobilizing and if no improvement, then consultant is to be informed for further instruction.
- When capsule is confirmed to be in large bowel the recorder will beep to let the operator know the procedure is complete and can be disconnected.
- Then the nurse will clean the equipment (see appendix 7).
- It is vital for the nurse to check for position of the capsule after download i.e. passed the ileo-caecal valve and now in the colon.
-

5.0 Key Stakeholders

Acknowledge all the stakeholders in the delivery of this service and the importance of their roles:

- Conducting regular scheduled meetings.
- Incorporating advice, feedback and updating of service delivery.
- Use of feedback/ evaluation questionnaire from patient and families to develop and improve service.

Name	Grade	Location
Grace O'Sullivan	Programme Manager, HSE Acute Operations Endoscopy Programme	HSE
Professor Seamus Hussey and all GI Consultants	Consultant	CHI Crumlin
Suzanne Byrne	ADON	CHI Crumlin
Philip Harnett	Chief Clinical Engineer	CHI Crumlin
Gugulethu Matshazi	CNM2	CHI Crumlin
Peter Larkin	Medtronic(PillCam Representative)	Citywest Business Campus
Patients and their families		Community
Reviewed and approved by the CHI Nurse Practice Committee November 2023		

6.0 Communication and training

Gastroenterology Consultants and the Capsule Endoscopy Nurse have undergone formal training and certification to run the service. Training on PillCam equipment use and setting up will be conducted by the Medtronic Representative. Regular in-service education and training will be conducted to maintain competence and update existing skills. Standards of Capsule Endoscopy will be maintained in accordance to national and international guidelines. This Guideline will be reviewed periodically, updating with evidenced based literature.

7.0 Monitoring and evaluation

The service delivery of Capsule Endoscopy will be audited yearly:

- By creating an audit tool to assess capsule endoscopy vs traditional endoscopy.
- Auditing our documentation
  1. Capsule Endoscopy Document
  2. Endoscopy Capsule Log Book/ folder.
  3. Capsule Endoscopy Consent Form

The audits will help to identify gaps in our service delivery for improvement and planning purposes.

8.0 References & Bibliography

Argüelles-Arias F. et al (2015). Guideline for wireless capsule endoscopy in children and adolescents: A consensus document by the SEGHNP (Spanish Society for Paediatric Gastroenterology, Hepatology, and Nutrition) and the SEPD (Spanish Society for Digestive Diseases). *Revista espanola de enfermedades digestivas*, *107*(12), 714–731. https://doi.org/10.17235/reed.2015.3921/2015 Accessed 06/04/2023

Enns R. A et al (2017). Clinical practice guidelines for the use of video capsule endoscopy. Gastroenterology. 152:497 – 514.

Friedlander J. A et al (2017). NASPGHAN Capsule Endoscopy Clinical Report. JPGN. Volume 64, Number 3. https://naspghan.org/files/NASPGHAN_Capsule_Endoscopy_Clinical_Report.28.pdf Accessed 06/04/202

Nursing and Midwifery Board of Ireland (2015) *Recording Clinical Practice for Nurses and Midwives.* NMBI, Dublin, Ireland

Nursing and Midwifery Board of Ireland (2015) *Scope of Nursing and Midwifery Practice.* NMBI, Dublin, Ireland.

Rondonotti E. et al (2018). Small-bowel capsule endoscopy and device-assisted enteroscopy for diagnosis and treatment of small-bowel disorders: ESGE technical review. Endoscopy 50:423-446.

Medtronic (2022). https://www.medtronic.com/covidien/en-us/products/capsule-endoscopy/pillcam-crohns-system/indications.html

Appendix 1. Capsule Endscopy Document.

Surname: Forenames: Date of Birth: Patient ID:	Ensure patient name, DOB and procedure corresponds with notes and referral ❑ Responsible Consultant: Surgical Care Practitioner: Admitting Nurse Capsule: Date of Capsule:
Preferred Name: Intended Procedure: Reason for Procedure:	Allergies? (Please List)

Is there suspected Crohn's disease documented in the referral?	Yes❑ No❑	
Does the patient have a diagnosis of confirmed Crohn's Disease?	Yes❑ No❑	
Has the patient had any previous bowel or abdominal surgery? Are there any visible scars on the abdomen?	Yes❑ No❑	
Does the patient have obstructive symptoms (frequent abdominal pain and nausea)	Yes❑ No❑	
Does the patient take NSAID regularly (at least 1 tablet daily)	Yes❑ No❑	
Does the patient have any swallowing problems?	Yes❑ No❑	
If yes to any of these 6 questions do not proceed and speak to …… – may need a patency capsule first		

Does the patient have a pacemaker?	Yes❑	No❑
Is the patient taking iron tablets?	Yes❑	No❑
Prescription completed	Yes❑	No❑

Pre-Admission			
Bowel prep and consent information given Date Sent:	Yes ❑	No ❑	
Do you take any of the following medications?			
Ace Inhibitors Lisinopril, Captopril, Enalapril, Cilazapril, Perindopril, Fosinopril, Imidapril, Quinapril, Moexipril, Trandolapril	Yes ❑	No ❑	I*f yes to any of these drugs ask the patient to stop the day they*

A2 Receptors	Losartan, Candesartan, Valsartan, Telmisartan, Olmesartan, Irbesartan, Eprosartan	Yes ❑	No ❑	*take bowel prep and morning of procedure.*
Diuretics	Bendroflumethiazide, Indapamide, Chlorthalidone, Metolazone, Furosemide, Bumetanide, Co-amilozide, Co-amilofruse, Spironolactone, Eplenerone, Amiloride	Yes ❑	No ❑	
NSAIDS	Ibuprofen, Diclofenac, Naproxen, Meloxicam, Nabumetone, Ketoprofen, Indometacin, Piroxicam, Mefenamic Acid	Yes ❑	No ❑	

Admission	Capsule
The equipment has been checked and is ready for use	Yes ❑ No ❑
The patient has arrived onto the Endoscopy department and oriented to the environment	Yes ❑ No ❑
Patient identity and notes confirmed and correct	Yes ❑ No ❑
The patient has been given an explanation of the procedure, understands what is involved and signed a consent form	Yes ❑ No ❑
Does the patient have any swallowing difficulties	Yes ❑ No ❑
Signature	
Additional Comments:	

Capsule Endoscopy	Surname: Forenames: Date of Birth: Patient ID:		
Patient preparation		Comments	Initial
Has patient taken both sachets of Picolax before the investigation?	Yes❑ No❑	Time taken:	
When did the patient last have diet and fluids?		Diet:	Fluid:
Is the patient diabetic?	Yes❑ No❑	If yes, BG	Time:
Procedure			
The equipment has been correctly connected to the patient?	Yes❑ No❑		
The patient has been given a cup of water, with the time recorded. Real time and observe the capsule as the patient swallows to ensure it is in the stomach	Yes❑ No❑	Time: Capsule Label:	
Removal of Capsule			
Patient returned equipment to Endoscopy department	Yes❑ No❑		

Downloaded Started	Yes❑No❑	Date/Time:	
Download Complete	Yes❑No❑	Date/Time:	

Appendix 2 Preparation

Day 2 Before The Procedure	Day 1 Before The Procedure	Procedure Day
BREAKFAST. Choose one: **OPTION A**— Rice Krispies®, Special K®, Cheerios®, and Cornflakes with 1 Cup of milk. **OPTION B**— 2 slices white bread/toast with a thin spread of butter and marmalade. **OPTION C**— 1 boiled/poached egg with a slice of white bread/toast with thin spread of butter. ***LUNCH.*** *Choose one :* **OPTION 1**— 2 Nugget sized portion of tender meat/ fish/ chicken with one serving spoon of white rice/ pasta. **OPTION 2**— 2 slices of bread/ toast with thin spread of butter with 2 boiled/poached eggs. **OPTION 3**— 2 Baby sized potatoes without the skin (may be boiled/ mashed/ baked) with 2 Nugget sized tender meat/ chicken/ fish. ***DINNER.*** *Choose one from lunch list above* **SNACKS** (Choose One) AT 11-12AM AND 3-4PM 1 serving spoon of yellow jelly OR 5 boiled Fox's Glacier mints. OR 5pieces of Savoury Crackers (lightly salted)/ Savour Bakes Corn Cakes/ Rivercote Lightly Salted Rice Crackers.	BEAKFAST AT 8AM. Choose one: **OPTION A**— Rice Krispies®, Special K®, Cheerios®, and Cornflakes with 1/2 Cup of milk. **OPTION B**— 1 boiled/poached egg with a slice of white bread/toast with thin spread of butter. *NO OTHER SOLID FOODS AFTER THIS!!!* THEN UNRESTRICTED FLUIDS · Water · Apple Juice · 7UP® (Not Sugar-free) · Orange Lucozade · Orange/ Lemon dilutable *Squash* e.g. MiWadi and Sun Quench · Yellow Ice Lollies. **PICOLAX BOWEL PREPARATION** 1ST Sachet at 10AM 2ND Sachet at 2PM **RECONSTITUTION**- Pour recommended sachet contents in approximately 1 cup of water, stir and drink entire solution within 30-60minutes. **TIPS** ¨ Serve chilled. ¨ Drink through a straw placed far back on your tongue. ¨ Suck on a hard candy.	No fluids 4hours before the test!!! Any queries, please contact: Endoscopy Capsule Nurse 01-4096100 ext. 2116

DRINKS Water and Ice Blocks. *Ice cubes* 7Up ®(Not Sugar-free). Orange/ Lemon *Dilutable Squash* MiWadi and Sun Quench). Strained Vegetable Juices. Orange Lucozade Broth. *? Strained* Ice lollies.		

Regimens/ Age	**>6/12**	**6-12 months**	**1-2 yrs.**	**2-4 yrs.**	**4-9 yrs.**	**<9 yrs.**
Senna oral liquid (7.5mg/5mls) Senna tablets (for diabetics)	Discuss with GI Drs	10ml	20ml	30ml	40ml	60ml
Sodium Picosulphate + magnesium salts **AT 10AM** **AT 2PM**		nil	2.5mg (1/4sachet) 2.5mg (1/4sachet)	5mg (1/2sachet) 5mg (1/2sachet)	10mg (1sachet) 5mg (1/2sachet)	10mg (1sachet) 10mg (1sachet)
Simethicone before swallow of capsule ≤2yrs 240mg ≥2yrs 480mg						

Appendix 3 Informed Consent Components

Indications	**Methods**	**Risks**	**Benefits**	**Alternatives**
Evaluation of the small bowel for the purpose of 1. Investigating CD 2. Investigating OGIB 3. Evaluation of polyps/ tumours 4. Others: celiac, diarrhoea	1. Swallowing of capsule. 2. Endoscopic placement of capsule via a capsule delivery system.	1. Pain 2. Nausea 3. Vomiting 4. Obstruction-capsule retention. 5. Need for surgical or endoscopic removal. 6. Bruising 7. Bleeding 8. Mucosal/ skin irritation.	More thorough investigation of small bowel mucosa for lesion of interest	1.Not doing procedure 2. Surgical evaluation. 3.MR/CT enterography 4.SB enteroscopy 5. Serology/ stool testing.

		9. Aspiration 10. Risk ass. With EGD 11.Missed lesions 12.Incomplete Study 13.Need for repeat study 14.Equipment malfunction		

Appendix 5 Capsule Log Book

Date	Name of Patient	Patient ID	Type of Capsule	Capsule ID No.	Lot No.	Expiry Date	Signature

Appendix 6 Post Procedure Information

You may continue with your regular activities.

Be as active as possible.

Continuously check for the capsule signal (**Blinking Blue).**

Ingestion Time:

Start Liquid diet after 2hrs:

Start Low fibre diet after 4hrs:

The procedure ends when the End of Procedure screen appears on the PillCam recorder. The PillCam recorder also beeps and vibrates when the End of Procedure alert appears.

Do not have an MRI if the capsule has not been expelled.

At End of Procedure, return to the Capsule Endoscopy Unit for equipment to be disconnected.

OR

At End of Procedure, the PillCam recorder and sensors may be removed from the patient. The patient may then return to a normal daily routine. Return the equipment to the unit before 9am the following day.

For any assistance contact:
Capsule Endoscopy Nurse
(01)4096100 Ext 2116

Appendix 7 Cleaning of the Equipment.

The PillCam Manufacturer recommends using alcohol wipes (up to 70%) to clean equipment surfaces. Usage of other classes of disinfectants (Aldehydes, Oxidizing Agents, Quaternary Ammonium, Chlorine compounds, Iodophor, Phenolic compounds) may stain or damage the materials.

1. PillCam Sensor Belt.
   It is used with a disposable single use covering over one layer of clothing. After use, discard the disposable covering and disinfect belt as recommended.

2. PillCam Sensor Array.
   For mild cleaning (dirt, sweat), wipe the sensors gently with alcohol wipes (up to 70%). The alcohol will not remove the adhesive. Use alcohol sparingly and allow the sensor array to dry for 20 minutes. To remove adhesive from the sensor array (not from the human body), use white benzene.

Alternatively, the following medical adhesive removers can be used to remove adhesive;
B-508 Secure Solvent,
B-202 Hollister Solvent
B-206 Detachol Adhesive

3. Recorder Pouch.
   Wipe down all surfaces with alcohol (70% isopropyl or ethyl alcohol) making sure that all surfaces are exposed to alcohol for at least 1 minute.

NB: Equipment used on patients with infectious disease will be decontaminated as per CHI – Crumlin Cleaning and Disinfection Guidelines (2019).