Continuous Quality Improvement on Surgical Patients Undergoing Colonoscopy

2014 Hospital Authority Convention
May 8th, 2014

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Clinical Assistant Professor (Hon), Department of Surgery, CUHK
Background

Colonoscopies in TMH alone

<table>
<thead>
<tr>
<th>Year</th>
<th>Surgical</th>
<th>Medical</th>
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<tr>
<td>2004</td>
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<tr>
<td>2013</td>
<td>3117</td>
<td>1196</td>
</tr>
</tbody>
</table>
Background

- Very common procedure
- Number rapidly on the rise

2014: TMH + POH = 5,065 colonoscopies
Simple Procedure

- Bowel Preparation
- Procedural Details
- Drugs
- Patient Anxiety
- Associated Morbidity
1) Standardize Clinical Practice and Protocols

2) Ensure Quality and Safety of Procedure

3) Improve Patient and Staff Satisfaction
Standardization of Protocols
Safety Checklist
Cluster Fact Sheets
Patient Education Video
Booking Pathway
Simple Discharge Protocol
New Admissions Time Slots
Default Patients Protocol
Reschedule Appointment Protocol
Tele-nursing Phone Reminders
SLH / CPH Collaboration
1) Standardization of Protocols

- Collaboration with Dept. of M&G
- Reviewed International Guidelines

Bowel Preparation

Medications

Risks and Complications
2) Safety Checklist

1) Bowel Preparation
2) Relevant Medications
3) Admission and Special Concerns
**Colonoscopy Date:**

**Doctor’s signature:**

1. Need for special bowel preparations?
   - [ ] NO
   - [ ] YES
   - 4L Klean Prep (recommended for normal cases)
   - 3-1L Klean Prep
   - Other regime (Please specify)
     - e.g. avoid PEG in high grade intestinal obstruction

2. Is the patient on any of the follow medications?
   - [ ] NO
   - [ ] YES
   - Oral Hypoglycaemic agents (OHA)
     - Stop 1 day prior to colonoscopy (day of fluid diet)
   - Fibre supplements and stimulant laxatives e.g. Metamucil, Agilax
     - Stop 3 days prior to colonoscopy
   - Iron supplements
     - Stop 1 week prior to colonoscopy
   - Aspirin
     - Continue drug as usual
   - Warfarin (Please select one of the following)
     - Low thrombotic risk (DVT, simple AF, AVR, bioprosthetic valve)
       - Stop 5 days prior to colonoscopy; no need for heparin
     - High thrombotic risk (AF = CVA / valvular lesion, MVR)
       - Admit to ward 4 days prior to procedure and follow warfarin protocol
     - Others
   - Clopidogrel (Plavix)
     - Please discuss with patient's cardiologist or consider postponing colonoscopy (strongly recommended)
     - Yes
     - Other drugs (with instructions)

3. Is there any special admission concern?
   - [ ] NO
   - [ ] YES
   - Requires Early Admission (e.g. non-ambulatory, age > 75, diabetic)
     - Day ward staff will arrange early admission at 08:30
   - CPH/SLH Inpatient
     - Day ward staff will alert CPH/SLH and arrange admission at 12:00 noon
   - Other (e.g. for heparinization)
     - Please specify and issue Admission Slip with date and time
     - ALL remaining patients
     - Day ward staff may arrange admission time at 12:00 noon on day of colonoscopy

Ver. Dated: 05/06/2013
3) Cluster Fact Sheets

- Updated 2010 & 2012
- Both Chinese and English versions
Endoscopy

Colorectal Endoscopic Submucosal Dissection (ESD) 大腸內視鏡黏膜下層剝離術 (2014/3/7)
ESD Consent

Endoscopic Ultrasonography 上消化道超聲內鏡

Capsule endoscopy 結腸內視鏡

Colonoscopy 結腸內視鏡

ERCP 内鏡逆行胰膽管造影術

Balloon-assisted enteroscopy 氣囊小腸內視鏡

Percutaneous Endoscopic Gastrostomy 經皮內視鏡胃造口術

OGD 上消化道內鏡
Colonoscopy
PATIENT FACTSHEET No EDU/colon/03

Introduction
Colonoscopy is currently the best method to examine the lower digestive tract. It is a long flexible endoscope which allows the direct visualization and diagnosis of disorders of the colon, rectum, anal canal and possibly the terminal portion of the small bowel. The procedure usually takes 20 to 30 minutes, and sedatives and analgesics may be given intravenously if indicated. Colonoscopy is not only useful in making a diagnosis (e.g. biopsy for tumour), additional therapeutic procedures can also be performed at the same time (e.g. removal of polyp).

Indication
Per rectal bleeding, change in bowel habit, anaemia and follow up for colonic polyp or malignancy.

Risks & Complications
(Overall incidence is 0.1%, complication rate could be higher in cases that require therapeutic procedures e.g. removal of polyp, bleeding control, colonic stenting etc.)
1. Cardio-pulmonary complications due to sedatives and analgesics e.g. hypotension, aspiration, pulmonary suppression
2. Perforation of intestine
3. Bleeding
4. Infection
5. Peri-anal pain and tenesmus
6. Failed or incomplete examination due to poor bowel preparation or anatomical difficulties (~5%)

Preparation
1. Patient should adopt low residue diet starting 3 days before the procedure. Iron preparation should be stopped at least 1 week before colonoscopy.
<table>
<thead>
<tr>
<th>Food allowed</th>
<th>Food to avoid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cereal</td>
<td>Rice, congee, noodle, biscuit, corn, wheat</td>
</tr>
<tr>
<td>Vegetable</td>
<td>Low residue fruit / juice, High residue vegetable / fruit</td>
</tr>
<tr>
<td>Meat</td>
<td>Lean meat or fish, Tendon, organ, processed meat</td>
</tr>
<tr>
<td>Bean and nut</td>
<td>Bean curd, Red bean, peanut, almond, cashew nut, sesame</td>
</tr>
</tbody>
</table>
2. Fluid diet on the day before procedure, e.g. soup, thin congee, juice, but avoid consuming too much milk or milk product.
3. bowel cleansing agent (laxative) should be taken according to the instruction prior to the procedure (usually starting the day before). Shall there be any major discomfort after taking the bowel cleansing agent (e.g. severe abdominal pain or vomiting), please immediately seek medical attention.
4. Patients should inform medical staff of any major medical problems including diabetes, hypertension, valvular diseases, previous gastrointestinal surgery and pregnancy. Patients should also provide information concerning the current medications used especially antiplatelet and anticoagulation drugs and any allergic history. The regime for the medications may be adjusted, so please follow as instructed by your medical staff.
5. Patients should avoid smoking, alcohol drinking and taking sedatives before the procedure.

Post-operation care
1. There may be minor abdominal pain or discomfort, but these should subside after a short period of time. Minor per rectal bleeding is also after the procedure.
2. If the procedure is uneventful, patients should resume oral intake only after the effect of anaesthetic and sedative has worn off.
3. Patient will be observed for any complication after the procedure. Generally, most patients will be discharged on the same day after a few hours of observation.
4. Driving, signing legal documents or manipulating heavy machineries is prohibited for 12 hours after the procedure to allow the sedative time to wear off.
5. Under the rare and unfortunate complication in perforation of bowel, emergency surgery will be needed.

Remarks
1. You may not be aware of complications until a few days after the procedure. You should contact Tuen Mun Hospital (2488 5111) / Pok Oi Hospital (2486 8000) within office hours for any queries or discomfort after the procedure. However, if serious events develop, such as passage of large amount of blood, severe abdominal pain etc, patients should seek medical advice at the nearest Accident and Emergency Department.
2. Information collected during the procedure including photographs and film may be used for professional or educational purpose.
3. In case of Typhoon signal no. 8 or Black Rainstorm Warning, the procedure will be cancelled. Patients should contact Tuen Mun EDU (2488 5630) or Pok Oi Hospital EDU (2486 8270) within office hours for further arrangement.
4. It is impossible to mention all the possible complications that may happen after the colonoscopy and the above is only a few important complications which may occur. Before agreeing for the colonoscopy, you must acknowledge and accept the fact that no matter how ideal the situation may be, complications may occur and can have serious sequel and may result in death.
結腸內視鏡

病人資料夾

簡介
結腸內視鏡檢查，俗稱大腸鏡檢查，是檢查下消化道疾病的最佳方法，結腸鏡是一種細長可彎曲的內視鏡，內置有一個可調整角度的細長攝影鏡頭還能檢查結腸各部位。直腸、肛門內及甚至可能遠端腸末端的狀況並作出診斷。整個檢查一般需時二至三分鐘，其間可能為病人注射侷部麻醉藥物及止痛藥以減緩檢查時之不適。大腸鏡檢查症狀及過去病史等因素，在有需要時也能對處理作活組織檢查及進行治療（如切除息肉）。

適應症

1. 排便出血，排便習慣改變，腹痛、腹痛及腹部腫脹

可能出現的情況或併發症

併發症機率約0.1%，病人如接受內視鏡治療，如息肉切除、內鏡止血、擴張及支架置入等，出現嚴重併發症之機會會相對提高。

1. 由於結腸鏡及止血器引致的心靜脈發炎及血流低、呼吸困難或窒息
2. 口腔破裂
3. 出血
4. 感染
5. 肛門緊閉及異常便便

6. 由於排便不順或生理結腸上之障礙導致未能完成整腸鏡腸鏡檢查 (-5%)

檢查前注意事項

1. 檢查前三天開始進食低渣食物，如病人服用過敏藥，須在檢查一星期前停止服用。

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<thead>
<tr>
<th>可進食</th>
<th>非可進食</th>
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<tr>
<td>級類</td>
<td>飯、粥、稀飯、餅乾</td>
</tr>
<tr>
<td>雞蛋類</td>
<td>麵、米、麥、麥皮及茶包</td>
</tr>
<tr>
<td>蔬果類</td>
<td>素食的蔬果及魚類，當清淡為主</td>
</tr>
<tr>
<td>肉類</td>
<td>合適的肉類、內臟、頭頸、膿液、肉乾、魚乾、蝦類及各種熟食</td>
</tr>
<tr>
<td>豆類及果仁</td>
<td>豆腐、腐竹</td>
</tr>
<tr>
<td>蔬菜及果仁</td>
<td>紅豆、眉豆等非豆類</td>
</tr>
</tbody>
</table>

2. 檢查前一天只可進食流質食物如湯粥、稀粥、去渣果汁，但勿飲過量熱飲品

3. 一般情況下，檢查前一晚應照常使用腸道清潔藥物（灌腸），若於服用腸道清潔後仍感到嚴重不適（如腹脹及便意），請立即尋求醫生協助。

4. 病人如有其他疾病如糖尿病、高血壓、心臟瓣膜性疾病、曾因腸道疾病接受手術或懷疑

血的藥物及任何過敏反應資料，藥物的劑量可能需要調整，所以請聽從醫囑人員的指示服藥。

5. 病人應避免在檢查前喝酒、抽煙或服用不當份量的降壓藥物。

檢查後安排

1. 檢查後會有輕微腹痛、腹脹等情況，但此多屬暫時性，檢查後病人亦常見有輕微腸

出血的現象。

2. 於檢查後，待麻醉藥或降壓藥藥力減退後病人方可進食。

3. 病人於檢查後需進行數小時的暫時留院觀察，大部份病人即日便可以出院。

4. 檢查後十二小時後，由於結腸鏡藥物未能完全減退，病人禁止駕駛、簽署法律文件及操作重型機械，以防意外發生。

5. 如不幸出現腸穿刺的情況，便需要進行緊急手術。

備註

1. 檢查後的併發症可能在數天之後才出現，如病人出現腹痛難治，或對檢查結果、

服藥有疑問者，請於辦公時間內電/電通醫院病房 (2468 5111) / 博愛醫院病房 (2466 8000)查詢；如出現異常反應，如大便出血、劇烈腹痛等，則應到就近診所求診。

2. 所有檢查時獲得的資料包括照片、錄影等可應用於教學及教學用途。

3. 在八個月及黑色素瘤的情況下，檢查將會被取消。病人請於辦公時間內致電屯門

醫院「心臟檢診科」 (2468 5610) / 博愛醫院「心臟診所」 (2466 8270) 詢問檢查日期。

4. 由於沒有可能把所有風險或併發症列出，以上只列出最常見及重要的風險。在同意

進行大腸鏡檢查前病人或其親屬並接受無論手術安排如何完善，以上之風險仍然可以發

生及引致嚴重後果或甚至死亡。
4) Patient Education Video

- 15 mins video
- Detailed explanation on:
  - Indications and details of procedures
  - Risks and potential complications
  - Dietary and bowel preparations
  - Administrative information
大腸檢查
短片歩
5) Simplifying Booking Pathways

- Problems:
  - **Patients:**
    - LONG idle *waiting time* from booking to discharge
  - **Nurses:**
    - Repetitive work over and over
Booking in SOPD

Education in DW

Drugs

Bowel prep

Admission Slip
6) Simple Discharge Protocol

- Standard discharge information
  - Follow ups
  - Sick Leave
  - Medications
- Early discharge if suitable
  - ↓ patient idle time

Goal:
Eliminate / Minimize need for nurses to contact doctors after procedure
First audit

- Nov 2010
- 2 weeks pre- and post- implementation
- 69 patients

Targets:
1) Time saved (Patients and Staff)
2) Quality of colonoscopy
3) Patient satisfaction
Audit: 1) Time saved - Patients

Average time from booking in SOPD to discharge

137 mins → 15 mins

Also ↓ next day return
Audit: 1) Time saved – Nursing Staff

- 2010 TMH:
  - 2400 colonoscopies
    (>2/3 ⇒ Day Ward for education)
  - Avg. 10 mins education by nurses

\[1600 \times 10 \text{ mins} = 16,000 \text{ mins} = 267+ \text{ Hours}\]

2014: 3100 colonoscopies ⇒ 340+ Hours
Audit: 2) Quality of colonoscopy

- Quality of bowel prep
  - 70% Good (58%)
  - 26% Fair (35%)
  - 4% Poor (7%)
Audit: 2) Quality of colonoscopy

- Objective Measures:

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<th>ASGE standard</th>
<th>Baseline</th>
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<tr>
<td>Complete colonoscopy</td>
<td>&gt;90%</td>
<td>92%</td>
<td>94%</td>
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<tr>
<td>Polyp detection</td>
<td>&gt;25% (♂)</td>
<td>50%</td>
<td>40%</td>
</tr>
<tr>
<td></td>
<td>&gt;15% (♀)</td>
<td></td>
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<tr>
<td>Complication</td>
<td></td>
<td>0%</td>
<td>0%</td>
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</table>
Audit: 3) Patient Satisfaction

- **Satisfaction Survey**

  - 20 FU colonoscopy cases
    - 75% satisfactory
      (25% no comment)
    - All cases
      - 70% satisfactory
      (28% no comment)
7) New Admission Time Slot

- Avg. 12-14 colonoscopies / day
- Problem:
  1) Very long waiting time for patients in ward
  2) Peak hour for morning admissions

**Before**

All patients admitted at 08:30

**After**

Only 4 admitted at 08:30, others all admitted at 12:00
7) Audit: New Admission Time Slot

1) Waiting time:
   - Longest waiting time: 6.2 hrs ⇝ 4.3 hrs
   - Shortest waiting time: 1.3 hrs ⇝ 0.3 hrs

2) Satisfaction Survey
   - 53 /58 (91.3%) patients rated satisfied or above
8) Default Patients Protocol

- **Problem:**
  Default patients ⇒ Wastage of colonoscopy slots

- **Aim:**
  Early detection via -
  1) Telephone reminder
  2) Patient hotline

  Early communication -
  1) Day Ward
  2) Endoscopy Unit
  3) Doctors
8) Default Patients Protocol

Before

Nothing

After

Simple pathway to contact Endoscopy Unit to open slots
9) Reschedule Appointment Protocol

- **Problem:**
  
  **Miscommunication between**
  
  *Day Ward ⇔ Endoscopy Unit ⇔ Doctors*

- **Before:** Nothing
- **After:** Simple integrated form for easier communication
10) Tele-nursing Phone Reminders

- Phone reminder 3 days prior to colonoscopy
  - Dietary restrictions
  - Bowel preparation
  - Medications

- Problem:
  1) Overlapping education (video, pamphlets...)
  2) **Time burden** on nurses (~15 calls per day)
10) Tele-nursing Phone Reminders

Before

Phone reminder for all 15 patients

After

Phone reminder for 4 patients only (08:30 admissions)
10) Audit: Tele-nursing Phone Reminders

- **Time saved**
  - **OLD**
    - 5 mins / patient x 15 patients x 5 working days
      = 375 mins / week = 1500 mins / month
  - **New**
    - 5 mins / patient x 4 patients x 5 working days
      = 200 mins / week = 400 mins / month

- **Quality**
  - Bowel preparation same
  - Default rate same

↓ 73.3%
11) SLH / CPH Collaboration

- Problem – SLH / CPH patients in TMH
  - Patient: Unfamiliar environment ⇒ Unease
  - Nurses: Unfamiliar patient groups ⇒ Unease
  - RESULT: Poor bowel prep
11) SLH / CPH Collaboration

Before

Patients admitted to TMH for bowel preparation

After

Bowel preparation back in SLH / CPH
Special admission arrangement
Examination will be booked by doctors and patients will receive:
1) An appointment sheet for Colonoscopy
2) Admission Slip to Day Ward (F3DW / DW) (Appendix 2)
3) Dietary information and other instructions (Appendix 3)

CPH / SLH ward staff will need to **notify TMH / POH day ward** once the colonoscopy appointment is received as soon as possible
- TMH: Tel – 24686104  Fax – 24685497
- POH: Tel – 24688280  Fax – 24686828

**Low residue diet** should be ordered for patient through DCMS **four days before** the examination

Day ward staff will contact CPH / SLH staff **three days before** the examination as a reminder.

**Transfer of patient:**
1) Before exam:  CPH / SLH staff will book NEATS for transfer to day ward AND transfer back to CPH / SLH
2) After exam:  Day ward staff will notify NEATS for the return trip

**Klean Prep**
1) Fax MAR to CPH / SLH Pharmacy for 4 litres of Klean Prep one day before examination.
2) Give **3 litres** of Klean Prep from 4 pm to 7 pm (finish no later than 10 pm)

**Normal patients:**
- Give final 1 litre of Klean Prep at CPH / SLH before 7 am (no later than 10 am)
- Fast patient after this final litre
- Allow home leave and transfer to TMH / POH by NEATS, and admit to day ward through Admission Office

**Infectious patients**
- Give final 1 litre of Klean Prep by CPH / SLH before 6 am (no later than 7am)
- Fast patient after this final litre
- Allow home leave and transfer to TMH / POH by NEATS, and admit to day ward through Admission Office

**Infectious patients** will be admitted at 11:00

**Normal patients** will be admitted at 12:00 noon

- Order “low residue diet” **4 days before** the appointment
- Order “Fluid diet” and “Klean prep” **2 days before** the appointment
- Give 3 L Klean prep (dilute in water) in the evening before the appointment
- Give 1 L Klean prep (dilute in water) in the morning of the appointment
- Patient should be granted on home leave for the procedure

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**Checklist for Colonoscopy Preparation by CPH / SLH Ward Staff**

- Notify day ward (TMH / POH) for colonoscopy booking, and they will reconfirm the time for admission
  - Fax the colonoscopy appointment sheet to either TMH **day ward** at 2468 5497 or POH **day ward** at 2486 8281
  - Please fax the colonoscopy appointment sheet as soon as possible in order to receive an updated admission slip with special arrangement.

- For infectious patients (E.g.: VRE, VRE contact precaution cases, MRA... etc) please contact day ward for special arrangement with CEC (EDU)
  - Call day ward at least one week before the appointment
11) Audit: SLH / CPH Collaboration

- ↓ Waiting time

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<th></th>
<th>Average WT</th>
<th>Longest WT</th>
<th>Shortest WT</th>
</tr>
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<tbody>
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<td>General pt.</td>
<td>197.4</td>
<td>400</td>
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<tr>
<td>CPH/SLH pt.</td>
<td>141</td>
<td>196</td>
<td>48</td>
</tr>
</tbody>
</table>

- Bowel preparation **improved**

- **Positive** feedback from nursing staff
<table>
<thead>
<tr>
<th>Wards</th>
<th>Day Ward</th>
<th>SOPD</th>
<th>CEC</th>
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<tbody>
<tr>
<td>Dr. YW Wong (Con)</td>
<td>MN Leung (WM)</td>
<td>Chan Kin Ngan (DOM)</td>
<td>Isabella Lee (WM)</td>
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<tr>
<td>Salina Lo (DOM)</td>
<td>Alice Wong (RN)</td>
<td>Grace Chiu (APN)</td>
<td>Chen Mun (APN)</td>
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<tr>
<td>Lau Ka Wai (WM)</td>
<td>Rachel Yeung (RN)</td>
<td>Leung Po Yuen (RN)</td>
<td>MW Kwok (APN)</td>
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<td>Joan Pang (WM)</td>
<td>Au Lai Ha (RN)</td>
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<td>Mang Fan Wai (WM)</td>
<td>Wan Mei Yuk (RN)</td>
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<table>
<thead>
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<td>Calvin Chan (WM)</td>
<td>Porter Ng (NO)</td>
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<td>Sung Hoi Yan (RN)</td>
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<td>Lam Shuk Man (RN)</td>
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<td>Dr. KK Li</td>
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(Special thanks) Dr. Lawrence Lai Dr. Calvin Ng