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Web-based learning in inflammatory bowel diseases: General truths and current specifics

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Abstract

In a field rapidly evolving over the past few years, the management of inflammatory bowel diseases (IBD), Crohn's disease and ulcerative colitis, is becoming increasingly complex, demanding and challenging. In the recent years, IBD quality measures aiming to improve patients' care have been developed, multiple new medical therapies have been approved, new treatment goals have been set with the "treat-to-target" concept and drug monitoring has been implemented into IBD clinical management. Moreover, patients are increasingly using Internet resources to obtain information about their health conditions. The healthcare professional with an interest in treating IBD patients should deal with all these challenges in everyday practice by establishing, enhancing and maintaining a strong core of knowledge and skills related to IBD. This is an ongoing process and traditionally these needs are covered with additional reading of textbook or journal articles, attendance at meetings or conferences, or at local rounds. Web-based learning resources expand the options for knowledge acquisition and save time and costs as well. In the new era of communications technology, web-based resources can cover the educational needs of both patients and healthcare professionals and can contribute to improvement of disease management and patient care. Healthcare professionals can individually visit and navigate regularly relevant websites and tailor choices for educational activities according to their existing needs. They can also provide their patients with a few certified suitable internet resources. In this review, we explored the Internet using PubMed and Startpage (Google), for web-based IBD-related educational resources aiming to provide a guide for those interested in obtaining certified knowledge in this subject.

Key Words: Inflammatory bowel diseases; Ulcerative colitis; Crohn's disease; Technology-enhanced learning; E-learning; Web-based learning; Continuing medical education

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Core tip: In a field that is rapidly evolving, healthcare professionals face new challenges in inflammatory bowel diseases (IBD) management that includes new drugs, new treatment goals and new quality measures in patient care. In an era of advanced communications technology, web-based resources offer diverse, substantial, very efficient, and easily accessible accredited educational opportunities. These can save time and cost compared to the more traditional modes of knowledge acquisition. In this review, we provide a guide of web-based IBD-related educational resources for practitioners to allow acquisition or maintenance of certified skills and knowledge in IBD management.

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INTRODUCTION

The Inflammatory bowel diseases (IBD), Crohn's disease and ulcerative colitis, are an area of gastroenterology which has rapidly evolved over the past few years with vast scientific and medical advances. Additionally, the incidence and prevalence of IBD is rising worldwide^[1]. In recent years, multiple new medical therapies have been approved, new treatment goals have been set with the "treat-to-target" concept and drug monitoring has been implemented into IBD clinical management^[2,3]. Moreover, IBD quality measures aiming to improve patients' care have been developed^[4,5].

The management of IBD is becoming increasingly complex, challenging and demanding; this requires additional education for practicing gastroenterologists, both in the hospital and the ambulatory care setting. As described in their seminal review of e-learning medical education, Ellaway and Masters^[6] note that traditional continuing medical education (CME) includes face-to-face courses, conferences, seminars, grand rounds, or it may be informal with reading of journal articles or texts. The authors mention that there are barriers to formal traditional CME including increased professional workload, family commitments, distances to travel to conferences, and costs of attending courses. Informal traditional CME have also barriers including lack of time, isolation and lack of access to professional colleagues, lack of libraries and library services, delayed delivery

of documents, lack of access to technology and information technology problems, as well as cost.

At the trainee level, it is essential to improve the experience of gastroenterology (GI) residents with management of IBD by providing additional education and by enhancing their exposure in IBD patients within their core training program. Furthermore, advanced IBD fellowships in high-volume academic centers, provide the opportunity for a more extended training in the field for those who want to follow a career focused on IBD. Other options for trainees include mentorship in IBD programs, electives in IBD, or courses with intensive training in IBD, like IBD Xcel^[7-9].

Technology has occupied every aspect of our lives and is widely used both in education and in medicine. While it is known that most learners benefit from and value the one-on-one interaction with instructors and that many small and seemingly less significant interactions are lost in the streamed and streamlined online environment, there are on line technologies that exist to try to replicate and employ these important features^[10]. The internet is used by patients and physicians to obtain information and knowledge for various health conditions. In a recent survey of adult GI program directors and trainees in the United States, Cohen *et al*^[11] reported that only one third of the trainees were satisfied with their level of IBD exposure, while more than half were uncomfortable dealing with IBD special situations including the management of pouch, stoma, pregnancy or postoperative patients. Web-based resources were the first choice, more than any other, as an information aid for IBD clinical care and were selected by almost half of the trainees^[11]. Another recent survey of 223 gastroenterologists in the United States, found that 82% of them used Internet-based resources including the UpToDate, PubMed and the Crohn's and Colitis Foundation of America (CCFA) websites to obtain information about management strategies for their IBD patients^[12].

Evidently, both GI trainees and specialists use on-line resources to cover their educational and clinical practice needs in IBD management. It is known that learning from these types of resources is likely equivalent to that obtained from more traditional methods of instruction^[13]. In this review, we explored and described existing web-based IBD learning resources for physicians and patients, with the aim to provide a guide to those who are interested in maintaining up-to-date knowledge and skills in IBD. Some of these resources also had interactive components that allow learners to dialogue with experts and peers^[10].

LITERATURE SEARCH

We conducted literature searches in PubMed to identify peer-reviewed articles related to eb-based educational material for IBD. We also used two Web search engines, Google.ca and Startpage (<http://www.startpage.com>),

to identify websites containing educational material related to IBD. Search results were generated using the following search strategy: ("inflammatory bowel diseases" OR "ulcerative colitis" OR "Crohn's disease") AND ("online") AND ("resources" OR "CME" OR "educational"). Furthermore, we performed targeted searches by browsing websites of known IBD-related national or international organizations or societies.

We performed hand-searching to assess and review the contents of each web site. We did not use any specific medical website tool to assess the quality of the educational web sites. Journal articles published in PubMed the last 10 years were considered for review. Website inclusion criteria consisted of active websites that were in the English language, related to IBD education including CME courses, and targeted to patients, undergraduate medical education students, postgraduate medical education and healthcare professionals.

We downloaded or manually entered references from all sources into the online Endnote reference manager (<http://www.myendnoteweb.com>) database recording each website's name/organization, year, access date, and the URL.

INTERNATIONAL AND NATIONAL SOCIETIES WEB SITES

European Crohn's and Colitis Organization

The European Crohn's and Colitis Organization (ECCO) has contributed substantially to the education of gastroenterologists interested in IBD^[14]. On the ECCO web-site there is free access to a list of previously published *ECCO Guidelines* and the *ECCO e-Guide*, a toolkit harboring a collection of algorithms based on the ECCO guidelines, disease information, disease activity calculators and other useful resources^[15].

In 2013, ECCO launched e-CCO^[16], an online learning platform aimed at improving the care of IBD patients by providing a comprehensive educational package for health care professionals involved in IBD management. The e-CCO platform is subdivided to *IBD basics*, *e-Library*, *e-Courses*, *Advanced Topics* and the *ECCO IBD Curriculum*, all of which are accessible only with membership. The *e-library* is made up of abstracts, presentations (slides or videos) and webcasts from the ECCO congresses, created and delivered by experts in IBD. The current e-CCO learning portfolio contains 24 extensive *e-Courses* based on the ECCO guidelines, and over 40 original videos and podcasts on basic IBD topics and current controversies in IBD treatment. The *e-courses* are accredited, and a certificate is available when participants successfully pass the post-test. Feedback is also available during the course and after the post-test.

Finally, ECCO created the *ECCO IBD Curriculum* which is a framework for all of ECCO's educational activities and operates as its foundational educational core: the

guide for the gastroenterologists interested in IBD, the index of the entire on-line ECCO content and the tool to be used by national or by individual physicians for educational purposes. The *ECCO IBD Curriculum* is organized in 16 broad topics, ranging from a general understanding of disease and treatment, to more specific situations in the management of IBD patients. Each domain within the curriculum is constantly enriched and updated with new material incorporated from ECCO educational and scientific activities. The purpose of the *ECCO IBD Curriculum* is to provide the knowledge and skills necessary for a gastroenterologist to become an IBD expert.

The Crohn's and Colitis Foundation of America

The Virtual Preceptorship program: The CCFA web-site offers a domain with information about IBD for patients and physicians^[15]. In the Programs and Materials section, CCFA provides the *Virtual Preceptorship* program^[17], to enrich physician training in the diagnosis, treatment and management of IBD with 5 online interactive and accredited activities. In the same section, there are also available, for physicians and patients, free educational brochures and fact sheets providing current information and treatment options about IBD.

The Rising Educators, Academicians and Clinicians Helping IBD group:

This group has been founded under the auspices of the CCFA and its mission is to cover the educational needs of trainees and junior faculty members interested in IBD. It facilitates mentorship with established experts, fosters collaborative research between junior investigators, advises on career development and trajectory, and develops best practices for patient care, through educational and career development seminars, mentoring programs, networking events, research collaborations, participation activities within the CCFA, and trainee educational modules^[18].

In August 2016, the Rising Educators, Academicians and Clinicians Helping IBD (REACH-IBD) group and the University of Nebraska Medical Center jointly launched the *IBD Clinical Practice Video Series*^[19], which was a year-long accredited on-line activity. Based on identified knowledge gaps among trainees, this program covered 4 topics with videos and quizzes about the latest information on IBD treatments and on management of special IBD situations including postoperative recurrence in Crohn's disease, pouch endoscopy, pregnancy in IBD, and advanced treatment approaches for IBD care and recognizing complications. The modules were free, highly educational, and accessible; and included a pre-presentation quiz. Unfortunately, the pre- and post-learning assessments, the evaluations and the request for credit are no longer available.

Canadian Association of Gastroenterology

The Canadian Association of Gastroenterology (CAG)

has developed and launched the *ePortal* in the Education section of CAG's web-site^[20]. The *ePortal* is an accredited program dedicated to maintain members' up-to-date knowledge in various topics in Gastroenterology and to contribute to their Maintenance of Certification requirements. The material in *ePortal* is a collection of presentations and videos related to gastroenterology practice coming primarily from previous national (Canadian Digestive Disease Week) or local meetings. The site is organized into *ePortal course categories* and the IBD section includes 97 courses which are listed only in chronological order and not by subject. The *ePortal* automatically saves each member's individual educational activities which can be reviewed and printed anytime.

UNIVERSITY WEBSITES

"IBD LIVE" Webcast Program

In 2009, Dr. M. D. Regueiro at the University of Pittsburgh initiated the "IBD LIVE" webcast program^[21,22], an interinstitutional and interdisciplinary videoconference educational activity, where sites can remotely join in live IBD case discussions on Thursday mornings from 7:00 AM to 8:00 AM EST. Two cases per conference are selected, prepared and discussed. Currently, over 25 East Coast academic IBD Centers participate in this interactive live conference of difficult cases, and the participants can hold discussions with IBD experts in an active learning environment. Admission to the program is free through an easy registration process and the webcast participants may view the discussion and submit questions or comments *via* a chat feature. Previous webcasts have been archived and are also available. The IBD LIVE is accredited by the UPMC Center for CME in the Health Sciences.

This program is a significant educational initiative which allows participants to remain in their home working environment and participate in a CME-approved multidisciplinary conference which provides them with the opportunity to promote their knowledge, exchange opinions and ideas with other colleagues and IBD experts, start collaborations with other centers and finally improve their patients' care.

IBD GROUPS WEBSITES

The IBD Working Group

The IBD Working Group (IBDWG) provides an educational forum for healthcare professionals interested in IBD and aims to improve the quality-of-care of patients with IBD^[23]. The web-site contains high-quality and clinically-oriented educational resources focused on IBD, which have been prepared in collaboration with top experts in IBD from Europe and Northern America. The content of the site is available after free subscription and is organized in sections where the presentations (slides with or without audio) and other educational material are listed. Post activity tests with feedback

are available, but unfortunately CME credit is no longer available for the activities and the content has not been updated since 2016.

IBD Dialogues and E-mentoring in IBD

Mentoring in IBD (MIIBD) is an innovative and successful annual national symposium for Canadian gastroenterologists (*The Master Class*) that takes place at Toronto^[24]. *Mentoring in IBD* also operates regional satellite meetings, a website, a newsletters and regular emails focused on clinical questions with new research supported by Canadian and International experts in IBD.

IBD Dialogue was launched in 2004, is a quarterly published newsletter delivered *via* e-mail and is based on hot topics presented at the annual national *Mentoring in IBD: The Master Class* symposium each year^[25]. *IBD Dialogue* reports new advances in management of IBD and open case-based discussions with experts and peers.

E-mentoring in IBD was launched in 2008 and is an interactive scientific e-bulletin on state-of-the-art issues in IBD management published twice per month and is delivered to the subscribers electronically *via* email^[26]. *E-Mentoring in IBD* provides with short comments on the results papers from the current IBD literature, together with level of evidence and hyperlinks.

The Mentoring in IBD website has free access and users can find accredited educational material, browse or download publications including previous *IBD dialogue* and *E-mentoring* letters and watch videos presented by experts in IBD. The subscription to receive the newsletters and the bulletin is easy to obtain and is free of charge^[24].

INDUSTRY SPONSORED WEBSITES

SEEMLI: Standardizing the Endoscopic Evaluation of Mucosal Lesions in IBD

SEEMLI is a CAG accredited program supported by AbbVie and its purpose is to increase gastroenterologists' proficiency in performing endoscopies in IBD patients and to enhance their experience and skills in using different endoscopic scoring methods^[27]. The program focuses on the most common endoscopic scores used in clinical practice: the Simple Endoscopic Score for Crohn's Disease, the Ulcerative *Colitis* Endoscopic Index of Severity, the Mayo Endoscopic Score for ulcerative colitis, and the Rutgeerts score for post-ileocolic resection of Crohn's disease. The program provides information on how to use each of these methods, discusses of some of the pros and cons of each method, and provides practice opportunities using endoscopic videos. Subscription is free, and a user's dashboard is created to show the courses taken and their progress.

IBD Talks and IBD Points Educational programs

These online modules were co-developed by the Canadian Association of Gastroenterology and AbbVie

through an educational grant^[28]. IBD Talks and IBD Points are educational programs developed to meet the learning needs of practicing IBD experts on how Motivational Communication could be useful in clinical practice. They were developed by a multidisciplinary faculty including gastroenterologists, IBD nurses, and a motivational communication expert.

The activity is an accredited self-assessment program as defined by the Maintenance of Certification Program of The Royal College of Physicians and Surgeons of Canada and was approved by CAG on 23/03/2016. The program expires in March 2019. Each module is eligible for 2 hour-credits after the completion of all of its stages: Pre-test, Learning Module, Post-test, Self-Assessment Evaluation and Program Evaluation. Upon completion of a free subscription, a dashboard is created which shows the progress of each module.

INDEPENDENT RESOURCES WEBSITES

Imedex E-learning Center

Imedex® is an industry leader in providing certified, independent continuing medical education for health care professionals, with high quality scientific activities in multiple specialties which aims to improve disease management and patient care. The e-learning activities include video and audio material from interviews, debates and panel discussions with world-renowned experts that translate the latest research into clinically relevant information, in various areas in medicine including gastroenterology and IBD^[29]. The subscription is free, the activities are accredited and are organized in lists for each specialty. Subscribers can sign up for email updates and alerts for all types of educational activities.

You and IBD

This website is designed to provide patients and health care practitioners with updated information about IBD^[30]. Learners can find excellent animations, slideshows, downloads, quizzes, and a library of visual tools. Topics cover a wide range of topics related to IBD management including causes, diagnosis, medications, operations and lifestyle choices. The site has free access and with a free registration the user can download free educational resources, receive updates and future notifications from the website.

MyCME

Haymarket Medical Education, a medical education company, has developed *MyCME* offering independent continuing education programs for physicians, physician assistants, nurse practitioners, pharmacists, nurses, and other healthcare professionals^[31]. In *MyCME* website, with a free subscription, the user can have access to CME activities listed under specialty categories. To receive the certificate, participants must read the learning objectives and disclosure statements, complete a pre-test, study or watch the educational activity, and finally

complete the post-test and activity evaluation form. The online certificate can be saved on *myCME* within the user's Profile/CME History, which can be accessed any time. *MyCME application* is also available and free to download.

CME outfitters

CME Outfitters (CMEO) is an independent resource of accredited, evidence-based medical educational activities operating since 2002, aiming to improve patients' care by improving clinical competence of the health care professionals including physicians and other healthcare providers^[32]. In the CMEO webpages the user can find continuing medical education activities organized by date, credit type, specialty and topic (*i.e.*, Gastroenterology: IBD, Crohn's disease, or ulcerative colitis). Information is presented in multiple formats designed to satisfy diverse learning preferences, including nationally televised satellite broadcasts (live and recorded), internet webcasts podcasts, symposia at major medical meetings or conferences. Subscription is free and for each CMEO activity there is knowledge evaluation during the credit request process with a pre-test and a scored post-test joined with performance feedback and evaluation of the activity.

GastroCE

GastroCE is another independent source of accredited evidence-based medical educational activities which contains articles, lectures, videos, case studies, and CME modules covering various topics in IBD^[33]. Subscription is free and for each CME activity there is a pre-test knowledge evaluation and a scored post-test. Self-assessment tests are also available. Participant activities are stored in history pages for each account. Resources for patients are also included in this website.

Medscape

Medscape is a well-known online global website for physicians and healthcare professionals, which offers, with free subscription, up-to-date medical news and expert perspectives, essential drug and disease information, and relevant professional educational activities including accredited CME. Medscape also offers the *Medscape*, *MedPulse News* and the *CME and Education applications*.

In the section of *Medscape Gastroenterology*, the user can find the latest news about different diseases and conditions including IBD^[34]. Under the CME and Education List the *Inflammatory Bowel Disease CME Learning Center* is available with up-to-date accredited CME activities^[35].

OTHER WEBSITES

The websites containing educational material for IBD comprise a long list and they cannot be covered completely with this review. A few more interesting on-line sources or websites include the *IBD module*

Table 1 Inflammatory bowel disease educational resources for healthcare professionals and patients

	Website		
	Name	Address	Educational activity type
Societies			
ECCO	e-CCO	https://e-learning.ecco-ibd.eu/	IBD curriculum, archived videos, webcasts, CME, <i>etc.</i>
CCFA	Virtual Preceptorship	http://www.crohnscolitisfoundation.org/science-and-professionals/programs-materials/virtual-preceptorship.html	Videos, brochures, CME
CAG	REACH-IBD ePortal	http://programs.rnei.com/IBDKnowledgegap	Videos
ACG	ACG Education Universe	https://www.cag-acg.org/education/eportal http://universe.gi.org	Videos, slide shows, CME, MOC Accredited courses, CME, MOC
AGA	AGA Education	http://www.gastro.org/education	Accredited courses, CME, MOC
Universities			
University of Pittsburgh	IBD LIVE	https://services.choruscall.com/links/UPMC/ibd/	Live-webcasts, archived webcasts
IBD groups			
The IBD working group	IBD WG	http://www.ibdwwg.org	Videos, slide shows
Mentoring in IBD	IBD dialogue	http://www.mentoringinibd.com/category/ibd-dialogue/classic-edition/	Bulletin <i>via</i> email
	e-mentoring IBD	http://www.mentoringinibd.com/category/e-mentoring/	Newsletter <i>via</i> email
Industry sponsored			
	SEEMLI	https://www.seemli.ca/Dashboard-/MyCourses	Videos, power point presentations, CME
	IBD Talks and Points	https://www.ibdtalkpoints.ca/login/index.php	Videos, CME
Independent resources			
Imedex	Imedex E-learning Center	http://elc.imedex.com/	Videos, CME
You and IBD	You and IBD	http://www.youandibd.com/en-ibd/home	Animations, slide shows, quiz
Haymarket Medical Education	MyCME	http://www.mycme.com/	Videos, CME
CME outfitters	CME outfitters	https://www.cmeoutfitters.com/	Videos, CME
GastroCE	GastroCE	https://cme.healio.com/gastroce/	Articles, lectures, videos, case studies, CME
Medscape	IBD CME Learning Center	https://www.medscape.org/resource/ibd/cme	News, videos, CME
MEDPAGE TODAY	Gastroenterology	https://www.medpagetoday.com/gastroenterology	News, videos
AMEDEO	Literature Guide in IBD	http://amedeo.com/medicine/ibd.htm	Journal scan email
PubMed	My NCBI	https://www.ncbi.nlm.nih.gov/sites/myncbi/searches/	Journal scan email

ECCO: The European Crohn's and Colitis Organization; IBD: Inflammatory bowel diseases; CME: Continuing medical education; CCFA: The Crohn's and Colitis Foundation of America; REACH-IBD: The Rising Educators, Academicians and Clinicians Helping IBD; CAG: The Canadian Association of Gastroenterology; ACG: The American College of Gastroenterology; AGA: The American Gastroenterological Association; IBDWG: The IBD Working Group; SEEMLI: Standardizing the Endoscopic Evaluation of Mucosal Lesions in IBD; MOC: Maintenance of certification.

"IBD: Key Concepts and Treatment Paradigms" at the American College of Physicians website^[36], the Cleveland Clinic Center for continuing education^[37], the MEDPAGE today^[38], the American Society of Colon and Rectal Surgeons website^[39], and the Inflammatory Bowel Disease Toolkit^[40].

More IBD-related accredited educational material can be found online in the American College of Gastroenterology (ACG; *ACG Education Universe*)^[41] and the American Gastroenterological Association (AGA; *GI self-assessment modules SAM, Digestive Diseases Self-Education Program, DDSEP*)^[42] websites, which cover various topics in GI disorders including IBD.

Finally, with the *AMEDEO Medical Literature Guide* subscribers receive newsletters with an overview of new articles published on a pre-selected topic (*i.e.*, IBD) and personalized journal subset^[43]. Similarly, PubMed in the *My NCBI homepage* offers the opportunity to receive

regular emails with new results based in a previously saved set of search terms^[44]. Both medical literature web search engines are available with free subscription.

CONCLUSION

The advent of new therapies in IBD, the shift of treatment goals from control of symptoms to endoscopic mucosal healing in the treat-to-target approach, the advances in imaging technology and in surgical techniques, and the change to a more patient-centered approach in IBD-related clinical practice and care have made the management of IBD very demanding and challenging. The healthcare professional with an interest in treating IBD patients should deal with all these challenges in his or her everyday practice by establishing, enhancing and maintaining a strong core of knowledge and skills related to IBD management. Moreover, patients are

increasingly using the Internet to obtain information about their health conditions and therefore the healthcare professional should be well informed with up-to-date knowledge during clinical discussions with them.

Traditionally the needs in acquiring or updating knowledge are covered with additional reading of relevant textbook or journals, and attendance of meetings, congresses or small group discussions. Technology-enhanced learning with the Internet as its major source expands the options for information and knowledge acquisition and may save on some of the time and costs of attending meetings or conferences.

In this review, we have explored internet learning resources for the Inflammatory Bowel Diseases. There are many resources with diverse characteristics that provide information about new drugs or strategies, improve or maintain knowledge, or enhance experience and management skills. We presented and listed websites that offer substantial and variable educational material related to IBD (Table 1), but of course there many more. Each healthcare professional should individually visit and regularly navigate the relevant websites that tailor educational activities to their existing needs. It would also be very wise to be familiar with and have available a few certified internet resources with material suitable for patients. Particularly important and useful are the *ECCO IBD Curriculum*^[13], the *CME outfitters*^[32], the *GastroCE*^[33], the "IBD LIVE" webcast program^[19], the *You and IBD*^[17], and the *E-mentoring in IBD websites*^[23], which are among the most impressive, novel and authoritative educational activities related to IBD.

In the new era of communications technology, Internet-based resources can cover the educational needs of both patients and healthcare professionals who treat IBD and can contribute to the improvement of disease management, patient care and patient outcomes. Aiming at improving the online educational resources, future studies should investigate the quality and the utility of these websites.

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