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Approaches to improve quality of care in inflammatory bowel diseases

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Core tip: There is growing recognition in the variation and lack of quality of care in medicine, including the care of patients with inflammatory bowel disease. We review the existing literature on approaches to quality improvement and their potential application and barriers when applied to inflammatory bowel disease care.

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Abstract

Studies across medical disciplines have shown gaps in the care recommended in evidence based guidelines and the care actually delivered. Quality improvement projects using systematic audit and feedback interventions such as quality measures, will become increasingly important tools to address these gaps in care. These gaps are also apparent in the care of patients with inflammatory bowel disease. Multiple organizations, including the American Gastroenterology Association and the Crohn's and Colitis Foundation of America, have developed programs designed to implement quality measures to improve the care of inflammatory bowel disease (IBD) patients. Early results show promise of improving quality, but numerous barriers remain. Gastroenterologists need to be aware of these processes to provide the highest care possible to patients with IBD. We review the existing literature on approaches to quality improvement and their potential application and barriers when applied to IBD care.

QUALITY OF CARE AND USE OF QUALITY MEASURES

Quality in medical care has been defined by the Institute of Medicine as "the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge"^[1]. Another description of quality care has also been called the triple aim, which is summarized as improving the experience of care, improving the health of populations and reducing per capita costs of healthcare^[2]. The current healthcare system is undergoing a shift from a fee for service model to a performance based model. This change will occur over the next few years and will likely change how we practice medicine. Integral to this shift from a fee for service to a performance based system is the concept of quality. To this end, different systems have been developed to improve quality and quantify that improvement.

Clinical practice guidelines are one of the current methods of improving the quality of care. They are developed through review of the literature and evidence based consensus, yet many of these recommendations have not translated into clinical practice. Despite development and distribution of numerous guidelines, gaps persist between recommended care and provided care. McGlynn *et al*^[3] evaluated a broad sampling of the United States population by randomly sampling patients, as part of the Community Tracking Study. Patients were sampled by telephone for any healthcare encounters in the preceding 2 years and then the investigators reviewed their medical charts for performance of specific quality measures. They found that 54.9% of quality measures were being met and little difference existed between provision of acute care, preventative care or chronic disease care. Similarly, gaps have been observed in specialty care. Calvin *et al*^[4] reviewed the compliance of physicians with prescription of beta blockers and angiotensin-converting-enzyme inhibitors or angiotensin receptor blocker's according to evidence based guidelines to patients with congestive heart failure. They found that only 63% of physicians were compliant with these guidelines and interestingly 37% of patients were noncompliant with evidence based prescription medication. These results highlight the obstacles to delivery of quality care, which requires the participation of the physician and the patient. Kanwal *et al*^[5] examined the adherence, to quality measures for ascites and cirrhosis among practitioners in the VA healthcare system. Though variation existed for individual quality measures, they found only 33.2% of patients received all recommended care. Absence of comorbid conditions, treatment by a gastroenterologist and care received at an academically affiliated hospital were correlated with higher rate of adherence to quality measures. These studies showed the limitation of passive guideline distribution to effect patient care and that more targeted interventions are needed to improve the quality of patient care.

METHODS TO IMPROVE QUALITY OF CARE

Audit and feedback systems are among the most effective interventions for quality improvement. In audit and feedback interventions, a provider's performance is measured and the results of their performance are shown to the provider with the intention of highlighting areas of deficiency and encouraging a change in practice. A systematic review of audit and feedback studies showed modest gains when feedback was provided in a timely manner and in written format^[6]. Audit and feedback is one of the underlying principles behind quality and performance measures. Quality measures are sets of quantifiable processes and outcomes defined by evidence based medicine and expert consensus to reflect high quality care for a specific disease. In contrast to clinical practice guidelines, which provide only passive dissemination of recommendations, quality and practice measures incorporate audit

and feedback to the provider, which may include external or financial incentives for adherence. However, audit and feedback interventions are limited by the type of data readily available for auditing. Current quality measures are therefore limited to processes or outcomes with available administrative or billing data, which may fail to capture the breadth of quality of care provided. Audit using manual chart review are more comprehensive, however are too time consuming to be used in routine practice. Use of standardized templates embedded in electronic medical records or use of information retrieval techniques from plain text medical records, such as natural language processing, are being developed. These approaches may expand the ability to quantify processes and outcomes beyond administrative data.

To have meaningful and long-term impact in clinical outcomes, quality measures need to be systematically integrated in clinical care, involving multidisciplinary teams and open access to share best practices. One approach to implement quality measures is the Donabedian model of structure, process, and outcome improve quality of care^[7]. Structure involves identifying the practice or system level factors that may influence how care is delivered. These include organizational structure (multi-disciplinary models), support staff numbers and qualifications and certifications for excellence in disease care^[8]. A process is defined as the actions required to move through the defined health care structure, including how patients interact with clinic staff and how diagnostic tests are performed. Outcomes are the effects of the health care delivered and may be either process measures (*i.e.*, if a vaccination was administered), or outcome measure (*i.e.*, colon cancer). Consideration of all of these components will identify not only what needs to be measured, as in quality measures, but what the components of a high quality care organization will require and how patients interact with that organization.

Systematic integration of quality measures has been used effectively in other disciplines of medicine to improve patient care. The Cystic Fibrosis Foundation's Quality Care Initiative provides an example of a successful intervention using quality measures in a chronic disease with a meaningful improvement in clinical outcomes. The initiative began as a collection of over 100 centers that provide cystic fibrosis (CF) care. After developing quality measures, which included weight, forced vital capacity and mortality they implemented a transparent system of audit and feedback. Outcomes were shared across all participating centers through regular meetings to review these outcomes and processes that result in improved outcomes. Since it was created, they have managed to improve the median age of death among CF patients from 27 years to 37 years^[9]. In cardiology, the Northern New England Cardiovascular Disease Study Group, which is a collaboration of multiple sites, has worked to improve several cardiovascular disease outcomes. Over a 2 year period, they achieved a 24% reduction of in-hospital mortality related to coronary artery bypass grafting^[9]. Taking these

examples, we can see how influencing particular processes in a collaborative and continuous way is able to affect meaningful clinical outcomes.

QUALITY OF CARE IN INFLAMMATORY BOWEL DISEASE

Inflammatory bowel disease (IBD) is very similar to the previously mentioned diseases of coronary artery disease, CHF, cirrhosis and CF, in that it is a chronic medical condition with a growing impact on the healthcare system. Kappelman *et al*^[10] examined the annual cost of IBD by review of administrative claims data. Their results showed Crohn's disease and ulcerative colitis (UC) mean annual costs were \$8265 and \$5066, respectively. When examined based on costs incurred inpatient, outpatient or medications related, costs were relatively equally distributed.

Despite numerous guideline publications addressing IBD care, gaps remain in the care provided and recommended. Reddy *et al*^[11] examined this gap in IBD patient care by reviewing the medical charts of patients referred to their tertiary referral center. They found that patients with active disease were receiving suboptimal dosing of current medications (64% for mesalamine) or were given medications, such as steroids, for prolonged periods of time without attempting steroid sparing agents (77%). Wagnon *et al*^[12] also showed, through a mailed survey study, that the screening and treatment for osteoporosis was highly variable between high (52%) and low volume centers (16%). In a retrospective study of adherence to colorectal cancer screening in ulcerative colitis patients, Velayos *et al*^[13] found that only approximately 25% of patients received adequate screening. These observations show that gaps in IBD care exist and implementation of quality improvement in IBD projects could have a meaningful impact.

QUALITY OF CARE INTERVENTIONS IN IBD

One of the first attempts to adopt quality improvement projects in IBD started in the United Kingdom after an audit in 2006 showed variation in the quality of care delivered to IBD patients. This group developed a set of quality measures addressing both structural measures and process measures centered on delivery of better patient care^[9]. The Improve Care Now (ICN) consortium in the United States is a collaboration between pediatric gastroenterology centers to develop quality measures regarding IBD. Prospective data is aggregated in a central database and used to generate weekly audit and feedback reports for the participating centers. These reports are reviewed by the sites and modifications are made to processes to improve outcomes. Involvement in this program has resulted in an increase in remission rates from 55% to 75% over the past few years^[9].

In Sweden, Rejler *et al*^[14] developed a quality improvement framework, consisting of demographic data, disease

characteristics, prior surgeries and medications, quality of life and measures to assess time from referral to scheduled appointment with a specialist, to a local community to measure its ability to record pertinent patient data. They found a lower prevalence of anemia than expected, a lower prevalence of surgeries than expected and overall good access to care. Parker *et al*^[15] measured the effect of a simple vaccination questionnaire prior to a clinic visit on the quality metric of vaccination compliance. They found significant improvement in the compliance with influenza vaccine before (54%) and after implementation of the questionnaire (81%).

In adult gastroenterology practice, the American Gastroenterology Association (AGA), in association with the American College of Gastroenterology and Crohn's and Colitis Foundation of America, has worked to develop a set of quality measures for IBD. The IBD measures (Tables 1 and 2) have been developed through collaboration of the AGA and the Crohn's and Colitis Foundation of America (CCFA) through two separate panels. The IBD performance measures are now part of the Centers for Medicare and Medicaid Services pay for performance program, Physician Quality Report Service (PQRS)^[16]. As physicians submit data to this system, they are currently eligible for reimbursement incentives and beginning in 2015 penalties will be applied to reimbursement if not meeting particular standards^[9]. This vividly shows the shift towards performance based care, which will shape the near future of our healthcare system. The CCFA has developed a separate IBD quality measure set using RAND/DELPHI panel consensus and reflect expert consensus of the available literature for the specific purpose of quality improvement rather than financial incentives^[17].

The PQRS IBD measure set has also been adopted by the Bridges to Excellence (BTE) program, which is being implemented through the Digestive Health Recognition Program by the AGA. BTE works by providers selecting 25 consecutive patients seen within a 12-mo period who have an IBD diagnosis. From each chart, specific metrics must be extracted, entered through a web portal and submitted to a third party for adjudication. Each metric is weighted and if a provider achieves a threshold number of points, they will be awarded BTE recognition for 2 years^[9]. Many third party payers are reviewing this system and considering incorporating this into incentives for reimbursement.

FUTURE DIRECTIONS AND POTENTIAL BARRIERS

While the quality measures for adults with IBD are a first step towards improving care, systemic and multidisciplinary approaches will be needed to affect meaningful and durable practice change. The CCFA, in collaboration with leaders from the ICN, have started a feasibility study to develop such a project. This pilot will be performed in both academic and community practices and is designed to study the best ways to implement IBD quality measures

Table 1 American gastroenterology association inflammatory bowel disease performance measures^[16]

Performance measures	
IBD characteristics	
	Type
	Anatomic location
	Activity
Preventive care	
	Corticosteroid sparing therapy
	Bone loss assessment
	Influenza immunization
	Pneumococcal immunization
	Smoking screening and cessation assessment
Testing	
	Latent tuberculosis testing prior to anti-TNF therapy
	Assessment for Hepatitis B prior to anti-TNF therapy
Inpatient care	
	<i>Clostridium difficile</i> testing in patients with new onset diarrhea
	Venous thromboembolism prophylaxis

IBD: Inflammatory bowel disease; TNF: Tumor necrosis factor.

in adult gastrointestinal practices. As in the ICN, this project will involve individual reporting of quality measure and sharing of knowledge between sites to improve the overall care delivered to adult patients with IBD.

However several barriers to implement quality improvement in IBD still exist. Although success in improvement of remission rates have been observed in ICN, the structure and processes of care may not translate into adult practices. For example, in contrast to pediatric care of IBD or CF, care for adults with IBD is decentralized with many patients receiving care from non-referral centers. The differences in practice patterns between providers in academic and community gastroenterologists have been previously described in IBD. Esrailian *et al*^[18] performed a survey study comparing diagnostic and treatment decisions for IBD among community and academic-center affiliated gastroenterologists. They mailed surveys with clinical vignettes and asked for structured responses. They found overall agreement between groups regarding diagnostic measures, but found variation in treatments recommended both between and within groups. This suggests that heterogeneity exists both between community and academic groups and within these groups regarding therapeutic options. Spiegel *et al*^[19] also examined this issue in a national survey study comparing the responses of community gastroenterologists and UC experts. They found dramatic differences regarding both diagnostic evaluation and treatment decisions, though the vignettes were developed to address controversial issues in UC management. Other related, but distinct issues, are the differences between care endpoints in pediatric and adult practices. While nutrition is important in adult patients with IBD, outcomes assess growth and height may be less relevant in adults. These are some of the limitations to be addressed prior to wide adoption of quality improvement projects can occur in adult gastroenterology practices.

Table 2 Crohn's and Colitis Foundation of America inflammatory bowel disease process measures^[17]

Process measures	
Treatment	
	If anti-TNF therapy is considered, then test for tuberculosis with skin testing or interferon gamma release assay
	If anti-TNF therapy is considered, then assess for latent hepatitis B virus
	Consider steroid sparing agent, if steroids needed at 10 mg (of more) daily for > 16 wk
	Test for <i>Clostridium difficile</i> if a patient presents with new symptoms of diarrhea
	If planning to start 6-mercaptopurine or azathioprine, then test for thiopurine methyltransferase and dose accordingly
	If a patient is hospitalized with severe colitis and does not improve after 3 d of IV steroids, flexible sigmoidoscopy with biopsies should be performed to check for CMV infection and surgery consulted
Surveillance	
	If a patient with UC has low grade dysplasia in flat mucosa, then procto-colectomy or repeat surveillance in 6 mo should be offered
	If a patient has extensive UC or Crohn's disease involving the colon for 8-10 yr, then surveillance colonoscopy should be performed every 1-3 yr
Health maintenance	
	If a patient is on immunosuppressive therapy, then vaccinations for influenza and pneumococcus should be offered, as well as education regarding avoidance of live vaccines
	If a patient has Crohn's disease, smoking status should be assessed and smoking cessation recommended

TNF: Tumor necrosis factor; UC: Ulcerative colitis.

Another limitation to wide spread adoption of quality improvement interventions will be the time and financial constraints placed on physicians to implement the proposed quality improvement systems. Currently, physicians are faced with many pressures for their time and the possible addition of new processes could lead to unexpected adverse outcomes such as patient selection or new deficiencies in care areas not addressed in quality measures. A related issue involves the cost of establishing this system and the structure needed to provide continuous quality improvement. Illustrating this, the ICN network has shown an improved outcome of remission after implementing many process measures, but the program remains expensive and difficult to continue funding^[9]. Potential means to address these barriers are through innovations in bioinformatics. Development of integrated templates with automated data extraction of relevant clinical data into databases or information retrieval from plain text in EMR notes *via* natural language processing are possible means of accurately and efficiently gathering the data necessary for audit and feedback. Further work in these areas is required.

CONCLUSION

The system of quality measures and measurement of outcomes in IBD suggests many benefits regarding out-

comes. Several quality improvement programs have been established in IBD to develop the fundamental concepts and strategies for future quality improvement initiatives. Much has been learned from studying other chronic conditions, including CF and cardiac diseases, which can be applied to future quality initiatives within the field of IBD. Limitations remain to developing these systems and their implementation, and ongoing studies are needed to identify which outcomes should be used and how to accurately and efficiently provide feedback to providers. Overall, the healthcare system is moving towards a performance based model and as gastroenterologists we should be leading the development of potential measures and appropriate outcomes to help deliver the best care possible to our patients.

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