

# Should We Revise Colonoscopy Indication Criteria; Revised and Updated?

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## ABSTRACT

Colonoscopy is the most accurate technique for the diagnosis, surveillance, or exclusion of important colorectal diseases. In general, the indications for colonoscopy have expanded since its inception and are likely to differ between countries, depending on the available resources and the perceptions of local healthcare experts in that country regarding the benefits, costs, and risks of colonoscopy relative to other diagnostic strategies. This study was designed to evaluate the indication, endoscopic finding, complications and therapeutic consequences. It includes 106 colonoscopies patients referred from Emergency Department. Patients admitted to medical department, follow up patients of colon cancer and patients having anemia or altered bowel habit. The results showed that positive findings were in 42% of patients who had colonoscopy and were more in anal region. Most of them had history of abdominal pain, altered bowel habit and constipation. Subjects aged 70 years and more who have anaemia and haematochezia are turned to have serious diseases as colonic cancer. As colonoscopy still the gold standard tool to explore colonic abnormalities, further larger multicentric studies are required to evaluate colonoscopy indications to determine whether they should be included in future revisions of the guidelines.

**Keywords** - Colonoscopy; Indications; Colon; Abdominal pain; Alter bowel habits.

## INTRODUCTION

Access to colonoscopy to the suspected colonic disease is often not practical and based on patient's selection. Global cooperation to diagnostic analysis of colonoscopy indications and results is needed to determine the main colonoscopy indications, their diagnostic approach and the suitability of each colonoscopy indication. High diagnostic profile was found for rectal bleeding, polyps follow up and iron deficiency anemia, on the contrary, colonoscopy to investigate abdominal pain, altered bowel habit and cancer follow-up have a low diagnostic finding.<sup>1</sup> Berkowitz and Kaplan<sup>1</sup> concluded that when facilities and expertise for colonoscopy are easily accessible, patient selection criteria should be implanted and the colonoscopy carried according to the diagnostic expectation of each indication. Patients aged > 54 years or had major illness were more likely to have an appropriate necessary indication for colonoscopy. On the other hand, healthy subjects between 45 to 54 years of age, have usually no significant abnormality as compared to screening patients. Patient underwent colonoscopy for iron deficiency anemia, bowel habit change, known inflammatory bowel disease, surveillance or other indications were more likely to have appropriate indication, while patient underwent colonoscopy for abdominal pain or chronic diarrhea were less likely to have an appropriate necessary indication.<sup>2-7</sup> Colonoscopy indications evidences appreciation must not directly have been taken from the literature only.

Expertise opinion and appropriate criteria considered by expert panel from previous studies should be agreed and considered carefully.<sup>8</sup> Nicoller<sup>9</sup> concluded that new good approach should be sought in order to integrate complementary evidence obtained from clinical trials and expert panels into practice guidelines for colonoscopy.

Indications to conduct colonoscopy in acute primary care patients referred for that examination was < 10% which alone underscore the need for further evidence base for many colonoscopy clinical indications. Although it is not easy to conduct effective studies, it is important that physicians and patients can rely on more solid information to make informative decision about colonoscopy indication. It is also essential to have more accurate information to improve the use of resources in health care.<sup>9,10</sup>

Significant number of inappropriate colonoscopies are usually done without clear indication referring physician and/or the colonoscopist should have certain documented colonoscopy indications criteria to improve results and quality of care especially in younger patients and patient with nonspecific symptoms.<sup>4</sup>

There is world-wide trend to cut down health expenses parallel to excellent health services. Hence appropriate use of medical procedures, as colonoscopy is crucial. Certain approved criteria for medical procedure based on evidence of effectiveness, complications and consequences are a way to improve the quality of care.<sup>9,10</sup>



Using the RAND (Research and Development) method, the European Panel on Appropriateness of Gastrointestinal Endoscopy (EPAGE) gave detailed and clear appropriateness colonoscopy criteria, and applying these criteria to patients, a true good use of colonoscopy. Colonoscopy to patients older than 54 years who have major illness are more likely to have positive results than healthy subjects who are 45 to 54 years old and healthy. Additionally, the inappropriate use of colonoscopy among patients with abdominal pain and diarrhea can result in overuse in such patients, this affects medical products availability, medical care quality and costs.<sup>2-4</sup>

Guidelines suggests that screening should be offered for colorectal cancer and adenomatous polyps beginning at age of 50 years.<sup>13</sup> Subjects aged 70 years and more who have anaemia or haematochezia are indicators of serious diagnosis as colon cancer and are clear indication for colonoscopy.<sup>14</sup>

Therefore, further studies are needed to assess the current indications for colonoscopy, so prospective study is planned to study and review the indication and results of the carried colonoscopy in our Gastro-enterology unit.

## MATERIALS AND METHODS

This study was conducted prospectively from January 2009 to August 2009 in Gastroenterology unit, Medical Department in Tripoli Central Hospital, indications and results of colonoscopy (including the histological report, if any) were recorded in standardized form with a questionnaire – filled by the referring doctor. One hundred and six patients for colonoscopies were conducted from Emergency department, patients admitted to Medical Department, follow up of colon cancer and patients having anemia or altered bowel habit. The indication, endoscopic finding, complications and therapeutic consequences were evaluated. Bowel preparation has been performed with magnesium sulphate sachets. The procedure has been carried using pulse oxymetry after sedating the patients with Propofol (2-15 ml). Excel-Microsoft and SPSS version 17 were used for statistical analysis.

## RESULTS

One hundred and six patients, out of them 51 patients (48.1%), 55 patients (51.8%) were male and female respectively. Altered bowel habit reported in 49 (46.2%), 40 patients (37%) had history of constipation. Abdominal pain reported in 73 patients (68.9%) and diarrhea in 21 (19.1%) patients. Bleeding per rectum in 27 patients (25%), melena in 14 patients (14.2%) and only 5 patients (4.7%) had positive blood in stool. Most patients were not diabetic (73.6%) and were not smoker (86 patients 81.1%) and also were not obese (87 patients 82.1%). Patients had previous colonoscopy were only 24 (22.6%). Only 12 patients (11.3%) had history of other malignancies. Most of patients have no history of polyps or family history of malignancy (102 patients 96.3%). Pallor was reported in 47 patients (44.3%), while 94 patients (87%) had anemia with hemoglobin less than 12 gm /dl (Table 1; Figures

1-3).

Colonoscopic finding in anal canal region were 12 patients with hemorrhoid, two patients had anal mass proved to be anal carcinoma by histopathology, 10 had fissure. In sigmoid colon four patients had single polyp, only one patients has multiple polyps and one had malignant sigmoid mass.

In ascending colon four patients had single polyp, only one with multiple polyps and three patients have malignant mass, while in transverse colon five patients had positive finding; three had single polyp, one have multiple polyps and another one having fungating malignant mass. Colonoscopy of the descending colon, seven patients had positive finding; four with single non malignant polyp, 4 with multiple premalignant polyps, one only patient had malignant ulcerated mass. At the caecal and ileocecal; four had positive finding two of them with single polyp, one patients with multiple polyps and one with ulcerated malignant tumor (Table 2).

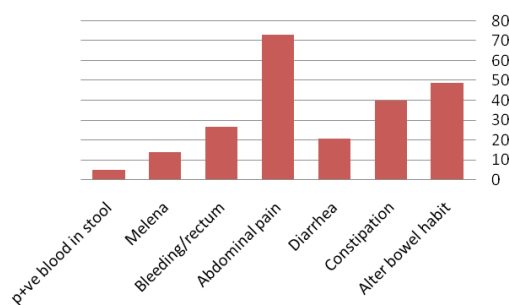
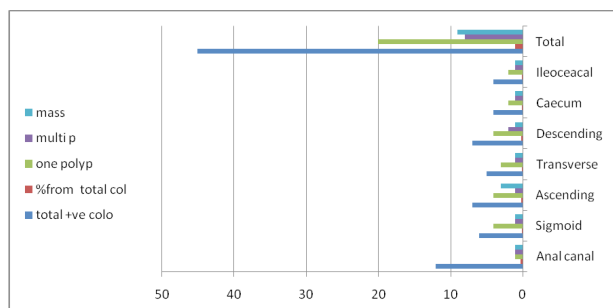
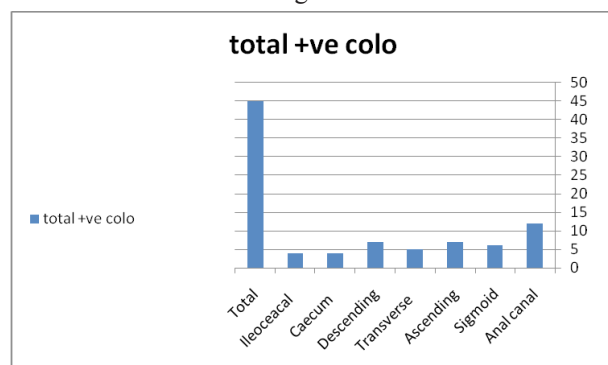
**Table 1:** Demography and clinical characteristics of 106 patients undergone colonoscopy.

| Gender                     | number      | %    |
|----------------------------|-------------|------|
| Male                       | 51          | 48.1 |
| Female                     | 55          | 51.8 |
| Age (yr)                   | 17 to 85yrs |      |
| Mean age (SEM)             | 53.32       | 1.77 |
| Abdominal pain             | 73          | 68.9 |
| Altered bowel habit        | 49          | 46.2 |
| Constipation               | 40          | 37.7 |
| Diarrhea                   | 21          | 19.8 |
| Fresh bleeding from rectum | 27          | 25.5 |
| Melena                     | 14          | 13.2 |
| Smoker                     | 13          | 12.3 |
| Diabetes mellitus          | 16          | 15.3 |
| H/previous colonoscopy     | 24          | 22.6 |
| H/previous malignancies    | 12          | 11.3 |
| Obesity                    | 19          | 17.9 |
| H/polyp removal            | 4           | 3.8  |
| F/Hmalignancies            | 4           | 3.8  |
| Pallor                     | 47          | 44.3 |
| Hg<12g/dl                  | 94          | 87   |



**Table 2:** Different positive colonoscopy finding at each region of the colon.

| Region     | Total +ve colon | % from total col | One polyp | Multiple | Mass |
|------------|-----------------|------------------|-----------|----------|------|
| Anal canal | 12              | 27%              | 1         | 1        | 1    |
| Sigmoid    | 6               | 13%              | 4         | 1        | 1    |
| Ascending  | 7               | 16%              | 4         | 1        | 3    |
| Transverse | 5               | 11%              | 3         | 1        | 1    |
| Descending | 7               | 16%              | 4         | 2        | 1    |
| Caecum     | 4               | 9%               | 2         | 1        | 1    |
| Ileocecal  | 4               | 9%               | 2         | 1        | 1    |
| Total      | 45              | 100%             | 20        | 8        | 9    |

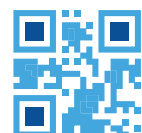
**Frequent clinical history****Figure 1:** Patients history of altered bowel habit, constipation, diarrhea, melena and rectal bleeding.**Figure 2:** Number of positive colonoscopy in different regions.**Figure 3:** Patients had positive colonoscopy finding.

## DISCUSSION

Over the last two decades there is a remarkable development in gastrointestinal endoscopy and the colonoscopy becomes the most common diagnostic and therapeutic procedure for large bowel disease as well as a screening for colorectal cancer.<sup>15,16</sup> The easy accessibility of colonoscopy led to inappropriate referral and incorrect overuse of this procedure. The misuse of the colonoscopy is reported to range between 15 to 35% in different studies.<sup>6,17-21</sup> Consensus based guidelines for appropriate referral of both upper and lower endoscopic procedures have been developed by several expert panels.<sup>4,22</sup> American society for gastrointestinal endoscopy developed and reviewed the guidelines regularly on appropriate use of endoscopy with the latest update in the year 2000.<sup>23</sup> The diagnostic yield of an endoscopic procedure is defined as its capacity for identifying a lesion that is potentially important to patient care and has been reported for both upper and lower endoscopy in relation to its indication.<sup>4</sup>

Appropriate indications for colonoscopy was reported to range from 40 to 45% and only 15 to 20% for those with inappropriate indications in some studies.<sup>1,4,6,18</sup> A large proportion of colonoscopies performed in an open-access system was considered inappropriate indication for colonoscopy, or not listed in the 2000 guide lines of the ASGE on appropriate use of gastrointestinal endoscopy.<sup>24</sup> The probability of identifying significant finding on colonoscopy is particularly higher when the indications are judged to the ASGE guidelines. The only appropriate indications were in patients aged over 50 years with change in bowel habit e,g (constipation) with or without abdominal pain, and in younger age group in a very few situation (4%) were judged necessary.<sup>25</sup> Adler<sup>26</sup> concluded that currently used criteria for diagnostic colonoscopy increases yield of relevant finding but leads to a miss rate of other findings in the range of 10 to 15%. Simple selection criteria based on age and symptoms could be more suitable and should be tested in a large group of patients.<sup>25</sup>

In this prospective study, a total of 106 colonoscopy were conducted for patient of different indications. Out of these colonoscopies, 45 had positive finding (42%) and nearly two-third of the positive findings found in subjects



aged more than 50 years; most of them were males (30 patients). These findings were more in anal region in patients who had history of abdominal pain, altered bowel habit and constipation. For other regions of the colon, more or less the positive finding was nearly the same as previous reports with minor difference in percentage.

The commonest lesion in the sigmoid descending and transverse colon were either single or multiple polyps. Most of the multiple polyps proved to be either premalignant or malignant. Furthermore, tumor were detected more in ascending colon with equal frequency of mass finding in sigmoid, descending, caecum and ileocecal region.

Clinical pallor, low hemoglobin level and abdominal pain (47%, 94%, 69%) were reported the highest frequency as referral indication for colonoscopy in this study, while altered bowel habit, constipation, diarrhea, fresh blood from rectum (46%, 38%, 20%, 26%) respectively were the second most common indication for colonoscopy in our study. Meanwhile, family history of malignancy, history of malignancy in patients, obesity and smoking were associated risk factors for colorectal cancer have had similar results with our finding as an indicator for colonoscopy procedure.<sup>24,25</sup>

## CONCLUSION

Careful classification of indication criteria is important in improving the quality of colonoscopy testing. In our prospective study, the results demonstrate that colonoscopy in older subjects (70 years and more) as well as subjects who have anaemia or haematochezia at presentation are more likely to have positive findings. Therefore larger prospective multicentric studies are needed to assess the current indication of colonoscopy and to implement new specific indicators for colonoscopy in gastroenterology unit in the hospital.

## REFERENCES

- Berkowitz I and Kaplan M (1993) Indications for colonoscopy. An analysis based on indication and diagnostic yield, *South Africa Medical Journal* **83**(4), 245-248.
- Vader JP, Pache I, Froehlich F, *et al.* (2000) Overuse and underuse of colonoscopy in a European primary care setting, *Gastrointest Endosc.* **52**, 593-599.
- De Bosset V, Froehlich F, *et al.* (2002) Do explicit appropriateness criteria enhance the diagnostic yield of colonoscopy?, *Endoscopy* **34**, 360-368.
- Froehlich F, Pache I, Burnand B, Vader JP, Fried M, Beglinger C, Stalder G, Gry K, Thorens J, Schneider C, Kosecoff J, Kolodny M, DuBois RW, Gonvers JJ and Brook RH (1998) Performance of pan-based criteria to evaluate the appropriateness of colonoscopy; a prospective study, *Gastrointest Endosc.* **48**, 128-136.
- Minoli G, Meucci G, Bortoli A, *et al.* (2000) The ASGE guidelines for appropriate use of colonoscopy in an open access system, *Gastrointest Endosc* **52**, 39-44.
- Morini S, Hassan C, Meucci G, *et al.* (2005) Diagnostic yield of open access colonoscopy according to appropriateness, *Gastrointest Endosc.* **54**, 175-179.
- Thomas-Gibson S, Thapar C, Shah SG, *et al.* (2002) Colonoscopy at a combined district general hospital and specialist endoscopy unit; lesions from 505 consecutive examinations, *J R Soc Med.* **95**, 194-197.
- Mahajan RJ, Barthel JS and Marshall JB (1996) Appropriateness of referral for open access endoscopy, *Arch Intern Med* **156**, 2065-2069.
- Adler A, Roll S, Marowski B, *et al.* (2005) Appropriateness of diagnostic colonoscopy in the era of screening colonoscopy; do we need better selection criteria?, *Gastrointest Endosc.* **61**, AB 246.
- Nicollier-Fahrni A, Vader J, Froehlich F, Gonvers J and Burnand B (2003) Development of appropriateness criteria for colonoscopy; comparison between standardized expert panel and an evidence-based medicine approach, *International Journal for Quality in Health Care* **15**, 15-22.
- Harris JK, Froehlich F, Gonvers JJ, *et al.* (2007) The appropriateness of colonoscopy: a multi-center, international, observational study, *Int J Qual health Care* **19**, 150-157.
- Shekele P (2004) The appropriateness method, *Med Decis. Making* **24**, 228-231.
- Vader JP, Froehlich F, Dubois RW, *et al.* (1999) The European panel on the Appropriateness of Gastrointestinal endoscopy (EPAGE): conclusion and WWW site, *Endoscopy* **31**, 687-694.
- Winawer S, Fletcher R, Rex D, *et al.* (2003) Colorectal cancer screening and surveillance: clinical guidelines and rational- update based on new evidence, *Gastroenterology* **124**, 544-560.
- Mcirillo N, Gennarelli A, Calogero C, Fedele C, Mattera R, De Falco and Lobello R (2009) Is anemia a correct indication to colonoscopy in elderly patient?, *BMC Geriatrics* **9**(Supp. II):A79doi:10. 1186 /1471-2318-9-S1-A79.
- Karasick S, Ehrlich SM, Levin DC, Harford RJ, Rosetti EF, Rissi JA, Beam LM and Gigliotti JV (1995) Trends in use of barium enema examination, colonoscopy and sigmoidoscopy: is use commensurate with risk of disease? *Radiology* **195**, 777-784.
- Scott B (1990) Endoscopic demands in the 90s, *Gut.* **31**, 125-126.
- Charles RJ, Chak A, Cooper GS, Wong RC and Sivak MV Jr (1999) Use of open access in GI endoscopy at an academic medical center, *Gastrointest Endosc.* **50**, 480-485.
- Mahajan RJ, Barthel JS and Maschal JB (1996) Appropriateness of referrals for open-access endoscopy. How do physician in different medical specialties do? *Arch Intern Med.* **156**, 2065-2069.
- Minoli G, Meucci G, Bortoli A, Garripoli A, Gullotta R, Leo P, Pera A, Prada A, Rocca F and Zambelli A (2000) ASGE guidelines for the appropriate use of colonoscopy in an open access system, *Gastrointest Endosc.* **52**, 39-44.



21. Morini S, Hassan C, Meucci G, Toldi A, Zullo A and Minoli G (2001) Diagnostic yield of open access colonoscopy according to appropriateness, *Gastrointest Endosc.* **54**, 175-179.
22. Burnand B, Vader JP, Froehlich F, Dupriez k, Larequi-Lauber T, Pache I, Dubios RW, Brook RH and Gonvers JJ (1998) Reliability of panel - based guidelines for colonoscopy :an international coparison, *Gastrointest Endosc.* **47**, 162-166.
23. Worthington DV (2000) American Academy of Family Physicians (AAFP) position paper: Colonoscopy: procedural skills, *Am Fam Physician* **62**(5), 1177-1182.
24. American Society for Gastrointestinal Endoscopy (2000) Appropriate use of gastrointestinal endoscopy, *Gastrointest Endosc.* **52**, 831-870.
25. Adler A, Roll S, Marowski B, Drossel R, Rehs HU, Willich SN, Riese J, Wiedenmann B and Rösch T (2007) Appropriateness of colonoscopy in the era of colorectal cancer screening: a prospective, multicenter study in a private-practice setting, *Berlin Colonoscopy Project I* **50**(10), 628-638.

