TITLE: Prioritization of Patients Requiring Endoscopy Procedures: Clinical Evidence and Guidelines

DATE: 14 December 2011

RESEARCH QUESTIONS

1. What is the evidence regarding the clinical and demographic factors that would put a patient at risk for negative outcomes if not prioritized to a timely endoscopic procedure?

2. What are the evidence-based guidelines regarding prioritization of patients for endoscopic procedures?

KEY MESSAGE

Sixteen relevant studies with varying objectives and conclusions regarding the prioritization of patients for endoscopic procedures were identified. The majority of identified literature pertained to upper endoscopic procedures.

METHODS

A limited literature search was conducted on key resources including PubMed, The Cochrane Library (2011, Issue 12), University of York Centre for Reviews and Dissemination (CRD) databases, Canadian and major international health technology agencies, as well as a focused Internet search. Methodological filters were applied to limit retrieval to health technology assessments, systematic reviews, meta-analyses, randomized controlled trials, non-randomized studies with safety, and guidelines. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2001 and December 1, 2011. Internet links were provided, where available.

The summary of findings was prepared from the abstracts of the relevant information. Please note that data contained in abstracts may not always be an accurate reflection of the data contained within the full article.

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RESULTS

Rapid Response reports are organized so that the higher quality evidence is presented first. Therefore, health technology assessment reports, systematic reviews, and meta-analyses are presented first. These are followed by randomized controlled trials, non-randomized studies, and evidence-based guidelines.

Two systematic reviews, one randomized controlled trial, 13 non-randomized studies, and one evidence-based guideline were identified regarding prioritizing endoscopic procedures and the clinical and demographic factors that would put a patient at risk for negative outcomes if not prioritized to a timely endoscopic procedure. Due to the amount of literature identified, non-randomized studies published prior to 2006 were not included in the summary, but were identified and are included in Appendix 1. Further information that may be of interest is included in Appendix 2.

OVERALL SUMMARY OF FINDINGS

Colonoscopy and Flexible Sigmoidoscopy

Based on evidence from a systematic review, which sought to assess the ability of established guidelines to refer patients with malignancy, both the American Society for Gastrointestinal Endoscopy and European Panel on the Appropriateness of Gastrointestinal Endoscopy guidelines may not be sensitive or specific enough to refer the appropriate patients to colonoscopy. They also found that up to 26% of patients were referred inappropriately to colonoscopy. Evidence from a non-randomized study suggests that compliance with guidelines regarding surveillance colonoscopy could reduce wait times, however, there may be social and ethical issues that should be considered. Patients older than 40 years exhibiting symptoms of hemorrhoids are likely at higher risk for malignant disease and should undergo flexible sigmoidoscopy.

With respect to referral pathways, a “straight-to-colonoscopy” protocol and a rapid-referral pathway were found to be safe and feasible ways to optimize wait list times for patients with suspected colorectal cancer.

More detail regarding the included colonoscopy and flexible sigmoidoscopy studies is included in Table 1.

<table>
<thead>
<tr>
<th>Author, Year, Study Type</th>
<th>Study Objectives</th>
<th>Results and Author Conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hassan et al, 2011, Systematic Review (SR)</td>
<td>To assess the accuracy of established guidelines for the referral of patients to colonoscopy and the subsequent detection of lesions and relevant findings.</td>
<td>26% of patients were inappropriately referred to colonoscopy. Appropriateness guidelines, based on the American Society for Gastrointestinal Endoscopy (ASGE) and the European Panel on the Appropriateness of Gastrointestinal Endoscopy (EPAGE), had suboptimal sensitivity and poor specificity for colorectal cancer. Authors concluded that better strategies for colonoscopy screening are required.</td>
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</table>
### Table 1: Included Studies Examining Colonoscopy and Flexible Sigmoidoscopy

<table>
<thead>
<tr>
<th>Author, Year, Study Type</th>
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<tr>
<td>Beggs et al, 2011, NRS</td>
<td>To examine the implementation of a “straight-to-colonoscopy” protocol (as a part of the two week rule) for patients with colorectal cancer (CRC) symptoms referred to testing.*</td>
<td>No patients with inappropriate referral to colonoscopy were diagnosed with cancer. The “straight-to-colonoscopy” protocol did not increase wait times for colonoscopy and authors determined that it was safe and feasible.</td>
</tr>
<tr>
<td>Valentín-López et al, 2011, NRS</td>
<td>To assess the results of a rapid-referral pathway for patients with suspected CRC.</td>
<td>Using rapid-referral pathway: average wait time for colonoscopy was 18.5 days (SD 19.1) average wait time to surgery was 28.6 days (SD 23.9) A rapid-referral pathway for patients with suspected colorectal cancer reduced wait times for colonoscopy and appeared to be a good strategy in diagnosing early-stage CRC.</td>
</tr>
<tr>
<td>Chivers et al, 2010, NRS</td>
<td>To examine and assess the compliance of the waiting list for surveillance colonoscopy with established guidelines and to measure the impact of adjusting referrals to comply with guidelines.</td>
<td>Compliance with guidelines for surveillance colonoscopy can reduce wait times for diagnostic colonoscopy. This practice, however, may result in social, moral, and ethical debates.</td>
</tr>
<tr>
<td>Vening et al, 2010, non-randomized study (NRS)</td>
<td>To determine the likelihood of identifying pathology requiring treatment in patients with symptoms of haemorrhoids referred to flexible sigmoidoscopy.</td>
<td>No malignant disease was found in patients younger than 40 years of age. Patient age older than 40 years was found to be a risk factor for malignant disease in patients with hemorrhoid symptoms and authors suggest that flexible sigmoidoscopy should be performed.</td>
</tr>
<tr>
<td>Clements et al, 2009, NRS</td>
<td>To apply the British Society of Gastroenterology (BSG) guidelines to the colonoscopy waiting list in order to determine if wait-list patients are listed appropriately.</td>
<td>49% of patients were wait-listed inappropriately, most of which were older than the upper age-limit suggested by the guideline. Authors suggested that education and wait-list control can be used to reduce the number of unnecessary colonoscopies.</td>
</tr>
</tbody>
</table>

ASGE = American Society for Gastrointestinal Endoscopy; BSG = British Society of Gastroenterology; CRC = colorectal cancer; EPAGE = European Panel on the Appropriateness of Gastrointestinal Endoscopy; NRS = non-randomized study; SD = standard deviation; SR = systematic review

* The target for the two week rule and straight-to-colonoscopy protocol was treatment for identified cancers within 62 days of colonoscopy referral.
Upper Endoscopy

Overall, evidence suggests that upper endoscopy has low predictive value for gastroesophageal cancers and may not be necessary as a routine procedure preceding bariatric surgery.

Urgent endoscopy may have no effect on patient outcomes in patients with acute upper-gastrointestinal bleeding, time to endoscopy may have no effect on mortality in patients with hemodynamically stable acute variceal bleeding (AVB), but is likely related to in-hospital mortality in cirrhotic patients with AVB. The optimal timing for the evaluation of progress following chemoradiotherapy or radiotherapy for patients with esophageal cancer was found to be between 75 and 90 days. In patients with non-variceal upper-gastrointestinal bleeding, guideline adherence to timing of endoscopy may influence patient outcomes.

With respect to patient factors, in patients with dyspepsia, one study found the optimal cutoffs for endoscopic detection of upper gastrointestinal tract carcinoma to be 38 years in females and 43.5 years in males, while a second study found a 60% increase in the risk of disease over each five year age increment. Further detail regarding the included studies examining upper endoscopy is included in Table 2.

The identified guideline summary regarding the priority of diagnostic tests form patients with suspected gastroesophageal reflux disease (GERD) suggests that endoscopy with biopsy improves patient outcomes and that the ideal patients for the procedure are those with GERD syndrome who have not responded to pharmacologic proton pump inhibitor therapy.

### Table 2: Included Studies Examining Upper Endoscopy

<table>
<thead>
<tr>
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<tr>
<td>Di Giulio et al, 2010, systematic review (SR)</td>
<td>To assess the efficacy of the American Society for Gastrointestinal Endoscopy (ASGE) and European Panel on the Appropriateness of Gastrointestinal Endoscopy (EPAGE) guidelines for referral to upper endoscopy and the subsequent detection of gastro-esophageal cancers and relevant findings.</td>
<td>Upper endoscopy has low predictive value for gastro-esophageal cancers and other relevant findings.</td>
</tr>
<tr>
<td>Bjorkman et al, 2004, randomized controlled trial (RCT)</td>
<td>Determine whether urgent (pre-hospital admission) upper endoscopy decreases health resource use or patient outcomes in patients with upper gastrointestinal bleeding.</td>
<td>Timing of endoscopy had no effect on patient outcomes or healthcare resource use; endoscopy results had no impact on the decision to admit patients to the hospital. Authors concluded that in order to have an impact on resource use, results of endoscopy must be a determining factor in patient care.</td>
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<tr>
<td>Buri et al, To compare different</td>
<td>Age and alarm features were simpler and</td>
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<td>2010, non-randomized study (NRS)</td>
<td>strategies for upper endoscopy patient selection and referral including ASGE guidelines, age features, alarm features, and artificial neural network (ANN) models.</td>
<td>similarly effective compared to ASGE guideline referrals. ANN and regression models may be useful for identifying patients at high-risk for cancer.</td>
</tr>
<tr>
<td>Cheung et al, 2009, NRS</td>
<td>To evaluate the association between timing of endoscopy and outcomes in stable patients with acute variceal bleeding (AVB).</td>
<td>There was no significant association between time to endoscopy and mortality and difference in urgency times made no difference in patient outcomes. Authors conclude that time to endoscopy did not appear to be associated with mortality in patients with hemodynamically stable AVB.</td>
</tr>
<tr>
<td>Hsu et al, 2009, NRS</td>
<td>To evaluate the association between endoscopy timing and in-hospital mortality in cirrhotic patients with AVB.</td>
<td>Delayed endoscopy (more than 15 hours) was an independent risk factor for in-hospital mortality in the studied patient group.</td>
</tr>
<tr>
<td>Zenda et al, 2009, NRS</td>
<td>To evaluate the optimal timing of endoscopic response evaluation for patients undergoing chemoradiotherapy or radiotherapy treatment for esophageal cancer.</td>
<td>Authors found that ideal response evaluation with endoscopy was between 75 and 90 days and recommended that subsequent evaluations should be carried out 30 days following non-progressive disease declassification.</td>
</tr>
<tr>
<td>Loewen et al, 2008, NRS</td>
<td>To determine the diagnostic yield of routine upper endoscopy for patients undergoing bariatric surgery.</td>
<td>Abnormal findings that changed the course of treatment were observed in 18% of patients. Authors suggested that a randomized trial should be performed to validate the usefulness of preoperative EGD in bariatric patients.</td>
</tr>
<tr>
<td>Sumathi et al, 2008, NRS</td>
<td>To assess the appropriateness and determine the age cut offs for endoscopy in patients with dyspepsia.*</td>
<td>The optimal cutoff age was found to be 38 years for females, 43.5 years for males. In patients with dyspepsia, more normal and benign than malignant lesions were identified.</td>
</tr>
<tr>
<td>Cardin et al, 2007, NRS</td>
<td>To assess and determine the importance of endoscopic diagnosis using factors such as age, gender, and compliance with European Society of Primary Care Gastroenterology (ESPCG) guideline statements for</td>
<td>A statistically significant correlation between cancer or gastric ulcer and compliance with ESPCG guidelines. Authors found a 60% increase in risk of disease over each 5-year age group increase. Physician participation in a program to improve the quality of dyspepsia management was not associated with positive gastroscopy.</td>
</tr>
</tbody>
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Table 2: Included Studies Examining Upper Endoscopy

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<td>da Silveira et al, 2006, NRS</td>
<td>To identify factors that predict time to endoscopy in patients with new nonvariceal upper-gastrointestinal bleeding (NUGIB).</td>
<td>Time intervals differed between inpatients and outpatients. Authors discuss the importance of resource allocation to facilitate early endoscopy to adhere with guidelines to improve patient outcomes.</td>
</tr>
</tbody>
</table>

ANN = artificial neural network; ASGE = American Society for Gastrointestinal Endoscopy; AVB = acute variceal bleeding; CRC = colorectal cancer; EPAGE = European Panel on the Appropriateness of Gastrointestinal Endoscopy; ESPCG = European Society of Primary Care Gastroenterology; NRS = non-randomized study; NUGIB = new non-variceal upper-gastrointestinal bleeding RCT = randomized controlled trial; SR = systematic review

* Study performed in India to determine appropriateness in the Indian population.
REFERENCES SUMMARIZED

Health Technology Assessments
No literature identified.

Systematic Reviews and Meta-analyses


Randomized Controlled Trials


Non-Randomized Studies

Colonoscopy and Flexible Sigmoidoscopy


Upper Endoscopy


Guidelines and Recommendations

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APPENDIX 1- RELEVANT NON-RANDOMIZED STUDIES PUBLISHED PRIOR TO 2006:

   PubMed: PM15591502

   PubMed: PM15017624.

   PubMed: PM12510229

   PubMed: PM14499777
APPENDIX 2- FURTHER INFORMATION

Guidelines and recommendations- methodologies unclear or not systematic


Additional References


