

2nd N-ECCO Consensus statements on the European nursing roles in caring for patients with Crohn's Disease or Ulcerative Colitis

K.Kemp^{‡*}, L.Dibley[‡], U.Chauhan^{‡*}, K.Greveson^{‡*}, S.Jäghult^{‡*}, K.Ashton[‡], S.Buckton[‡], J.Duncan[‡], P.Hartmann[‡], N. Ipenburg[‡], L. Moortgat[‡], R.Theeuwen[‡], M.Verwey[‡], L.Younge[‡], A.Sturm[‡], P.Bager^{‡*}

[‡]These authors contributed equally to this paper

*Members of N-ECCO committee 2017 and WG leads

Correspondence to:

Dr Karen Kemp, Consultant Nurse Inflammatory Bowel Disease / Honorary Lecturer, Dept of Gastroenterology, Manchester Royal Infirmary, Oxford Road, Manchester, M13 9WL, University of Manchester. karen.kemp@mft.nhs.uk 0161 276 4048

Key words: Inflammatory bowel disease; Crohns Disease; ulcerative colitis; IBD nurse; Advanced IBD nurse

The contributors to the consensus were:

Katherine Ashton, Department of Gastroenterology, Hull & East Yorkshire Hospitals NHS Trust, Hull, UNITED KINGDOM

Copyright © 2018 European Crohn's and Colitis Organisation (ECCO). Published by Oxford University Press. All rights reserved. For permissions, please email: journals.permissions@oup.com

Palle Bager, Department of Gastroenterology and Hepatology, Aarhus University Hospital, Aarhus, DENMARK

Stephanie Buckton, Department of Gastroenterology, Sunshine Coast University Hospital, Birtinya, QLD AUSTRALIA

Usha Chauhan, Digestive Disease, McMaster University Medical Centre, Hamilton Health Sciences, Hamilton, CANADA

Lesley Dibley, Faculty of Education and Health, University of Greenwich, London, and Barts Health NHS Trust, London, UNITED KINGDOM

Julie Duncan, Department of Gastroenterology, Guy's and St. Thomas' NHS Foundation Trust, London, UNITED KINGDOM

Kay Greveson, Department of Gastroenterology, Royal Free Hospital, London, UNITED KINGDOM

Petra Hartmann, Gastroenterologische Gemeinschaftspraxis Minden, Minden, GERMANY

Nienke Ipenburg, IJsselland Hospital, Capelle a/d IJssel, THE NETHERLANDS

Susanna Jäghult, Karolinska Institutet Danderyd Hospital, Stockholm Gastro Centre, Stockholm, SWEDEN

Karen Kemp, Department of Gastroenterology, Manchester NHS University Foundation Trust / School of Nursing, Midwifery and Social Work, University of Manchester, Manchester, UNITED KINGDOM

Liesbeth Moortgat, Department of Gastroenterology, AZ Delta Roeselare-Menen, Roeselare, BELGIUM

Andreas Sturm, Department of Gastroenterology, German Red Cross Hospital, DRK Kliniken Berlin I Westend, Berlin, Germany

Rosaline Theeuwen, Department of Gastroenterology, Leiden University Medical Center (LUMC), Leiden, THE NETHERLANDS

Marthe Verwey, Department of Gastroenterology, Leiden University Medical Center (LUMC), Leiden, THE NETHERLANDS

Lisa Younge, IBD Nurse Specialist, Barts Health - Royal London Hospital, London, UNITED KINGDOM

1. Introduction to N-ECCO Statements

This is the second Nurse European Crohns and Colitis (N-ECCO) consensus statements document addressing inflammatory bowel disease (IBD) nursing across Europe. N-ECCO continues to be an active member of European Crohns and Colitis Organisation (ECCO), providing education and networking opportunities for nurses across Europe within three designated nurse sessions, N-ECCO Network Meeting, N-ECCO School and the N-ECCO Research Forum, in addition to e-learning and podcasts.

1.1 Aim

The over-arching aim of ECCO is to improve the care of patients with IBD through the development of guidelines, education and research. Current evidence is fundamental to enable N-ECCO to meet this progressive aim. This document updates the first N-ECCO consensus statements based on the 'ideal' standard of care [1], and provides additional statements and evidence supporting contemporary IBD nursing practice, whilst acknowledging the extensive variety in IBD nursing practice across Europe [2].

1.2 Methods and results

The N-ECCO consensus statements required revision due to the emergence of new evidence supporting the role of the IBD nurse. In line with Standard Operating Procedures set out by ECCO, the proposal to update the statements was approved by ECCO's Governing Board. The ECCO Office sent an international call for N-ECCO members in January 2017; ten nurses and the current N-ECCO committee of 2017 were selected and divided into four working groups (WG) in March 2017, each responsible for a different section of the consensus document.

Each WG performed literature searches to enable review of original statements and to add new statements. The electronic literature search databases included AGRIS, Embase, Global health, HMIC, Journals @ Ovid full-text, OVID Medline (R) In-process Non-indexed citations, and Medline, PsychArticles Full text, PsychInfo, Your Journals @ OVID EMBASE, CINAHL and the British Nursing Index via the OVID platform from 2010 onwards.

The consensus process was based on a modified Delphi method, a recommended method to determine consensus for a defined clinical concern [3, 4]. The iterative method uses rounds of voting to determine consensus of opinion [4] with participants debating the agreed statements at the final voting round [5]. The updated statements document was submitted to an online platform for discussion and for online voting by all national representatives of N-ECCO in May 2017. 63% of national representatives and the consensus working group voted. 83% of the statements gained over 90% consensus suggesting further online consensus rounds were unnecessary. Statements receiving less than 80% consensus were reviewed and for the second and final voting round, which took place

in June 2017, the consensus working group met and achieved 100% consensus agreement for all 31 statements.

The consensus statements are divided into four sections. 'Fundamental IBD Nursing' details the basic nursing care required to meet the needs of patients with IBD, delivered by nurses working across many settings. The section 'Advanced IBD Nursing' pertains to nurses who have developed their knowledge, skills, research and expertise in IBD. 'Advanced IBD nursing care for particular situations' provides guidance on supporting patients with IBD facing special situations, and 'Benefit of an IBD Nurse', addresses the value and benefits of the specialist nurse within the IBD multidisciplinary team.

2. Fundamental Inflammatory Bowel Disease (IBD) Nursing

N-ECCO Statement 2A

Nurses in contact with patients with IBD working in any setting need basic knowledge of the diseases, to know the difference between Crohn's disease and ulcerative colitis, and to appreciate the importance of establishing timely therapeutic interventions. Understanding of key diagnostic strategies and the main medical and surgical options available in the management of IBD is recommended [EL2]

2.1 Definition and requirements

IBD is an umbrella term for the life-long bowel diseases of ulcerative colitis (UC) and Crohn's disease (CD). IBD is a global disease with a rising prevalence [6, 7] which follows an unpredictable relapsing and remitting course. Common symptoms of active disease in both conditions include diarrhoea, abdominal pain, anaemia and fatigue.

Although the causes of IBD are unknown, it is recognised as an immune-mediated disease, possibly precipitated by various genetic and environmental factors, it is advisable to read the ECCO Topical review on environmental factors in IBD [8]. Although IBD often presents in adolescence or young adulthood, 10 – 30% of patients are over 60 years old, either having aged with IBD or developed it in middle adulthood. Illness in older adults is often complicated by physical changes of ageing, associated co morbidities and atypical presentations [9]. Paediatric forms of IBD are characterised by a more complicated disease course with marked inflammatory activity and frequent need for corticosteroids and immunosuppressive therapy compared with adult-onset IBD [10].

UC affects only the rectum and colon. Originating in the rectum, it can extend proximally to the sigmoid, descending, or entire colon [11]. The inflammation is continuous and limited to the mucosa. Symptoms include rectal bleeding, passing mucus, abdominal pain, diarrhoea and faecal urgency, sometimes with incontinence. Location and severity of disease activity determines therapy options [12].

CD occurs anywhere between mouth and anus. The inflammation is intermittent, with patches of disease activity (skip lesions) between areas of healthy mucosa. Symptoms vary according to disease location and include abdominal pain, diarrhoea, weight loss, anorexia and fever. Nausea

and vomiting can occur if strictures cause intestinal obstruction [13]. Initially an inflammatory process, CD can progress to a stenosing / stricturing or penetrating / fistulising pattern, each adding considerably to disease burden, with a reported occurrence of perianal fistulae to be between 21% and 23% in population based studies [14].

Patients may develop extra intestinal manifestations (EIMs) with up to 50% of patients with IBD experiencing at least one EIM which may present before diagnosis and can affect joints, skin, eyes and liver [15]. Patients with IBD are at increased risk of developing colorectal cancer (CRC); in both UC and CD, the risk varies with the extent and duration of disease, family history of CRC, and presence/absence of primary sclerosing cholangitis (PSC). Over the past 35 years, risk of CRC in patients with IBD has not declined significantly, but risk of dying from CRC has decreased [16].

2.2 IBD Diagnosis and treatments

Diagnosis is confirmed by clinical evaluation (patient history, physical assessment) and a combination of endoscopic, histological, radiological, and/or biochemical investigations [13]. Inflammatory markers, such as faecal calprotectin, may also be used [17]. Endoscopy with biopsy of the colon and terminal ileum may confirm diagnosis. Computed tomography (CT) and magnetic resonance imaging (MRI) scans enable evaluation of disease extent, activity and complications [12, 13]. A working knowledge of diagnostic procedures enables all nurses to support patients with their questions and during preparation for investigations.

Medical treatments aim to induce and maintain remission, and improve health-related quality of life (HRQoL). The complex choice of single or combined drug therapy is influenced by location and severity of disease, treatment availability, local experience, individual patient

circumstances such as tolerance, side-effects, drug interactions, pregnancy, and patient and clinician preference. Detailed explanations of recommended medical treatments are available in current ECCO consensus documents [12, 13].

Approximately 30% of patients with UC and up to 70% of patients with CD will require surgery at least once in their lives [18, 19]. Surgery for CD may include small bowel resections, subtotal colectomy, temporary ileostomy, ileo-rectal anastomosis, or pan-proctocolectomy [20]. Ileocaecal resection is sometimes indicated for isolated terminal ileal disease, and surgery and endoscopy procedures may be necessary to treat strictures and fistulae. Surgical interventions for UC include restorative proctocolectomy with ileal-pouch anal anastomosis, subtotal colectomy with end-ileostomy and subtotal colectomy with ileorectal anastomosis [21]. Pouch surgery and pouch dysfunction is covered in section 4 'Advanced IBD nursing care for particular situations. Surgery may improve HRQoL in patients with CD and relieves patients with UC of unremitting inflammation, although EIMs can remain [22]. A consistent patient-reported fear is the potential need for a stoma [23-26], although stoma-forming surgery may have significant benefits for HRQoL [27-29].

IBD can have significant negative impact on patients' HRQoL; prolonged disease activity, disease complications, the uncertain nature of IBD, and risk of developing cancer cause particular concern [30, 31]. Alongside objective measures of disease such as endoscopy results, patient reported outcome measures (PROMs) are emerging as a means of gauging the impact of these concerns, and the effectiveness of interventions [32-34]. PROMs developed with patient and clinician input more accurately reflect the concerns of each and will become an important future aspect of assessing disease activity and licensing IBD-specific drugs [32-34]

Timely therapeutic intervention is essential for disease control [35]. Nurses with a basic knowledge of IBD are advised to consult the Advanced IBD Nurse or gastroenterologist where appropriate, according to local referral procedures.

2.3 Impact of IBD on patients' lives

N-ECCO Statement 2B

Nurses caring for patients with IBD need an awareness of the immediate and long term physical, social and emotional impact of the disease including patients' key concerns, and the effect of IBD on Health-Related Quality of Life [EL3]

A major life impact is the need to be near a toilet. Urgency can be severe, with some patients reporting less than 30 seconds between calls to stool and actual defecations [36]. Fear of losing bowel control is so great that some patients always worry about where the nearest toilet is [31, 36, 37]. Recent evidence suggests that, at some point of the disease course, between 31 and 74% of people with IBD experience faecal incontinence [36, 38, 39], not necessarily related to disease activity [37]. Despite it being a major concern, incontinence is rarely reported to or addressed by clinicians.

IBD can have an immediate and lifelong psychological impact [40]. Nurses can provide support and help patients utilise appropriate tools to facilitate self-management. The immediate impact results from embarrassment, hospitalisation, fears and concerns about the uncertain origin and course of disease [41] and possibility of cancer [41, 42]. Concerns about possibly requiring surgery and / or a

stoma bag, body image, loss of bowel control, and producing unpleasant odours are particularly distressing [43]. During hospitalisation, bowel control difficulties are more likely, due to relapse and shared toilet facilities with limited availability. Nurses can provide empathetic support and may be able to influence easier access to facilities. Discreet assistance and maintenance of patient dignity in the event of incontinence is essential.

Lifestyle impacts of IBD include self-imposed or professionally recommended dietary restrictions to control symptoms and long term medication to control disease, with patients constantly monitoring behaviors that may trigger symptoms [41]. There can be an ambivalent relationship with eating, including food-avoidance due to concerns about potential after-effects [44].

Impact on daily activities may include absence from school or work, and difficulties meeting employment requirements. Patients may feel stressed about taking time off work due to IBD and 40% make adjustments such as working from home, working shorter days or working part time [30]. Research suggests fatigue is the commonest reason for absence, with patients reporting insufficient energy to last through the full working day [30].

As IBD is unpredictable, patients may have difficulty planning or engaging in activities, both of which are often influenced by toilet access and availability [41]. Social and leisure activities are negatively affected when patients have to avoid, make last minute changes to, or cancel planned activities due to symptoms [45].

Although necessary, receiving IBD treatment may have a negative impact as it reminds patients about their illness. Concerns range from side effects of medication, inconvenience and burden of taking medication and financial burden. However, evidence suggests that strong social

support networks in patients with a chronic illness can facilitate effective coping, positively influence health status and improve outcomes of disease [46]. Family support, particularly that provided by parents, plays a vital role in the development of children and adolescents with IBD [47].

2.4 Psychological impact of living with IBD

N-ECCO Statement 2C

Nurses caring for patients with IBD need to be aware of the psychological impact of IBD, including anxiety, depression and distress, and offer onward referral to appropriate specialist support services if necessary (EL3)

The unpredictability of IBD symptoms cause numerous physical and psychosocial challenges for patients [48], often independent of disease severity. IBD is a concealable illness, leading some to downplay the associated symptoms [45]. Many people feel stigmatized by IBD, often because it is a bowel disorder which others may perceive as dirty [49, 50], or by associated fatigue which others may misinterpret as laziness [51]. Some patients report feeling damaged due to physical changes associated with IBD or treatments. Self-blame regarding onset of IBD can lead to poorer adjustment to disease and reduced HRQoL during remission and relapse. Even in remission, background persistent disease-related issues such as fatigue, EIMs and sleep difficulties can be detrimental for HRQoL [44, 52].

One-fifth of patients experience depression, and one third experience anxiety [40]. Routine screening for signs of psychological morbidity is recommended, with referral to formal psychological counseling and support for those patients demonstrating higher levels of concern [40]. Screening

may be conducted using validated scales [53-57]. Interventions including cognitive behaviour therapy [57] and pharmacological agents such as selective serotonin re-uptake inhibitors may be beneficial. Mindfulness is a psychological skill linked to mental health and well-being encouraging the patient to be aware of moment-to-moment experiences and avoiding excessive, unnecessary upset [58]. Mindfulness interventions aim to develop skills to manage stress and have been shown to improve mood and quality of life, sustained at 6 months post intervention [58]. Psychotherapeutic interventions may be beneficial for patients with IBD who have co-existing IBS-type symptoms [59].

Disease-related distress is a phenomena distinct from psychological morbidities such as anxiety, depression or stress and has been identified in other chronic diseases such as diabetes [60]. Disease-specific scales can be used to measure distress, identifying priority issues for patients and informing delivery of supportive interventions [61]. Nurses can also reduce disease-related distress by providing patients with realistic expectations about onset of therapeutic effects of medication and the transient nature of some side-effects, including temporary worsening of symptoms, weight gain and sexual dysfunction [57].

Some patients may struggle to disclose their diagnosis and symptoms to new potential partners, or find intimacy challenging due to sexual difficulties, fatigue and fear of incontinence [62]. Even if family members, partners and friends are usually supportive, there can be a lack of understanding [63]. Contact with other people with similar health problems may benefit patients [64]. Sharing experience with others who 'know' what it is like to have IBD, can provide important social, emotional and psychological support [65]. Nurses can provide contact details for country specific patient groups and charities. These fulfill an important supporting role for those dealing with a new diagnosis or with major developments of established disease.

2.5. Patient Advocacy and Person-Centred Care

N-ECCO Statement 2D

Nursing involves advocacy for all patients and this is of the utmost importance to patients with IBD due to the complex, uncertain and chronic nature of the condition. Advocacy can include identifying needs and ensuring appropriate access to the best care available [EL4]

An advocate promotes and supports the interests of others [66]. Advocacy is universally considered a moral obligation in all clinical practice, particularly when the patient's ability to make decisions, and to defend or protect themselves physically and emotionally, may be impaired due to illness [67-69]. Examples of advocacy in practice include respecting patients' rights, representing, speaking up for the patient's point of view, protecting dignity and privacy [70]. Some interventions for IBD such as colonoscopy may be worrying to some individuals. Advocacy in this instance requires the nurse to understand the concerns, needs and preferences of the patient and assist the patient in meeting those needs or overcoming concerns to allow them to receive appropriate healthcare. Advocacy and appropriate support may include ensuring urgent and timely referral to Advanced IBD Nurses, gastroenterologists or stoma nurses [46], or assisting patients in voicing their concerns to the multidisciplinary team.

2.6. Communicating with the patient with IBD

N-ECCO Statement 2E

Nurses need to develop an empathetic and active listening role, and be able to provide essential IBD-related information and holistic support [EL3]. Nurses have a role in facilitating communication between the multidisciplinary team and the patient, enabling shared decision-making [EL3]

Verbal and non-verbal communication is vital in nursing; it helps meet patients' needs, and enables provision of support, advice, compassion, caring and empathy that is highly valued by patients [46, 71, 72]. Virtual contact with IBD nurses via telephone and email clinics is recommended, enabling a more flexible and patient-focussed approach to management [73]. Age-appropriate support should be offered by those who are best placed to meet the needs of patients and their family members or carers [74].

In any chronic illness where the individual will have an ongoing relationship with health care professionals, communication facilitates rapport and trust [75]. The resulting therapeutic nurse-patient relationship can encourage the patient to have an active rather than passive role in their care, and to recognise their expertise about their own illness [76-78].

Nurses should be empathetic, active listeners with sufficient knowledge to give basic guidance on key areas of concern for patients. This may include diet, social problems, aetiology of IBD, common symptoms and complications, medication and related potential side effects, and surgical treatments [79, 80]. Patients value the opportunity to be listened to and 'taken seriously.' However the nurse should not advise beyond their competency [81], and refer the patient to another healthcare professional within the the IBD-MDT where appropriate.

Patients with IBD may struggle at various stages of their disease with the loss of their healthy self [82]. This can affect the way the newly-diagnosed individual gives, seeks, receives and processes information. Worries and physical symptoms can also affect the ability to process information and the nurse must share this in a way that it cannot be misinterpreted [83]. Reliable printed information leaflets or web-based materials are recommended to supplement verbal information [79, 84, 85].

The method and source of information may need adjusting to meet individual patient requests [80]. Patients may forget up to 50% of medication information provided, mostly recalling medication intake aspects. Techniques such as summarising, categorising, and supplementing consultations with written information may improve patients' medication knowledge and recall [86]. Patients who participate in their care and share decision-making have appreciably better outcomes than patients who do not [87]. Similarly, patients who understand the benefits and risks of a disease management plan are more likely to accept it, and be more willing to share in and follow their treatment and monitoring schedules [88].

Effective communication between physicians, patients, and members of the MDT across different healthcare levels, is essential [73, 89]. The best care for patients is delivered within an IBD centre of excellence, founded on current consensus [88], and provided by a MDT with a named clinical lead [74]. An IBD-MDT could comprise specialist gastroenterologists, colorectal surgeons and nurses, dietician, pharmacist, pathologist and radiologist with special interest in gastroenterology [90].

Positive patient-clinician relationships, with good communication, are essential to optimize the quality of care, health outcomes, and patient satisfaction with healthcare in chronic diseases [91]. Person-centred care is one way of providing better care and support for people with IBD. In this approach, the individual and their family is at the centre of care management, the patient is recognised as an expert in their own health and enabling them to collaborate with healthcare professionals to achieve the best outcomes. The patient is treated as an active and responsible partner, and their narrative is listened to [92]. New concepts and practices include 'patient participation', 'patient involvement' and 'patient engagement', terms that are similar but should not be used interchangeably [93]. These concepts promote patient-empowerment which is recognised as being increasingly important in the management of chronic diseases, and preferred by patients with IBD [94]. Shared decision-making is also beneficial, although data on factors influencing decision-making are limited [95].

2.7 Fistulae

N-ECCO Statement 2F

In fistulising IBD, nurses have a role in ensuring patient comfort, protecting skin integrity, managing complications and educating the patient about fistulas. This can best be achieved by working in collaboration with the wider MDT including stoma care therapy, surgeon, gastroenterologist, and tissue viability team [EL5]. The potential psychological impacts should not be under-estimated [EL2]

Fistulae may arise in CD as a communicating channel between the intestine and perianal skin, abdominal wall, or other organs [96, 97]. Five aspects are important for managing fistulae: i. identification or exclusion of local sepsis; ii. assessment of nutritional status; iii. location and

anatomy; iv. evaluation of the originating intestinal loop; v. determining organs affected by the fistula and their contribution to systemic systems or impairment of HRQoL [20, 98]. Diagnostic accuracy is achieved by multiple modalities [99].

Fistulae management remains a major challenge in patient care, and has a significant impact on HRQoL [98]. Combined medical, surgical, nursing, nutritional, radiological and other specialist interventions may be required [100, 101]. Management of fistulae often requires referral to a specialist centre [102]. There is little evidence to inform nursing management of fistulising disease, but the nurse's role may include wound care, medication administration, containment of sepsis, and support and close liaison with specialist wound care nurses and stoma care nurses to help enhance patient care and comfort [103].

Surgical interventions for perianal fistulae may include abscess drainage, seton placement, and fistulotomy. In severe cases, patients refractory to medical therapy may require a diverting stoma or proctectomy [104]. Nurses need to ensure patients are informed, signposting them to alternative sources of support where appropriate. Support could include enabling careful combined discussion between the patient, surgeon and specialist gastroenterologist. Referral to country specific patient support groups, provision of information leaflets and diagrams and, in specific situations, the consideration of referral for more formalised counseling to help the patient manage their symptoms and the impact on their daily living, may be beneficial [105].

2.8 Diet and nutrition

N-ECCO Statement 2G

Nurses need knowledge of the potential nutritional issues in patients with IBD to ensure these are appropriately identified and managed [EL2]. Patients and carers may require ongoing support and education from nurses regarding nutrition and especially in specific situations such as stricturing disease, or following surgery. Referral to a specialist dietician is recommended [EL2]. Dietary interventions may have therapeutic benefit for patients with IBD [EL1]

There is now an accepted link between Westernised diet and the incidence of IBD [8, 106, 107]. Although causative mechanisms are still not yet fully understood, the combination of diet and genetic predisposition towards IBD may be influential and patients often enquire about links between diet and their IBD symptoms [107]. Patients are very interested in dietary modifications and often self-impose dietary restrictions, particularly of spicy, fatty and sugary foods, coffee, tea, carbonated drinks and alcohol, dairy products and vegetables [108]. However there is no evidence of the benefit of dietary restrictions.

Diet is also perceived to influence symptoms in CD more than in UC [109]. Patients with IBD need awareness of the importance of good nutrition to maintain maximum health, particularly as they may lose weight during relapse, or become deficient in nutrients including iron, vitamin D and calcium [110, 111]. Dietary advice is generally best provided by a dietician with special interest in IBD. Freely available dietary recommendations aimed at patients are highly conflicting and tend to focus on food restrictions [112].

IBD nurses need to appreciate that there is no specific diet that works best for everyone with IBD [108] and the aim is to encourage patients to follow a normal healthy diet and lifestyle as tolerated. For some patients, diet may need to be tailored based on symptoms, preferences and

needs [106, 113, 114] and some dietary interventions are beneficial in managing symptoms [115]. Nutrient supplements can improve nutritional status [116, 117] and exclusive enteral nutrition can induce and / or maintain remission in children and adults with IBD [118], either alone or in combination with medications [119].

2.9 Nutrient supplements, complementary and alternative medicines, and special diets

Access to appropriate dietary assessment and specialist advice is important, as during the course of their illness some patients may experience general malnutrition or specific deficiencies of individual nutrients. Multiple factors can lead to nutritional problems impacting on health, nutritional status and HRQoL during active disease, although a wide range of nutritional and functional deficiencies can be evident after long periods of remission [120]. The most common nutritional deficiencies in IBD are macro-nutrients, vitamins such as B12 and D, folic acid, and minerals such as iron, calcium, magnesium, selenium, or zinc [110, 111, 121]. Deficiencies in serum albumin, vitamin D, vitamin B12, folate, and iron levels in patients with CD may indicate active inflammation [122].

Vitamin D deficiency is high amongst patients with IBD, and may be due to sun-avoidance behaviours and reduced outdoor activity [123]. Lower levels of vitamin D correlate with increased disease activity, but the causal relationship is not clear [124]. Vitamin D has an anti-inflammatory effect and supplementation improves outcomes [123, 125, 126], but the serum dose levels need ascertaining [124] and larger studies required in this area [127]. There is convincing evidence that only patients with CD who have an ileal resection greater than 20cms are predisposed to vitamin D

deficiency, warranting monitoring and treatment when necessary [128]. There is no evidence that supplements of the fat-soluble vitamins A, E and K are effective [126].

The use of complementary or alternative medicines (CAM) is common across many patient populations and the most frequently-used CAMS are probiotics, multivitamins and supplements [129, 130]. Probiotics are used for pouchitis when preceded by antibiotic therapy [112]. Omega 3 fatty acids are probably ineffective for maintaining remission in CD [131, 132]. There is insufficient evidence that glutamine, known to maintain the integrity of the intestinal mucosa and reduce inflammation in experimental models, is safe and effective in inducing remission in CD [133]. Aloe vera may be effective in active UC [134, 135], and curcumin can also be considered for induction therapy in mild to moderate UC [132].

Special diets may or may not be effective. The low FODMAP diet has been consistently demonstrated to reduce functional GI symptoms (bloating, pain, gas) [136, 137] and the nurse can refer to the specialist dietician if a low FODMAP diet is considered.

2.10 Enteral nutrition as a therapy

The impact of inadequate nutrition is more noticeable in the growing child or adolescent as nutritional deficiencies can lead to a risk of growth failure, delayed puberty, bone demineralisation or significant psychosocial complications [116, 117, 138]. In addition, nutrition is an integral part of paediatric IBD management. The first line treatment of choice for active paediatric CD is exclusive enteral nutrition therapy in which all of the patient's requirements for energy, protein and other nutrients are met by a nutritionally complete liquid diet. This exclusive enteral nutrition (EEN) restores nutritional status and modulates intestinal immune responses [139]. It is an established

effective induction therapy for small and large bowel disease [118, 140], inducing response in 60 – 80% of cases [118]. As first line treatment in children with active CD, EEN is an effective alternative to pharmacological treatment, helps reverse weight loss and growth failure, and may be better tolerated than steroids. Recent evidence suggests potential benefits of EEN for adults with CD [141, 142], including inducing and maintaining remission, relieving bowel strictures and reducing post-operative septic complications in fistulising disease [139, 142, 143]. Pre-operative EEN has been shown to reduce risks in urgent and planned surgery, and decrease the incidence of postoperative complications in patients with CD [144].

2.11 Incontinence

N-ECCO statement 2H

Nurses need to recognise the impact of incontinence on Health Related Quality of Life. Management of faecal incontinence should be tailored to the needs of the individual. Formal referral to continence specialists for assessment and investigation may be appropriate [EL2]. Specific interventions such as pelvic floor exercises, evacuation techniques, dietary advice or information on continence products can be beneficial [EL1]

Faecal incontinence (FI) can be a significant problem for patients with IBD, affecting physical, psychological and social wellbeing and leading to symptoms of anxiety and depression [145]. Reported prevalence is between 24 - 74%, and risk factors include disease activity, vaginal delivery or previous IBD surgery [37-39, 146, 147]. There is a moderate risk of FI particularly at night in older patients or following ileo-anal anastomosis surgery [148]. Fear of incontinence is as debilitating as actual occurrence, and can leave patients housebound and unable to work [36].

Often patients find it difficult to reveal or discuss their bowel symptoms openly [149]. To properly address the issue of FI, the stigma surrounding it needs breaking down [36, 45, 150]. Simply by asking about symptoms, nurses can encourage patients to talk about continence issues [151]. Nurses have a vital role in helping patients to manage and improve the symptoms of FI. PROMs, such as the ICIQ-IBD [152] which incorporates the Bristol Stool chart [153] can facilitate accurate assessment of FI symptoms. Alongside provision of information and emotional support, specialist interventions for FI may include pelvic floor muscle exercises, perianal skin care, bowel retraining, anti-diarrhoeals, dietary management, behavioural therapy, and practical devices regarding anal plugs and pads. Optimisation of IBD treatments may also improve symptoms. There is also early evidence that electrical stimulation of the tibial nerve, a branches of the pudendal nerve supplying the pelvic floor, is beneficial [154]. However, all patients will not gain benefit from the same nursing intervention, therefore a tailored care plan should reflect each patient's needs, taking lifestyle factors into account [155]. Specialist referral to local biofeedback or continence services, where appropriate, is recommended.

2.12 Sexuality and IBD

N-ECCO Statement 2I

Issues relating to sexuality may cause anxiety, depression and concern for patients with IBD. Nurses identifying problems regarding sexual function and sexuality need to be able to support the patient and refer to specialist services as appropriate [EL2]

IBD commonly appears during young adulthood, and sexuality and self-confidence can be significantly affected. Sexual functioning is a marker for HRQoL, and IBD can have a meaningful impact on a person's body image, sexual functioning and interpersonal relationships [156-158]. High levels of sexual impairment have been identified amongst male and female patients with IBD [159, 160], but sexual difficulties need to be identified to be treated [62]. Emotional aspects may include concerns about body image, feeling unattractive, and worry about urgency and leakage of stool during intercourse. Unpredictability of the disease and fear of unexpected symptoms can lead to low self image or self esteem [161].

Surgery may increase the negative impact of IBD in both males and females, particularly following proctectomy [162, 163]. Decreased libido affects patients with CD and UC equally [164] and female patients who have had surgery experience greater impairment of sexuality and sexual activity than males [165, 166].

The IBD nurse/patient relationship can foster the confidence for sexual concerns to be raised, signposting towards information and offering advice, to identifying the need for more structured support or specialist counseling. Tactful prompting and open discussion will identify the level of support needed [167]. No formal tools for measuring the impact of IBD on an individual's

sexuality exist, but this may be beneficial in promoting an individualized approach to each situation [156].

Assisting gay, lesbian, bisexual and transgender (GLBT) patients solve problems associated with sexuality requires nurses to understand and feel comfortable discussing aspects of sexual practices of this patient group [168]. Nurses who feel under-informed can refer to the extensive literature on GLBT experiences within healthcare settings [169, 170]. The GLBT patient may not wish to publically receive emotional support from their partner during hospitalisation, and may therefore avoid hospital care. Gay and bisexual patients require precise information about sexual activity and restrictions [171].

2.13 Pain management

N-ECCO Statement 2J

Nurses may be well placed to identify, acknowledge and provide treatment and support for patients with IBD experiencing pain. Causes of pain may be multifactorial and not always linked to disease activity. Nurses, through discussion and collaboration with the MDT and specialist pain teams, may help patients to manage this symptom. Some psychotherapeutic interventions can be helpful in managing the disease-related pain [EL 2]

Abdominal pain is common in IBD and is often the first symptomatic presentation of newly-diagnosed or exacerbating disease [13, 172, 173]. It can influence HRQoL and anxiety due to its unpredictable nature and is often difficult to management [174, 175]. The cause of pain may be inflammatory such as stricturing disease, fistulae, fissures, or non-inflammatory which include adhesions, fibrotic stricturing disease, co-existing functional GI symptoms. Extra-intestinal factors including gall stones, renal calculi, pancreatitis or joint and skin

complications may also cause pain [12]. Complaints of pain may trigger further investigations to uncover the cause [172, 175]. A sub-group of patients will continue to experience pain without evidence of active disease on investigation [175]. In this case the nurse needs to be empathetic and support the patient to manage their pain, which may be a manifestation of anxiety and depression or related to functional symptoms such as IBS [172, 176-178].

Between 50 and 70% of patients experience pain during disease flares. Pain can also be associated with, or independent of, EIMs of which arthropathies are the most common with a reported prevalence of up to 46% [179]. Although treatment options for abdominal pain in IBD are sparse and thus far understudied [180], a treatment algorithm for IBD-related pain can support decision making in clinical practice [175].

The nurse administering analgesics must be knowledgeable about pharmacological pain control methods, associated side effects, and drug interactions of analgesics [172]. The psychological burden of pain can be recognised and addressed, and optimising IBD therapy may help. Opioids need to be used with caution as the use of these is complicated by dependence from chronic use and side-effects including serious infection and mortality [175, 181], narcotic bowel syndrome characterised by abdominal pain of unexplained nature or intensity that worsens with increased doses of opioids, and gut dysmotility [182-184]. Tricyclic anti-depressants may be useful adjuvant analgesics [175, 185]. Once the cause of pain is established, patients could be educated about this and, in conjunction with the MDT and pain management teams, empowered to recognise and proactively manage their pain, for example by taking regular analgesia [186]. The Brief Pain Inventory is a valid and reliable tool for assessment of pain intensity and interference, and effectiveness of interventions, in both UC and CD [187]. Cognitive and behavioural psychotherapy may help patients to cope

with pain and improve their quality of life and functioning [175, 188, 189], but does not appear to influence disease course in IBD [190].

2.14 Biological therapies

N-ECCO Statement 2K

The nurse involved in the management and delivery of biological therapy will ensure that appropriate screening and identification of any contraindications to therapy have been identified and recorded. Adhering to country-specific guidelines and local protocols enhances safe administration [EL 3]

Biologic therapies are a key component of medical management of IBD. Ideally the choice of biological (originator or biosimilar) agent should be guided by patient condition and preference after thorough discussion of efficacy and safety characteristics with the healthcare professional [94, 191]. However numerous factors including physician experience, local funding arrangements, previous response to therapies, and disease behaviour and phenotype may override this choice [13, 191]. Careful patient selection and close follow-up may decrease the side-effect burden associated with these therapies [192], and it is vital that education regarding care and side effects is addressed prior to commencing medical therapy [193, 194]. The IBD nurse can facilitate such education and ensure information is conveyed in an uncomplicated manner [195]. The use of decision aids are useful when discussing adverse events as these present evidence-based data in a pictorial form, comparing risk to situations that patients can easily relate to, and enhancing their understanding [88, 196]. Thorough pre-treatment screening is vital to ensure that specific drug inclusion / exclusion criteria have been

reviewed prior to administering biologics [192]. Screening includes blood monitoring, screening for active and latent infection to minimize the risk of reactivating dormant tuberculosis, radiologic and risk assessment including viral infection, immunization history and relevant co-morbidities e.g. cardiac history, previous cancer and demyelinating syndrome [197]. In home administration, patients need to be counseled about the risks of opportunistic infections and made aware of their responsibilities to report infections and attend for monitoring. Screening results may require onward referral to other specialties such as respiratory or infectious diseases. It is advisable to view the ECCO online tool kits for therapies in IBD [198] and eguides.

Any nurse responsible for biological therapies has to be skilled and competent in administering infusions, are aware of treatment side effects and know how to manage infusion reactions. Nursing practice should be underpinned with evidence-based protocols to protect the patient [191, 199, 200]. Checklists are a good safety measure for documenting that safe pre-treatment steps have been addressed. The IBD nurse expertise can influence IBD care beyond direct patient contact, for example, to facilitate teaching general ward nurses to administer biological therapies or developing link nursing roles [201]. Patients also need educating about self-administration [202]; assessment of the patient's competence and a training plan are essential and should be formally documented.

Assessment of patients' clinical response to biological therapies, including therapeutic monitoring for possible drug side effects, potential complications, clinical and biochemical response, can be undertaken by the IBD nurse following agreed protocols either at the time of administration, or at follow-up [203]. Some centres undertake this multidisciplinary review and management of patients on biologics via virtual biologics clinics [204, 205].

2.15 Health Maintenance

N-ECCO Statement 2L

Health maintenance is an integral part of routine preventative care for patients with IBD. Nurses can identify risk, screen, provide support and refer as necessary [EL 4]

Effective preventive measures to reduce morbidity, hospitalization, and surgery are critical to improving disease-free remission and quality of life [206]. Patients may not access routine preventative care mainly due to a clinical focus on IBD severity and symptom control, patient refusal to engage in prevention activities, and reimbursement issues may be influential [206].

Health maintenance for patients with IBD includes preventing disease-related complications and disease- or treatment-related infections, and minimising adverse effects from medications [207]. The IBD nurse can take a thorough medical history soon after each patient's initial diagnosis, including infectious disease, vaccination and smoking history. If the vaccination history is unclear, appropriate titers can be obtained in order to revaccinate prior to commencing immunosuppressant therapy [192]. Inactivated vaccines can be safely administered to all patients with IBD regardless of the degree of immunosuppressant [122]. Live virus and bacterial vaccinations, including BCG, are contraindicated in immunocompromised patients and annual inactivated influenza vaccination is recommended [208]. Further information regarding vaccinations can be found in section 4.

Smoking is associated with increased risk of complications in CD, worsening of disease course at an earlier age, post-operative fistula formation, decreased response to medical therapy including biologics, and increased risk of most malignancies [209]. Smoking cessation could be addressed often [207] as patients with CD who stop smoking have fewer relapses when compared

with continuing smokers [206]. Nurses should have the knowledge of local smoking cessation services to support patients.

Patients with IBD have increased risk of developing metabolic bone disease, including osteopenia and osteoporosis, especially if previously treated with steroids; however, patients with CD are at risk for osteoporosis independent of steroid use [207, 210]. Diminished absorption of vitamin D and calcium increases the risk of osteoporosis. Ideally, regular measurement of 25-OH vitamin D levels and bone-density testing could be completed in all patients with additional risk factors for osteoporosis [210]. Primary prevention of fragility fractures includes adequate vitamin D supplementation, calcium intake, and physical activity [211]. The most effective medical therapies for osteoporosis include bisphosphonates [15].

Colon cancer surveillance is recommended every one to five years for patients with IBD, commencing eight years after diagnosis, dependant on disease location. Annual colonoscopy is recommended in patients with the additional diagnosis of PSC [12].

Women with IBD have a slightly increased risk of cervical dysplasia [122] and young immunocompromised women should have a Papanicolaou (Pap) smear test twice in the first year of diagnosis and if the results are normal annual screening thereafter [157, 212]. Human papillomavirus vaccination is recommended for males and females ages 9–26 years [122, 192, 213].

Development of non-melanoma skin cancer is associated with use of immunomodulators especially thiopurines, although patients with IBD have an increased risk of developing melanoma regardless of medication use [122]. Regular dermatological examination, including counseling, is recommended for all immunocompromised patients. Natural skin protection is suboptimal in patients with IBD [214], therefore counseling on prevention of sun exposure and wearing sun protective clothing, using sun block and avoiding tanning beds is recommended [122].

2.16 Fatigue

N-ECCO Statement 2M Nurses are well placed to identify, acknowledge and provide treatment and support for patients with IBD experiencing fatigue. Causes of fatigue may be multifactorial and nurses, through discussion and holistic assessment, may help patients manage [EL5]. Fatigue in IBD can be formally assessed using a validated generic or IBD-specific fatigue assessment scale, according to local availability [EL 2]. A holistic approach, incorporating assessment of psychological aspects, is recommended [EL3]

Fatigue in IBD is a common complaint during relapse, and also affects over 40% of patients during remission [215]. It is widely described as 'unpleasant, unusual, abnormal or excessive whole body tiredness which is disproportionate to or unrelated to activity or exertion and present for more than a month' [216]. Not dispelled easily by rest or sleep, fatigue can have a profound negative impact on the person's quality of life [217, 218]. The complex, invisible and changeable nature can make it difficult for patients to describe the experience of fatigue to others [51, 219].

Fatigue is often poorly understood by healthcare professionals who may under-estimate the impact on the patient [220].

The aetiology of fatigue can be multifactorial and there may be a genetic predisposition [221]. Physical assessment, and biochemical and haematological testing may provide explanations. Persistently low iron stores, low haemoglobin, or raised inflammatory markers in the absence of bowel symptoms, are examples of reversible causes of fatigue. Low serum levels of vitamin D, IGF-1 and magnesium have also been linked to muscle fatigue, correlating well with self-reported fatigue, in patients with CD [222]. IBD Nurses can monitor this and provide advice on management. An early review suggested that one third of patients with IBD suffer from recurrent anaemia which may contribute significantly to fatigue. Active identification and treatment of anaemia was recommended [223]. Conversely, two studies have reported no correlation between anaemia and / or iron deficiency [224, 225]. However, fatigue appears to be most marked for female patients [224, 225] and those less than 60 years old [225], and thus has a greater impact on those perhaps with families, and of school and working age [226]. In addition, co-morbidity, a low level of education, and being unemployed may influence the perception of fatigue in IBD [227].

A holistic assessment is necessary to identify physiological, psychological and any other potential cause of fatigue. Psychiatric conditions can co-exist with physical illness and evidence supports this relationship in IBD, with the prevalence of mood disorders such as anxiety and / or depression possibly up to three times greater than in the general population [176, 228]. Fatigue is associated with increased levels of disease-related worries and concerns in IBD, which in turn are associated with impaired HRQoL [226, 228]. Sleep quality, psychological factors such as anxiety, depression, disease-related worries, co-existing IBS and perceived disease-activity have consistently been identified as being strongly associated with fatigue in both patients with UC and

patients with CD [226, 229-235]. Fatigue is reported as being more severe in patients with CD [230, 233], and in newly-diagnosed patients where it is independent of disease activity [229, 236].

Once identified, the IBD Nurse could monitor the patient to determine any improvement or worsening of fatigue symptoms. Optimisation of medical management is likely to alleviate fatigue in patients with UC over time [237], and once biochemical, haematological, or endocrine causes are excluded, the nurse can work with the patient to identify strategies and coping mechanisms which may help manage fatigue. Strategies could include: taking short naps during the day; reducing night shifts; exercising regularly; getting a good night's sleep; eating a well-balanced diet and keeping well-hydrated [238, 239]. In the absence of physiological causes of fatigue, moderate activity and psychological interventions, particularly solution-focused therapy and exercise, appear to be the most promising [237, 238], but more research is needed [240, 241]. Patients may need encouragement to report fatigue to, and seek help from, health professionals [242], but some may be reluctant to discuss fatigue if they perceive that no cure is available it [243].

3. Advanced IBD Nursing

3.1 Definition, requirements and skills

In this document the term 'Advanced IBD Nurse' refers to experienced adult or paediatric nurses caring for people with IBD at an advanced level attained by extensive clinical practice, professional development, formal education and research skills [244, 245].

N-ECCO Statement 3A

The Advanced IBD Nurse is an autonomous clinical expert in IBD who is responsible for the assessment and provision of evidence based care planning and treatment evaluation, and who provides practical information, education and emotional support for patients with IBD. They will practice within their own professional competency and accountability, supported by protocols or guidelines in collaboration with the MDT [EL 5]

The Advanced IBD Nurse is often referred to as a clinical nurse specialist, advanced practitioner or consultant who works autonomously in collaboration with the MDT and patient. The Advanced IBD Nurse plays an important role in assessment, diagnosis, treatment planning, evaluation, monitoring, surveillance, education, health promotion and practical and emotional support for a caseload of patients with IBD, within the scope of their own professional practice and limitations [246]. The Advanced Nurse will work within local, national, or international guidance or protocols. Although the specifics of these roles will vary depending on national and local needs, the international literature suggests commonalities in the expected skills required for advanced practice. These include competencies in advanced clinical skills, which may include physical assessment, performing and interpreting endoscopy or prescribing; the development of practice standards and provision of evidence-based care; ability to analyse, critique and evaluate evidence and outcomes; critical thinking; publishing practice innovations or audits; the development of original nursing research; leadership; education; and change management [245, 247-250].

3.2 The Advanced IBD nursing role

N-ECCO Statement 3B

The Advanced IBD Nurse works as part of the IBD-MDT, enhancing patient care and experience, providing efficient holistic and accessible care [EL 5]. The advanced IBD nursing role additionally includes education, research, service development and leadership. In order to achieve these skills a broad clinical experience and development of clinical competencies is ideally supplemented by post graduate education [EL 5]

Although the largest proportion of the Advanced Nurses' time is spent in direct clinical practice, education, research, leadership and service development activities are essential role components [245, 246, 248, 250, 251]. There is no consensus on the expected level of education which varies between countries and organisations and may be governed by national professional standards and regulatory requirements [244]. It is generally agreed that Advanced Nurses should have a first degree at minimum though many will be educated to Masters or Doctorate level. Although research remains a recommended core activity of the Advanced Nurse role, little time is dedicated to it compared to clinical care [245, 251-254]. Advanced IBD Nurses are well placed to undertake research and explore areas which impact the patient's quality of life, psychological health, the effect on family, employment and education, and financial implications of disease, all of which are areas of concern for patients. Lack of dedicated time is often cited as one barrier to integrating research into the role. Therefore it is essential to ensure this component is acknowledged in role descriptions and job plans and nurses are supported to attain the skills or confidence they often feel they lack to conduct research [255].

Leadership is pivotal to effecting change in clinical practice and enhanced leadership skills can improve team effectiveness and lead to provision of more patient-centred care [256]. Components of effective leadership include practice leadership; role modelling; promoting patient safety; caseload management; evaluation of services or interventions; facilitating improvements or innovation; consultancy; being able to develop self and others; and change management [245, 257]. Leadership may be demonstrated through problem solving, critical thinking, listening and engagement with the

MDT team or stakeholders [245]. Networking and sharing of practice via national and international groups is an important aspect of leadership. N-ECCO is one international nursing network which enables practice development and best practice across several countries to be shared.

Locally, each hospital is likely to have its own expectations and objectives for individual specialist nursing roles. The development of explicit clinical competencies is often advocated as a means to achieve the necessary advanced skills [247, 250, 253, 258]. The development of policies, protocols or guidelines are useful frameworks to support the clinical activities of the Advanced IBD Nurse. However, Advanced IBD Nurses also work beyond protocol-led care, with freedom to use their clinical acumen whilst acknowledging professional limitations, and seeking advice where appropriate.

3.3 The Advanced nurse role in the planned review, care and follow up of stable patients.

N-ECCO Statement 3C

The Advanced IBD Nurse can conduct regular patient reviews face to face, via telephone or electronically in order to monitor treatments, and arrange appropriate investigation as required, with local policy or guidance [EL5]. Limitations of remote contact must be considered and skilled judgement used in knowing when further assessment is required [EL5].

Patients with IBD require long-term outpatient follow-up and surveillance. Disease activity often fluctuates over time requiring maintenance therapy and acute interventions for disease flares.

Complex disease management requires a specialised MDT approach which enhances the level of continuous care and improves outcomes. In this dedicated team, a key role for the Advanced IBD Nurse is increasingly being recognised [259]. Advanced IBD Nurses are consistent team members who work with patients over a period of time. This continuity is one of the advantages, over other groups of healthcare professionals, for Advanced IBD Nurses involvement in follow-up [260, 261].

Advanced IBD Nurses facilitate the follow-up of patients during relapse and in remission, providing a link between the family doctor, hospital care, and rapid access in the event of a flare up [262, 263]. The Advanced IBD Nurse who reviews patients independently of medical colleagues has an added responsibility to raise any issues of concern that fall beyond their scope of practice with appropriate medical colleagues, and be aware when onward referral is necessary. Patients receiving conservative management in specialist nurse services report high levels of satisfaction, improved ability to live with symptoms and a better quality of life [264]. Nurse-led clinics have been shown to almost halve the number of physician visits, thus reducing medical workload in IBD units [265].

3.4 The Advanced IBD Nurse caring for complex patients

N-ECCO Statement 3D

The Advanced IBD Nurse plays a key role in the IBD-MDT when caring for complex patients, and will be able to assess the patients' care needs and can refer patients on, if needed [EL5].

Advanced IBD Nurses have a pivotal role within the IBD-MDT as they can provide direct care as well as holistic support [266, 267] and make a significant contribution to patient experience, including facilitating complex decision-making regarding patient care. The Advanced IBD Nurse develops the

role to provide social, physical and psychological support in addition to providing education and promoting understanding for the patient and families when IBD becomes complex. Further, the Advanced IBD Nurse plays a key liaison role, acting as the patient's advocate at IBD-MDT meetings and ensuring there is focus on managing IBD in the context of the patient's life, rather than just in terms of disease activity [88].

The changing demands of IBD in terms of complex treatment algorithms, place the Advanced IBD Nurse at the centre of care to ensure that patient needs are met through ongoing delivery of high quality evidence-based care.

3.5 The Advanced IBD Nursing Assessment

N-ECCO Statement 3E

The Advanced IBD Nursing assessment is both wide ranging and able to focus on specific areas of concern. The nurse may use biomarkers, imaging and physical assessment including endoscopy providing appropriate training has been undertaken. The Advanced IBD Nurse will be aware of existing assessment tools that may be useful aids in the management of patients with IBD and their related health problems [EL 5]

To develop a care plan for any patient in any situation whether face to face in clinic, or via telephone or email, a thorough, competent and relevant assessment is vital [246, 251, 268, 269]. At the first meeting, a comprehensive 'IBD history' may be recorded, including age at diagnosis, extent and duration of disease, any surgical procedures, current and past medication, any drug side effects or intolerances, dietary triggers or intolerances. It is also important to gauge the patient's understanding of IBD, its management and the care they are receiving. Assessment proformas are a useful tool to

ensure a consistent approach, and can be used by nurses at differing levels [269]. Assessment of current disease activity including EIMs, dietary history, HRQoL, coping strategies, psychological well-being, social support and health behaviours e.g. smoking, drug adherence could be reviewed. Confirmation of medication used, including complementary and alternative medicines (CAMs) or over the counter preparations, as well as response or adverse effects of prescribed treatment. Fever, nausea, vomiting, weight loss, fatigue or other signs indicative of active disease can be identified. Validated disease activity scoring systems, such as The Harvey Bradshaw Index (HBI) for CD, or Simple Clinical Colitis Activity Index (SCCAI) for UC [153, 270, 271] aid consistent assessment of disease severity, enable objective measurement of improvement or deterioration in the patient's condition, allow for revision of treatment plan and support audit and research.

The Advanced IBD Nurse may use other assessment methods such as abdominal examination, interpretation of endoscopy, blood tests, faecal calprotectin, radiology, histology and other imaging tests, all according to training, skills and local protocol [272]. Objective measures such as the Inflammatory Bowel Disease Questionnaire (IBDQ) or the Hospital Anxiety and Depression Scale (HADS) are useful to assess HRQoL and psychological well-being [273, 274]. Other scoring tools may be appropriate in certain situations, such as pain or fatigue scores.

Despite reporting similar levels of stress that are unrelated to work, patients with IBD have a lower employment rate, higher disability rate and more days of sick leave compared to the general population, but have enhanced social support [275-277]. The Advanced IBD Nurse can assess the social impact and the patients' existing resources both within the family and wider social structure. It is useful for the Advanced IBD Nurse to have some knowledge regarding national employment laws for people with a chronic disease, and to refer the patient for additional support, such as country specific patient support groups and charities, if needed. Completing a thorough holistic assessment enables the Advanced IBD Nurse to implement appropriate plans of care and identify other direct and indirect effects such as psychological morbidity, presence of functional GI disorders, problems with sexuality, fertility, drug monitoring and compliance, incontinence, fatigue and anaemia [278].

3.6 The Advanced IBD Nurse role in managing Advice Lines

N-ECCO Statement 3F

Advice Lines are considered a key element of an advanced IBD nursing role and may improve clinical and service outcomes [EL 5]. This type of contact provides rapid access to a specialist nurse. It is suitable for providing many aspects of care, information and support, and the assessment, investigation and treatment of the unwell patient [EL 3].

From the patient perspective, the rapid and direct access to an IBD nurse is of great importance. [261, 279]. An IBD service including advice lines (ALs) has been identified as an element of “best practice” in an observational study in eight European countries [280].

Besides the direct effects of IBD, patients may experience other life challenges as a consequence of their condition. Issues around schooling, employment, smoking, diet, pain, fertility and pregnancy, travel, sexual and other relationships, adherence, stigma, transition from childhood to adulthood, fatigue and more may be addressed via a telephone or e-mail AL [281-284].

ALs managed by IBD nurses is safe and cost-effective. ALs can reduce out-patient visits and 'avoid' inpatient stays [285-288]. Furthermore, ALs can reduce the need for some face to face reviews but may also, wrongly, be perceived as a means of keeping patients away from outpatient clinics [289]. ALs provides prompt and appropriate expert nursing advice, and

urgent access to clinics and to consultant support. Advanced communication skills must be utilised when using remote assessment especially as nonverbal cues cannot be used. Appropriate levels of practitioner competency and knowledge are emphasised [290]. Protocols may enable the development of agreed expectations of an AL service [280]. Local protocols will reflect local practicalities and legalities and outline the aim, responsibility, and the remit agreed for those involved in running an AL [287, 291].

3.7 Patient information and education

N-ECCO Statement 3G

The Advanced IBD Nurse assesses understanding and, informed by current evidence, provides education to patients with IBD and their significant others based on individual needs, preferences and coping ability aiming to empower the patient to live well with IBD. The Advanced IBD Nurse can direct the patient toward trusted sources of educational materials [EL 5]

The Advanced IBD Nurse can be perceptive to the patient's educational needs and provide essential information and education for patients, which may take various forms e.g. group, individual, or family-focused [292]. Patient education may need to be repeated and supported by other sources e.g. phone, written information, electronic means, and country-specific patient support groups.

A wide range of information and videos of IBD of variable quality are available on the internet, and may only be used as supplemental information to more individualised education [293-295]. The Advanced IBD Nurse need to be able to identify, analyse and classify relevant literature and information to guide the patient.

Studies of structured patient education programmes have, to some extent, shown an increase in the participants' level of knowledge and empowerment [296], but no significant effect on HRQoL [297-300]. Since some patients choose not to participate in structured patient education and a broad range of tailored alternatives has to be available [301].

There is no clear evidence that self-management programmes for patients with UC either improve health or increase wellbeing [302] but despite this, IBD nurses are encouraged to facilitate self-management [303]. There may be reduced economic cost for patients allocated to self-management compared to usual treatment [304]. Education towards self-management complements traditional patient education in supporting patients to live the best possible quality of life with their condition. As well as teaching problem-solving skills, a central concept in self-management is self-efficacy—confidence to carry out behaviour necessary to reach a desired goal [305].

IBD teams are encouraged to support country specific patient support groups and charities' educational and open forum sessions, allowing patients to become more involved in shaping local services [199]. This also improves patients' knowledge of IBD which is associated with improved coping and adherence to treatment [299, 306]. Recently diagnosed patients primarily glean information from the doctor and the internet, but two thirds of the patients prefer information from a nurse specialist [307]. For patients with special needs e.g. medical, cultural, mental, or social; the Advanced IBD Nurse plays a key role in linking to appropriate services in the MDT.

3.8 E-health Nursing

N-ECCO Statement 3H

Advanced IBD Nurse, along with the IBD-MDT, plays a key role in the development, introduction, delivery, monitoring and evaluation of electronic health technologies [EL 5]

Few studies have explored different e-health interventions in IBD. Most had an observational design but a small number were RCTs, including one which revealed significant beneficial effects of a telemedicine system on visits to and contact with health care services [308].

Three systematic reviews revealed that e-health interventions are safe, and effective for the subgroup of patients studied [309-311]. In general, study interventions and outcomes were heterogeneous, and interventions ranged from ALs and virtual clinics to smart-phone applications. The study participants were mainly patients with quiescent disease. Although it is not always clearly described, IBD nurses appear to play a key role in reviewing patient-reported data and taking action as necessary [312-314]. Patients with IBD have a positive attitude towards e-health and self-management approaches as long as they are well, but rapid and easy access to both gastroenterologists and IBD nurses remain an important supplement [261, 312]. Advanced IBD Nurses naturally become involved in the implementation and operation of most e-health initiatives, and may be involved in e-health projects. Their routine and frequent use of PROMs, well-developed communication skills and competences are essential when establishing and maintaining any remote IBD service.

4. Advanced IBD nursing care for particular situations

4.1 The advanced IBD nurse role in transitional care

N-ECCO Statement 4A

The adolescent and young person with IBD needs a structured transition programme when transferring from paediatric to adult care (EL2). The model of transition may vary according to local arrangements (EL5). The Advanced IBD Nurse is pivotal in the transition process by liaising with the adult and paediatric MDT to ensure a flexible and individualised transition process with the patient at the centre (EL3)

Transition is described as the purposeful and planned movement of care from a paediatric to adult-orientated health care service for young adults with chronic medical conditions, and handover of health responsibility from parent to adolescent [315]. Transition differs from transfer in that transition is structured, planned and considered [316]. Effective transition programmes empower young adults to take responsibility for, and manage their own health, by equipping them with the required knowledge and skills underpinned by appropriate health care support. Transition programmes yield significant improvements in disease outcomes and HRQoL [317, 318].

Differing models of transition have been described, which vary dependent upon geographical area, access to public health care and differing health care models. However, the importance of effective transition for any adolescent with chronic illness, and of the role of a care coordinator in improving patient outcomes within this vulnerable group, has been described in international literature [319] and supported by international IBD guidelines [320-322]. The Advanced IBD Nurse is well placed to undertake the key role of co-coordinator [320] with responsibility for transition [317, 323]. International audits have identified that alongside other clinical benefits, services with an IBD nurse within the MDT are associated with successful transition of adolescents from paediatric to adult-orientated IBD services [323, 324].

4.2 IBD and Travel

N-ECCO Statement 4B

Whenever necessary, the patient with IBD planning to travel receives appropriate pre-travel consultation and education regarding the risks and practical issues of travel with IBD. The Advanced IBD Nurse can be a source of information, support and referral to relevant resources. Special consideration should be given to patients on immunosuppressants [EL4]

4.2.1 Pre-travel consultation:

Foreign travel is associated with an increased risk of travel-related morbidity caused through exacerbations of IBD, acquisition of infectious diseases endemic to the destination, and availability of healthcare and medicines whilst abroad [325, 326]. Patients receiving immunosuppressive medication, such as azathioprine, methotrexate and 6-Mercaptopurine, have increased susceptibility to these infections in addition to an attenuated immune response to vaccinations [325, 327-330]. Detailed pre-travel consultations and vaccinations are advised to ensure travellers have the appropriate education and resources to stay healthy during their journey [325, 330-332].

Pre-travel preparation and education among patients is poor with many failing to obtain any formal pre-travel advice, having inadequate travel insurance to cover IBD, and lacking awareness regarding vaccinations [326, 333-335]. Healthcare professionals' knowledge and provision of pre-travel counseling and adherence to international guidelines is also poor [336, 337], particularly regarding avoidance of live vaccines for those on immunosuppressive medication [338-340].

The pre-travel consultation may be an MDT approach involving the Advanced IBD Nurse, gastroenterologist, family doctor, travel clinic and, for complex patients, the infectious diseases team. Consultation includes support and encouragement for travel – IBD need not restrict patients from foreign travel – and sign-posting to IBD-specific travel experts and resources [340]. The Advanced IBD nurse could be involved in the discussion regarding travel destination and related level of risk, particularly for those on immunomodulator therapy, including the importance of obtaining travel insurance to cover IBD and food and water precautions to avoid travelers' diarrhoea.

4.2.2 Vaccination advice

Administration of live vaccines to patients on immunosuppressant medication, such as azathioprine, 6-Mercaptopurine and methotrexate, is contraindicated. Serious and potentially fatal infections can arise due to extensive replication of the vaccine strain, which does not happen with inactivated vaccines. Some vaccinations for travel such as yellow fever, typhoid and BCG are only available in a 'live form'. It is recommended to use a standardised checklist for immunisation for opportunistic infections [325]. Good communication between the IBD-MDT, travel clinics and patient is therefore essential to ensure safe vaccination and travel. The ECCO 'evidenced – based consensus on the

prevention, diagnosis and management of opportunistic infections in inflammatory bowel disease' details individual vaccination required prior to commencing and discontinuation of immunosuppressant therapy, for example, varicella vaccine must be administered 3 weeks prior to starting treatment and subsequent immunisation can only be administered after 3-6 months after discontinuation [192].

4.3 Pregnancy and fertility

N-ECCO Statement 4C

The Advanced IBD Nurse plays a pivotal role in supporting the patient who is considering pregnancy. Pre-conception counseling addressing fertility and pregnancy outcomes would ideally start as early as possible with both males and females to support decision making (EL5). Controlling active disease prior to and during pregnancy is important (EL3, EL5)

Reproduction and pregnancy in patients with IBD are described in the ECCO guidelines [157].

4.3.1 Fertility

Compared with an age-matched population, female patients with quiescent IBD do not have decreased fertility. Low birth rates among women with IBD are often due to personal choice rather than disease related infertility [341-344]. The knowledge of women with IBD regarding pregnancy is often poor [345, 346], requiring assessment by the Advanced IBD Nurse and provision of appropriate disease-related education.

Women with active disease may experience sub fertility and problems achieving pregnancy [347]. IBD-related complications such as abscesses and fistulae in the genital region may result in sexual abstinence. Restorative proctocolectomy with ileoanal anastomosis has been associated with reduced sexual activity due to scarring and formation of adnexal adhesions [343, 348, 349].

There is no reported evidence of medications affecting female fertility [157]. Male fertility may be decreased by methotrexate which is teratogenic, and sulfasalazine which can cause oligospermia, reduced sperm motility and abnormal sperm morphology [350-353], although these effects are fully reversible within a few weeks of stopping the drug. Sub fertility in male patients may also be related to poor nutrition, depression and reduced libido [347]. Proctocolectomy in men may lead to impotence or ejaculatory difficulties [354].

4.3.2 Preconception care

Preconception counseling is recommended as women with IBD who conceive while in remission are more likely to remain in remission during the course of their pregnancy, although woman with UC have more disease activity during pregnancy than those with CD [354].

Family planning and breast feeding issues could be discussed with both males and females before treatment, as some patients may wish to stop treatment before conception [355]. The Advanced IBD Nurse may address specific patient concerns to optimise control of disease, avoid inappropriate medication cessation and discontinue medications that may adversely affect pregnancy. Patients often have concerns about IBD inheritability, the risk of congenital abnormality and medication teratogenicity [342, 356]. To provide optimal evaluation and treatment, the Advanced IBD Nurse as

well as the IBD-MDT needs to be aware of the diverse spectrum of conditions and problems that may be encountered.

4.3.3 Pregnancy and post-partum care

N-ECCO Statement 4D

An MDT approach is recommended as appropriate (EL3, EL5). The Advanced IBD Nurse can be a source of support and education during the pregnancy and post-partum period, in particular, regarding breast feeding and medication safety (EL5)

The severity and extent of disease at conception appears to influence the course of disease during pregnancy; approximately two-thirds of woman in remission will stay in remission, whilst active disease at conception is likely to persist and possibly deteriorate in two-thirds of women during pregnancy [157].

Disease activity is the main adverse factor predisposing to intrauterine death, prematurity and low birth weight babies [357, 358]. The balance between maintaining or discontinuing IBD treatment, which increases the risk of an acute exacerbation requiring prompt treatment [157], needs to be weighed up for each individual. Women with IBD often overestimate the harmful effects of medication while underestimating the harmful effects of an IBD flare during pregnancy [356, 358, 359]. Continued drug therapy may be necessary and the patient counseled of risks of discontinuing medication [360].

If pregnant women require hospitalisation for IBD, they may be transferred to a tertiary center with a MDT [356, 359, 361-364]. Labour and delivery plans should be discussed between the gastroenterologist, obstetrician and patient. The choice of vaginal or caesarean delivery may be influenced by IBD and / or disease activity and patient choice [157]. Breastfeeding is strongly encouraged due to the reported benefits for both mother and child. Breastfeeding does not increase the risk of disease flare and may even provide protection against flare in the postpartum year [365, 366]. The Advanced IBD Nurse can play a pivotal role throughout the woman's pregnancy, providing advice of the safety of medicines whilst breastfeeding and offering timely reviews to minimise the risk of relapse [367].

4.4 The IBD Nurse role in IBD iron deficiency and anaemia

N-ECCO Statement 4E

The Advanced IBD Nurse is well placed to identify iron deficiency anaemia, and facilitate iron supplementation in patients with IBD, monitoring both effect and side-effects of treatment [EL5]

Anaemia is a common EIM in IBD, and prevalence depends on disease activity. Approximately 25% of patients will have anaemia, although prevalence has been reported at 50% amongst IBD outpatients observed over a two year period [368]. Prevalence is slightly higher in patients with CD when compared to UC [369]. Anaemia is considered present if haemoglobin levels are < 12 g/dl in non-pregnant women and < 13 g/dl in men [370]. The detection, treatment and monitoring of anaemia and iron deficiency are described in the ECCO guidelines [371].

The main causes of anaemia in IBD are inflammation and/or iron deficiency. Anaemia of chronic disease (ACD) is caused by inhibited bone marrow activity and reduced iron uptake due to inflammation [371]. Iron deficiency anaemia (IDA) in patients with IBD may be caused by a combination of blood loss from the bowel, malnutrition with reduced iron intake, or impaired iron uptake [368]. The Advanced IBD Nurse investigates and interprets results to identify IDA and ACD and its consequences, and provides treatment as appropriate. This includes oral iron, IV iron therapy, with monitoring for effects, side effects and adherence to treatment, and referral to dieticians or gastroenterologists as required.

4.5 Caring for the patient undergoing stoma and ileal-anal pouch formation

N-ECCO Statement 4F

The Advanced IBD Nurse is well placed to support the patient in the perioperative period by being a source of education and referring to appropriate members of the MDT, particularly the stoma nurse. Psychologists, sexual therapists and country specific patient organisations can help with information provision and psychological support (EL5)

Many patients are understandably distressed at the thought of undergoing either planned or emergency surgery, and the Advanced IBD Nurse plays a key role in coordinating healthcare professionals. Patients may undergo a colonic resection without stoma formation or require further surgery to include restorative proctocolectomy with ileal pouch-anal anastomosis (IPAA). The main indication for IPAA is in patients with medically refractory UC [372, 373], or dysplasia or cancer developed from underlying UC.

For any complex surgical procedure, the patient is best managed within an MDT including the stoma care nurse. In the event of stoma formation, the stoma care nurse provides essential support and education to the patient and their family prior to surgery, during the hospital stay and following discharge [374].

Stoma and IPAA surgery provide numerous benefits including long term symptom relief [372, 375] although recent evidence suggests that while outcomes are often better than anticipated, some patients require a long time to decide about stoma surgery and find benefit from pre-operative contact with another patient with IBD living well with a stoma [29] .

4.5.1 Caring for the patient with an ileoanal pouch

N-ECCO Statement 4G

The Advanced IBD Nurse is well placed to identify problems associated with pouch function including pouchitis and dysfunction, and quality of life, fertility and pregnancy, incontinence and sexual issues. The Advanced IBD Nurse can support the patient and provide education and information regarding the pouch, referring on as appropriate (EL 5)

Pouch dysfunction can occur following surgery and can be caused by pouchitis, cuffitis, irritable pouch syndrome, CD, or pouch fistula. Pouch failure requiring surgery and removal of pouch can sometimes occur [372] and diagnosis depends on endoscopic and histological findings in conjunction with symptoms [376].

Approximately 25% of patients will develop recurrent pouchitis, with 5% enduring chronic pouchitis requiring maintenance therapy or, on rare occasion, pouch excision [372]. Factors associated with an increased risk of pouchitis include PSC, EIMs, and nonsmokers. Controversy surrounds other risk factors such as extent of colitis and backwash ileitis. The etiology of pouchitis is unknown, but theories range from genetic susceptibility, bacterial overgrowth, ischemia, and faecal stasis, to a recurrence of UC in the pouch, a missed diagnosis of CD, or possibly a novel third form of IBD [372]. Some patients with symptoms of pouchitis will not have inflammation, but rather, irritable pouch syndrome [372]. Symptoms related to pouchitis include increased stool frequency and liquidity, abdominal cramping, urgency, tenesmus, and pelvic discomfort. Fever, EIMs and rectal bleeding may also occur, although the latter is more often related to inflammation of the rectal cuff than to pouchitis [373, 377]. Faecal incontinence may occur after IPAA without pouchitis, but is more common in patients with pouchitis [372]. The Advanced IBD Nurse, other members of the MDT and the stoma / pouch care nurses provide support for the patient if complications develop, and if the pouch needs to be removed.

4.6 IBD in elderly

N-ECCO Statement 4H

The Advanced IBD Nurse is in a position to assess the health risks or frailty of elderly patients with IBD regarding medication (polypharmacy), medical history, co-morbidities, bone density, incontinence, cognitive deficit and depression (EL5)

Care of the elderly patient with IBD is extensively covered in the ECCO topical review [378]. A key characteristic of the health status of the elderly is its large heterogeneity in terms of the effects of ageing on individuals' quality of life, functional limitation and the type of diseases and conditions affecting them.

Until recently, little data existed about IBD in the older person. Possible explanations for this include higher rates of exclusion from clinical trials, primarily due to concerns about aging itself increasing the risk of adverse events, and less endoscopic procedures performed within this population [379].

Approximately 25-35% of people living with IBD are elderly, with 15% of those being diagnosed 'de novo' with conditions in later life. Incidence rates of UC are currently greater than for CD in the older person, but increased rates are anticipated in both disease groups [379, 380]. Effects of ageing include frailty, degeneration, reduced recovery capacity, co-morbidity, polypharmacy and shortened life expectancy [379]. The older person with IBD can be stratified into one of two subgroups: elderly onset and elderly IBD patient. 'Elderly Onset IBD' is defined as the first presentation / diagnosis of IBD in an individual aged 60 years and over, whilst an 'Elderly IBD Patient' is an individual aged 60 years or over with an established IBD diagnosis. Aging with a known diagnosis of IBD may increase the risk of complications, prolonged hospitalisation, and higher incidences of morbidity and mortality [379-381].

When making management decisions for care of the elderly with IBD, the Advanced IBD Nurse needs to assess the patient's frailty and acknowledge the difference between the chronological and biological age [382]. Validated measures of frailty may be used [383].

4.6.1 Health risks in the elderly with IBD

The principles of medical management for elderly individuals with IBD are the same as for any adult patient: to induce and maintain remission of symptoms, promote quality of life and prevent

complications of disease. However, advancing age can bring specific challenges including depression [384-386]. The Advanced IBD Nurse requires an understanding of elderly patients' needs including social history and support network, to identify when intervention and referral to outside agencies such as social care is required.

Between 26 - 48% of patients with IBD have decreased bone density and a 40% higher risk of fracture, when compared to a non-IBD population. Older age is also a risk factor for development of osteoporosis. However, establishing the degree of bone loss due to aging is difficult in patients with IBD due to confounding factors of corticosteroids use, poor nutrition, duration of disease and ongoing active inflammation, and body habitus [384, 387-389].

An elderly patient with at least two chronic diseases will usually exceed the arbitrary threshold of more than five medications. The consequences of polypharmacy include greater health-care cost, increased risk of adverse drugs events, drug interactions, medication non-adherence, reduced functional capacity and multiple age-related syndromes. Polypharmacy may be more common in elderly patients with IBD and the potential for drug interactions must be considered. Problems with administration, for example, rectal therapies, merit careful consideration by the Advanced IBD Nurse [390-392].

5. Benefits of an IBD nurse

N-ECCO Statement 5A

The Advanced IBD Nurse provides a pivotal and important role in the care of patients with IBD, within the IBD-MDT and to health care providers. Nurse-led services including telephone advice lines and out-patient clinics have been demonstrated to be cost-effective and beneficial to patients and healthcare providers [EL3]

Although generally accepted as beneficial to patients and services, a key challenge for the Advanced IBD Nursing role since its inception has been to demonstrate this benefit. This specialist role was the first to be reviewed for the Cochrane database [393] however, reviewed studies were assessed as having low methodical quality resulting in benefits being difficult to quantify. ECCO, N-ECCO, and the N-ECCO Research Forum continue to work to improve the quality and transferability of research into the Advanced IBD Nurse role.

5.1 Organisational benefits

A number of organisational benefits of the Advanced IBD Nurse role have been demonstrated, including greater integration of care across multidisciplinary teams [394], and the bridging of primary and secondary care interfaces. As discussed in Section 3, Advanced IBD Nurses play a vital role within the IBD-MDT [88, 395-398]. Patients report greater satisfaction of care with an IBD nurse in the team [399], with improved access to better co-ordinated care, and better education and support for them and their families/carers [395]. In the UK, centres with an Advanced IBD Nurse in

the MDT have fewer hospital admissions, provide access to self-management approaches for disease control, and give greater choice regarding delivery of follow-up care for patients [261]. One Australian IBD service consisting of a gastroenterologist, an IBD nurse, a weekly designated IBD clinic, a joint medical–surgical clinic for IBD and a regular time for radiology review was developed and coordinated by the Advanced IBD Nurse. Healthcare utilisation, number of admissions and disease burden decreased significantly demonstrating financial and clinical gains for patients [400]. Benefits have also been demonstrated in transition services where the skill of the Advanced IBD Nurse can facilitate adjustment to the many demands faced by the young person with IBD and their family as they progress to adult IBD services [397, 401-404].

As discussed in Section 2, IBD nurses at any grade may be involved in delivering biologic therapies, but the service delivery of this treatment modality is now routinely managed in many centres by the Advanced IBD Nurse [191, 397, 398]. One UK audit found that 90% of IBD nurses had direct clinical responsibility for delivering biological services within their institution [405], a role which incorporates patient counseling, safety pre-treatment screening, and delivery of therapy. The Advanced IBD Nurse is influential in improving quality of life outcomes in patients through increased safety monitoring [406, 407]. Monitoring for side effects and adverse blood results is described as vital ‘rescue work’ [408], and is essential for patients on immunosuppressive therapy to minimise potentially serious adverse events such as neutropenia or myelotoxicity, and reduce the burden of disease severity and activity. Recent advances with therapeutic drug monitoring, including measurement of trough levels of drug and antibody detection, further underpins the need for Advanced IBD Nurses. ‘Virtual’ review of patients receiving biological therapies provide a more cohesive monitoring model with ease of two-way feedback for patient and clinician, helping to ensure the most benefit for patient and cost effectiveness is obtained from therapy [205, 398]. The Advanced IBD Nurse will often oversee this review, ensuring relevant clinical information and patient

outcomes are reported appropriately. Despite this, many IBD centres across Europe delivering biological services still do not have access to an Advanced IBD Nurse as part of the MDT. By 2013, a quarter of UK hospitals still had no IBD nurse [409] and a 2016 Italian audit revealed that less than 40% of centres treating patients with biological therapy had access to a specialist IBD nurse [266], highlighting the need for continued work and investment in this area.

5.2 Better access to care, reduced waiting times, and cost benefits arising from an IBD Nursing service

Patients describe the IBD nurse as a constant and reliable source of contact providing immediate advice [285, 393, 395, 410]. Prompt access is the most frequently cited benefit of an IBD nursing service from the patient perspective. Increased access to the IBD team via telephone AL managed by Advanced IBD Nurses, has also been demonstrated to significantly reduce costs associated with unscheduled primary and secondary healthcare visits [259, 285, 410]. High levels of patient contact episodes are recorded via helpline services across Europe [285, 411]. Where a monetary tariff can be attached, ALs generate income for the IBD service [285, 288, 412]. Studies demonstrate that outpatient visits and hospital admissions can be avoided through counseling by phone or e-mail with the IBD nurse [73, 259, 288]. AL services enable Advanced IBD nurses to conduct 'rescue work' [408] and facilitate faster access to procedures and other relevant departments [259, 288].

Patients with quiescent disease can often be managed by IBD nurse led telephone clinics, with proven cost-effectiveness and acceptability to patients and health care providers [413-416]. The Advanced IBD Nurse's enhanced knowledge ensures assessment of patients' immediate needs,

skilled decision-making and care–planning, and access to the safety net of MDT care services when needed [393, 411, 417, 418]. Length of hospital stay may also be reduced by IBD nurse-led follow up, thereby improving patient satisfaction overall [260, 285, 412, 419]. Balancing the delivery of safe and effective care in addition to managing cost savings, whilst challenging, is enhanced by the expertise of the IBD nursing team [400]. Whilst the initial costs of employing an IBD nurse are recognised to be high, the overall savings are undisputed in centres that employ IBD nurses [400].

5.3 The benefit of the IBD Nurse for patient health-related quality of life and self-care

The burden of disease for patients with IBD extends beyond the costs associated with their clinical care, investigations and treatments [420]. IBD often causes considerable social encumbrance, mainly due to the bowel-related symptoms. Despite more liberal attitudes towards, for example, sexual function, bowels remain taboo. Patients can find it extremely difficult to talk about and seek support for their problems, despite the negative impact symptoms may have on educational and career aspirations, and on relationships and social activity generally.

Whether face to face or via the AL, the Advanced IBD Nurse acts as a valuable resource for patients enabling them to learn more about their disease, thus increasing confidence, subsequent disease management ability, and directly benefitting their overall quality of life [262, 421-424]. Advanced IBD Nurses can also provide ongoing support to family and carers who may be affected by the repercussions of the disease and therefore require information, support and advice to manage concerns on a daily basis [393].

It is crucial for successful treatment that patients acquire insight into their disease, and understand the importance of adhering to the recommended maintenance treatment regime. Despite non-adherence being a major risk factor for experiencing a relapse and increasing the risk of acute hospitalisation and surgery, both adult and paediatric patients often fail to adhere to long term prescribed medication [425-427]. The Advanced IBD Nurse has the knowledge required to sensitively discuss issues that may affect a patient's compliance. This may mean regular contact for reassurance and guidance or encouraging the patient's independence in managing their disease through a guided self-management programme with ongoing support as required [423].

5.4 The Advanced IBD Nurse and e-health

Since publication of the first N-ECCO consensus statements [1], care delivery in IBD has evolved to incorporate greater use of self-management and e-health platforms, and IBD nurses play a significant role in the development of these services [313, 314, 428, 429]. E-health in IBD refers to self-managed interactive web-based disease monitoring tools developed to individualize treatment and optimize patients' self-management, adherence, and quality of life. A number of telemedicine systems have been developed, often managed by IBD nurses. The growth in email and text message communication, led by the Advanced IBD Nurse, is both acceptable to patients and cost effective [430]. Telemedicine applications, such as teleconsulting and tele-education improve treatment adherence, quality of life, and disease knowledge. Structured or shared decision-making support for patients and caregivers via e-health platforms may lead to more effective and efficient patient decision making, decreased psychosocial distress, and, ultimately, improved outcomes [1, 418, 431]. The development of e-health platforms reflects the increase in roles, responsibilities and influence of IBD nurses, as services in IBD care have increased.

5.5 The Advanced IBD Nurse and Research

N-ECCO Statement 5B

The importance of conducting robust empirical nursing research has been recognised across Europe [EL3]. More nurse-led research in IBD is being undertaken and a variety of methodologies are being used to explore interventions, describe living with IBD and evaluate the care of patients with IBD [EL3]. Continuing IBD nurse-led research is essential, and is an important aspect of the Advanced IBD Nurse role

Robust empirical research supports IBD nurses' clinical practice and demonstrates the value of the Advanced IBD Nurse. Across Europe, greater support for research is now available locally via collaboration with clinical colleagues, and internationally via the growing N-ECCO Research Forum. Advanced IBD Nurses are increasingly undertaking original research within the field of IBD care using a variety of different methodologies. Examples of nurse-led research include studies describing living with IBD [432, 433], and evaluating care and choice of care of patients with IBD [89, 261, 434].

Advanced IBD nurses have also led on studies exploring the development of new patient assessment tools [34], a continence assessment tool [152], and several studies aiming to explore and understand fatigue [225, 435, 436]. A recent N-ECCO collaboration to identify research priorities will be used to influence ongoing IBD nursing research across Europe [437].

6. Conclusion

IBD is a complex chronic condition requiring expert nursing care and management within the context of the MDT. These updated consensus statements build upon the original document [1] to provide contemporary guidance at local, national and international levels of IBD nursing care. The statements are intended to inform, inspire, and improve the standards of IBD care, providing evidence for IBD nurses to move from fundamental to advanced care, and to encourage research by IBD nurses. The evidence underpinning these statements may assist in developing business cases to support appointment of IBD nurses in new and expanding IBD services and will also work as a base when creating educational programmes for IBD nurses.

Acknowledgement: All of the consensus group members for their work and commitment in producing this document. The ECCO Secretariat, for their continued support, advice and guidance in every stage of the production of this 2nd consensus document. Marian O'Connor Consultant Nurse, St. Marks Hospital, Watford Road, Harrow, HA1 3UJ London, United Kingdom for acting as an independent reviewer of this document prior to publication (November 2017)

The following N-ECCO National Representatives participated in the review process of this consensus:

Austria: Tobias Kasa

Belgium: Patricia Geens

Croatia: Nensi Lusicic

Czech Republic: Katerina Peukertova

Denmark: Anne Hindhede, Else Mikkelsen

Finland: Tanja Toivonen

France: Virginie Cluzeau

Germany: Janette Tattersall-Wong

Ireland: Denise Keegan

Israel: Revital Barkan

Italy: Daniele Napolitano, Elisa Schiavoni

Lithuania: Lina Ivanauskiene

Norway: Beathe Mari Nesvåg

Poland: Marzena Kurek

Slovenia: Carmen Bobnar Sekulic, Tadeja Polanc

Spain: Ester Navarro Correal

Switzerland: Christina Knellwolf

United Kingdom: Lynn Gray, Catherine Stansfield

In addition the following ECCO members, having applied to the Consensus, but not included in the working groups, also participated in the review process of this consensus:

Belgium: Eveline Hoefkens

Greece: Konstantinos Katsanos

DISCLAIMER TEXT

The ECCO Consensus Guidelines are based on an international consensus process. Any treatment decisions are a matter for the individual clinician and should not be based exclusively on the content of the ECCO Consensus Guidelines. The European Crohn's and Colitis Organisation and/or any of its

staff members and/or any consensus contributor may not be held liable for any information published in good faith in an ECCO Consensus Guideline.

CONFLICT OF INTEREST

ECCO has diligently maintained a disclosure policy of potential conflicts of interests (Col). The conflict of interest declaration is based on a form used by the International Committee of Medical Journal Editors (ICMJE). The Col statement is not only stored at the ECCO Office and the editorial office of JCC but also open to public scrutiny on the ECCO website (<https://www.ecco-ibd.eu/about-ecco/ecco-disclosures.html>) providing a comprehensive overview of potential conflicts of interest of authors.

References

1. O'Connor, M., P. Bager, J. Duncan, et al., *N-ECCO Consensus statements on the European nursing roles in caring for patients with Crohn's disease or ulcerative colitis*. *J Crohns Colitis*, 2013. **7**(9): p. 744-64.
2. O'Connor, M., J. Gaarenstroom, K. Kemp, et al., *N-ECCO survey results of nursing practice in caring for patients with Crohn's disease or ulcerative colitis in Europe*. *Journal of Crohn's and Colitis*, 2014. **8**(10): p. 1300-1307.
3. Meshkat B, S. Cowman, G. Gethin, et al., *Using an e-Delphi technique in achieving consensus across disciplines for developing best practice in day surgery in Ireland*. *Journal of Hospital Administration*, 2014. **3**(4): p. 1-8.
4. Murphy, M., Black NA, Lamping DL, et al., *Consensus development methods, and their use in clinical guideline development*, in *Health Technol Assess*. 1998. p. i-88.
5. Graefe, A. and J. Armstrong, *Comparing face-to-face meetings, nominal groups, Delphi and*

prediction markets on an estimation task. Int J Forecasting., 2016. **27**(1): p. 183-95.

6. Molodecky, N., I. Soon, D. Rabi, et al., *Increasing influence and prevalence of the inflammatory bowel diseases with time, based on systematic review.* Gastroenterology, 2012. **142**(1): p. 46-54.
7. Ng, S.C., H.Y. Shi, N. Hamidi, et al., *Worldwide incidence and prevalence of inflammatory bowel disease in the 21st century: a systematic review of population-based studies.* The Lancet, 2017.
8. Maaser, C., E. Langholz, H. Gordon, et al., *European Crohn's and Colitis Organisation Topical Review on environmental factors in inflammatory bowel disease.* Journal of Crohn's & Colitis, 2016. **[Published online Dec. 21]**.
9. Taleban, S., J.F. Colombel, M.J. Mohler, et al., *Inflammatory bowel disease and the elderly: a review.* Journal of Crohn's & Colitis, 2015. **9**(6): p. 507-515.
10. Ruemmele, F.M., J.S. Hyams, A. Otley, et al., *Outcome measures for clinical trials in paediatric IBD: an evidence-based, expert-driven practical statement paper of the paediatric ECCO committee.* Gut, 2015. **64**(3): p. 438-446.
11. Magro, F., P. Gionchetti, R. Eliakim, et al., *Third European Evidence-Based Consensus on Diagnosis and Management of Ulcerative Colitis. Part 1: Definitions, diagnosis, extra-intestinal manifestations, pregnancy, cancer surveillance, surgery, and ileo-anal pouch disorders.* Journal of Crohn's and Colitis, 2017. **Epub ahead of print.**
12. Harbord, M., R. Eliakim, D. Bettenworth, et al., *Third European Evidence-based Consensus on Diagnosis and Management of Ulcerative Colitis. Part 2: Current Management.* Journal of Crohn's & Colitis, 2017: p. Pages 1-24.
13. Gomollón, F., A. Dignass, V. Annese, et al., *3rd European Evidence-based Consensus on the Diagnosis and Management of Crohn's Disease 2016: Part 1: Diagnosis and Medical Management.* Journal of Crohn's and Colitis, 2017. **11**(1): p. 3-25.
14. Gionchetti, P., A. Dignass, S. Danese, et al., *3rd European Evidence-based Consensus on the Diagnosis and Management of Crohn's Disease 2016: Part 2: Surgical Management and Special Situations.* Journal of Crohn's & Colitis, 2016. **Advance access publication:** p. 135-49.
15. Harbord, M., V. Annese, S.R. Vavricka, et al., *The First European Evidence-based Consensus on Extra-intestinal Manifestations in Inflammatory Bowel Disease.* Journal of Crohn's and Colitis, 2016. **10**(3): p. 239-254.
16. Annese, V., L. Beaugerie, L. Egan, et al., *European Evidence-based Consensus: Inflammatory Bowel Disease and Malignancies.* Journal of Crohn's & Colitis, 2015. **9**(11): p. 945-965.
17. Burri, E. and C. Beglinger, *Faecal calprotectin – a useful tool in the management of inflammatory bowel disease.* Swiss Med Wkly, 2012. **142**(w13557).

18. Kaplan, G.G., C.H. Seow, S. Ghosh, et al., *Decreasing colostomy rates for ulcerative colitis: a population-based time trend study*. American Journal of Gastroenterology, 2012. **107**: p. 1879-1887.
19. Frolkis, A.D., J. Dykeman, M.E. Negrón, et al., *Risk of surgery for inflammatory bowel diseases has decreased over time: a systematic review and meta-analysis of population-based studies*. Gastroenterology, 2013. **145**(5): p. 996-1006.
20. Gionchetti, P., A. Dignass, S. Danese, et al., *3rd European Evidence-based Consensus on the Diagnosis and Management of Crohn's Disease 2016: Part 2: Surgical Management and Special Situations*. Journal of Crohn's & Colitis, 2016. **Advance Access publication**: p. 135-149.
21. Øresland, T., W.A. Bemelman, G.M. Sampietro, et al., *European evidence based consensus on surgery for ulcerative colitis*. Journal of Crohn's and Colitis, 2015. **9**(1): p. 4-25.
22. Ardizzone, S., P. Sarzi Puttini, A. Cassinotti, et al., *Extraintestinal manifestations of inflammatory bowel disease*. Digestive and Liver Disease, 2008. **40S**: p. S253-S259.
23. Drossman, D., D. Patrick, C. Mitchell, et al., *Health related quality of life in inflammatory bowel disease: functional status and patient worries and concerns*. Dig Dis Sci, 1989. **34**(9): p. 1379-1386.
24. Jelsness-Jorgensen, L.P., B. Moum and T. Bernklev, *Worries and concerns among inflammatory bowel disease patients followed prospectively over one year*. Gastroenterol Res Pract, 2011. **2011**.
25. Moser, G., W. Tillinger and G. Sachs, *Disease related worries and concerns: a study on outpatients with inflammatory bowel disease*. European Journal of Gastroenterology & Hepatology, 1995. **7**: p. 5.
26. Stjernman, H., C. Tysk, S. Almer, et al., *Worries and concerns in a large unselected cohort of patients with Crohn's disease*. Scandinavian Journal of Gastroenterology, 2010. **45**(6): p. 696-706.
27. Norton, C., *Faecal incontinence in adults 2: treatment and management*. British Journal of Nursing, 1997. **6**(1): p. 23-26.
28. Dibley, L., W. Czuber-Dochan, J. Duncan, et al., *NO002 Decision-making about emergency and planned stoma surgery for IBD: a qualitative exploration of patient and clinician perspectives 2017*. Journal of Crohn's and Colitis, 2017. **11**(Suppl.1): p. S487-S489.
29. Dibley, L., W. Czuber-Dochan, T. Wade, et al., *Patient decision-making about emergency and planned stoma surgery for IBD: a qualitative exploration of patient and clinician perspectives*. Inflammatory Bowel Diseases, 2017. **Accepted: in press. DOI: 10.1093/ibd/izx043**.
30. Lonnfors, S., S. Vermiere, M. Greco, et al., *IBD and health-related quality of life -- discovering the true impact*. Journal of Crohn's & Colitis, 2014. **8**(10): p. 1281-1286.

31. Kemp, K., J. Griffiths and K. Lovell, *Understanding the health and social care needs of people living with IBD: a meta-synthesis of the evidence*. World Journal of Gastroenterology, 2012. **18**(43): p. 6240-6249.
32. Centre for Drug, E. and Research, *Guidance for industry. patient reported outcome measures: use in medical product development to support labeling claims*. 2009.
33. Bojic, D., K. Bodger and S. Travis, *Patient Reported Outcome Measures (PROMs) in Inflammatory Bowel Disease: New Data*. Journal of Crohn's & Colitis, 2016. **Epub ahead of print**.
34. Wilburn, J., S.P. McKenna, J. Twiss, et al., *Assessing quality of life in Crohn's disease: development and validation of the Crohn's Life Impact Questionnaire (CLIQ)*. Quality of Life Research, 2015. **24**(9): p. 2279-2288.
35. Hommes, D., J.-F. Colombel, P. Emery, et al., *Changing Crohn's disease management: Need for new goals and indices to prevent disability and improve quality of life*. Journal of Crohn's and Colitis, 2012. **6**(Supplement_2): p. S224-S234.
36. Dibley, L. and C. Norton, *Experiences of fecal incontinence in people with inflammatory bowel disease: self-reported experiences among a community sample*. Inflamm Bowel Dis, 2013. **19**: p. 1450-1462.
37. Norton, C., L. Dibley and P. Bassett, *Faecal incontinence in inflammatory bowel disease: associations and effect on quality of life*. Journal of Crohn's & Colitis, 2013. **7**: p. e302-e311.
38. Gonzalez-Ortis, F., N. Bueno-Hernandez and J. Yamamoto-Furosho, *Frequency of fecal incontinence and factors associated with its development in patients with Inflammatory Bowel Disease*. Journal of Crohn's & Colitis, 2015. **9**(Suppl.1): p. S143.
39. Subasinghe, D., M. Navarathna and D. Samarasekera, *Faecal incontinence and health related quality of life in inflammatory bowel disease patients: Findings from a tertiary care center in South Asia*. World Journal of Gastrointestinal Pharmacology and Therapeutics, 2016. **7**(3): p. 447-452.
40. Neuendorf, R., A. Harding, N. Stello, et al., *Depression and anxiety in patients with Inflammatory Bowel Disease: a systematic review*. Journal of Psychosomatic Research, 2016. **87**: p. 70-80.
41. Devlen, J., K. Beusterien, L. Yen, et al., *The Burden of Inflammatory Bowel Disease: A Patient-Reported Qualitative Analysis and Development of a Conceptual Model*. Inflammatory Bowel Diseases, 2014. **20**(3): p. 545-552.
42. Pittet, V., C. Vaucher, F. Froehlich, et al., *Patient self-reported concerns in inflammatory bowel diseases: a gender-specific subjective quality of life indicator*. PLoS One, 2017. **12**(2): p. e0171864.

43. Keeton, R.L., A.A. Mikocka-Walus and J. Andrews, *Concerns and worries in people living with inflammatory bowel disease (IBD): A mixed methods study*. Journal of Psychosomatic Research, 2015. **78**(6): p. 573-578.
44. Wilburn, J., J. Twiss, K. Kemp, et al., *A qualitative study of the impact of Crohn's disease from a patient's perspective*. Frontline Gastroenterology, 2017. **8**(1): p. 68-73.
45. Taft, T. and L. Keefer, *A systematic review of disease-related stigmatization in patients living with inflammatory bowel disease*. Clinical and Experimental Gastroenterology, 2016. **9**: p. 49-58.
46. Belling, R., L. Woods and S. McLaren, *Stakeholder perceptions of specialist inflammatory bowel disease nurses' role and personal attributes*. International Journal of Nursing Practice, 2008. **14**(1): p. 67-73.
47. Alexakis, C., A. Nash, M. Lloyd, et al., *Inflammatory bowel disease in young patients: challenges faced by black and minority ethnic communities in the UK*. Health and Social Care in the Community, 2015. **23**(6): p. 665-672.
48. Zhang, C.K., J. Hewett, J. Hemming, et al., *The influence of depression on quality of life in patients with inflammatory bowel disease*. Inflamm Bowel Dis, 2013. **19**(8): p. 1732-1739.
49. Taft, T., L. Keefer, C. Artz, et al., *Perceptions of illness stigma in patients with inflammatory bowel disease and irritable bowel syndrome*. Quality of Life Research, 2011. **20**: p. 1391-1399.
50. Dibley, L., C. Norton and E. Mason-Whitehead. *Stigma in inflammatory bowel disease: a hermeneutic phenomenological study*. in *10th Congress of ECCO*. 2015.
51. Czuber-Dochan, W., L.B. Dibley, H. Terry, et al., *The experience of fatigue in people with inflammatory bowel disease: an exploratory study*. J Adv Nurs, 2013. **69**(9): p. 1987-99.
52. Brooks, A.J., G. Rowse, A. Ryder, et al., *Systematic review: psychological morbidity in young people with inflammatory bowel disease – risk factors and impacts*. Alimentary Pharmacology & Therapeutics, 2016. **44**(1): p. 3-15.
53. Bennebroek-Evertsz, F., N.A. Thijssens, P.C. Stokkers, et al., *Do Inflammatory Bowel Disease patients with anxiety and depressive symptoms receive the care they need?* Journal of Crohn's & Colitis, 2012. **6**(1): p. 68-76.
54. Alarhayem, A., E. Achebe and A.J. Logue, *Psychosocial Support of the Inflammatory Bowel Disease Patient*. Surgical Clinics of North America, 2015. **95**(5): p. 1281-1293.
55. Zigmond, A. and R.P. Snaith, *The Hospital Anxiety & Depression Scale*. Acta Psychiatrica Scandinavia, 1983. **67**: p. 361-370.

56. Graff, L., J. Walker, I. Clara, et al., *Stress Coping, Distress, and Health Perceptions in Inflammatory Bowel Disease and Community Controls*. American Journal of Gastroenterology, 2009. **104**(12): p. 2959-2969.
57. Graff, L.A., J.R. Walker and C.N. Bernstein, *Depression and anxiety in inflammatory bowel disease: a review of comorbidity and management*. Inflamm Bowel Dis, 2009. **15**: p. 1105-1118.
58. Neilson, K., M. Ftanou, K. Monshat, et al., *A Controlled Study of a Group Mindfulness Intervention for Individuals Living With Inflammatory Bowel Disease*. Inflammatory Bowel Disease, 2016. **22**(3): p. 694-701.
59. Berrill, J.W., M. Sadlier, K. Hood, et al., *Mindfulness-based therapy for inflammatory bowel disease patients with functional abdominal symptoms or high perceived stress levels*. Journal of Crohn's & Colitis, 2014. **8**(9): p. 945-955.
60. Woodward, S., L. Dibley, S. Coombes, et al., *Identifying disease-specific distress in patients with inflammatory bowel disease*. British Journal of Nursing, 2016. **25**(12): p. 3-13.
61. Dibley, L., W. Czuber-Dochan, S. Woodward, et al., *Distress in inflammatory bowel disease: development of a new assessment tool*. Journal of Crohn's and Colitis, 2016. **10**(Suppl.1): p. S241.
62. Dubinsky, M., *Sexual dysfunction in inflammatory bowel disease*. American Journal of Gastroenterology, 2007. **102**: p. S65-S67.
63. Dibley, L., E. Williams, P. Young, et al., *Kinship stigma in community-dwelling people with inflammatory bowel disease: family acknowledgement matters*. Journal of Crohn's and Colitis, 2017. **11**(Suppl.1): p. S490-S491.
64. Hashash, J.G., R. Sigal, P. Wein-Levy, et al., *Inflammatory Bowel Disease (IBD) Connect: A Novel Volunteer Program for Hospitalized Patients with IBD and Their Families*. Inflamm Bowel Dis, 2016. **22**(11): p. 2748-2753.
65. Bottomley, A., *Cancer support groups: are they effective?* European Journal of Cancer Care, 1997. **6**: p. 11-17.
66. Butterfield, J., *Collins English Dictionary: complete and unabridged*, L.S. Knight, Editor. 2003, HarperCollins: Glasgow.
67. Teasdale, K., *Advocacy in healthcare*. 1999, Malden, MA: Blackwell Science.
68. MacDonald, H., *Relational ethics and advocacy in nursing: literature review*. Journal of Advanced Nursing, 2007. **57**(2): p. 119-126.
69. Mallik, M., *Advocacy in nursing - a review of the literature*. Journal of Advanced Nursing, 1997. **25**: p. 130-138.

70. Snowball, J., *Asking nurses about advocating for aptients: 'reactive' and 'proactive' accounts*. Journal of Advanced Nursing, 1996. **24**(1): p. 67-75.
71. McCabe, C., *Nurse-patient communication: an exploration of patients' experiences*. Issues in Clinical Nursing, 2004. **13**(1): p. 41-49.
72. Wysong, P.R. and E. Driver, *Patients' perceptions of nurses' skill*. Critical Care Nurse, 2009. **29**(4): p. 24-37.
73. Leach, P., M. De Silva, R. Mountifield, et al., *The effect of an inflammatory bowel disease nurse position on service delivery*. Journal of Crohn's & Colitis, 2014. **8**(5): p. 370-374.
74. Nice, *NICE guidance: Inflammatory bowel disease - quality standard [QS81]*. 2015.
75. Belcher, M. and L.K. Jones, *Graduate nurses' experiences of developing trust in the nurse-patient relationship*. Contemporary Nurse, 2009. **31**(2): p. 142-152.
76. Koch, T., P. Jenkins and D. Kralik, *Chronic illness self-management: locating the 'self'*. Journal of Advanced Nursing, 2004. **48**(5): p. 484-492.
77. Kralik, D., K. Price and K. Telford, *The meaning of self-care for people with chronic illness*. Journal of Nursing & Healthcare of Chronic Illness, 2010. **2**(3): p. 197-204.
78. Shattel, M., *Nurse-patient interaction: a review of the literature*. Journal of Clinical Nursing, 2004. **13**(6): p. 714-722.
79. Bernstein, K.I., S. Promislow, R. Carr, et al., *Information needs and preferences of recently diagnosed patients with inflammatory bowel disease*. Inflammatory Bowel Disease, 2011. **17**(2): p. 590-598.
80. Pittet, V., C. Vaucher, M.H. Maillard, et al., *Information Needs and Concerns of Patients with Inflammatory Bowel Disease: What Can We Learn from Participants in a Bilingual Clinical Cohort?* PLoS One, 2016. **11**(3): p. e0150620.
81. Bradshaw, A., *Defining competency in nursing (Part 1): a policy review*. Journal of Clinical Nursing, 1997. **6**(5): p. 347-354.
82. Husain, A. and G. Triadafilopoulos, *Communicating with patients with inflammatory bowel disease*. Inflammatory Bowel Diseases, 2004. **10**(4): p. 444-50; discussion 451.
83. Giske, T. and B. Artinian, *Patterns of 'balancing between hope and despair' in the diagnostic phase: a grounded theory study of patients on a gastroenterology ward*. Journal of Advanced Nursing, 2008. **62**(1): p. 22-31.
84. Bernard, A., M. Langille, S. Hughes, et al., *A systematic review of patient inflammatory bowel disease information resources on the world-wide web*. American Journal of Gastroenterology, 2007. **102**: p. 2070-2077.

85. Politi, P., P. Bodini, M.G. Mortilla, et al., *Communication of information to patients with inflammatory bowel disease: a European collaborative study in a multinational prospective inception cohort*. Journal of Crohn's & Colitis, 2008. **2**(3): p. 226-32.
86. Linn, A.J., L. van Dijk, E.G. Smit, et al., *May you never forget what is worth remembering: the relation between recall of medical information and medication adherence in patients with inflammatory bowel disease*. Journal of Crohn's & Colitis, 2013. **7**(11): p. e543-e550.
87. Khan, S., F. Dasrath, S. Farghaly, et al., *Unmet Communication and Information Needs for Patients with IBD: Implications for Mobile Health Technology*. British Journal of Medicine and Medical Research, 2016. **12**(3): p. pii: 12119.
88. Panés, J., M. O'Connor, L. Peyrin-Biroulet, et al., *Improving quality of care in inflammatory bowel disease: What changes can be made today?* Journal of Crohn's and Colitis, 2014. **8**(9): p. 919-926.
89. Jelsness-Jørgensen, L.-P., T. Bernklev, Ø. Hovde, et al., *Patients' perceptions of quality of care and follow-up in inflammatory bowel disease*. Scandinavian Journal of Gastroenterology, 2016. **51**(4): p. 434-441.
90. Morar, P.S., N. Sevdalis, J. Warusavitarne, et al., *Establishing the aims, format and function for multidisciplinary team-driven care within an inflammatory bowel disease service: a multicentre qualitative specialist-based consensus study*. Frontline Gastroenterology, 2017.
91. Casellas, F., I. Vera, D. Ginard, et al., *Inflammatory bowel disease patient's satisfaction with healthcare services received. Physicians' and nurses' perceptions*. Revista Espanola de Enfermedades Digestivas, 2013. **105**(7): p. 385-391.
92. Lesnovska, K.P., G. Hollman Frisman, H. Hjortswang, et al., *Health care as perceived by persons with inflammatory bowel disease – a focus group study*. Journal of Clinical Nursing, 2017: p. n/a-n/a.
93. Wong-Rieger, D., *Moving from Patient Advocacy to Partnership: A Long and Bumpy Road*. Patient, 2017. [Epub ahead of print].
94. Baars, J., . Markus T, Kuipers EJ, van der Woude CJ., *Patients' preferences regarding shared decision making in the treatment of inflammatory bowel disease: results from a patient empowerment study*. Digestion, 2010. **81**: p. 113-119.
95. Siegel, C.A., J. Lofland, A. Naim, et al., *Gastroenterologists' Views of Shared Decision Making for Patients with Inflammatory Bowel Disease*. Digestive Diseases and Sciences, 2015. **60**(9): p. 2636-2645.
96. Marzo, M., C. Felice, D. Pugliese, et al., *Management of perianal fistulas in Crohn's disease: an up-to-date review*. World Journal of Gastroenterology, 2015. **21**(5): p. 1394-1403.
97. Kamrava, A. and N.N. Mahmoud, *Prevention and management of nonhealing perineal wounds*. Clinics in Colon and Rectal Surgery, 2013. **26**(2): p. 106-111.

98. Maconi, G., D. Gridavilla, C. Vigano, et al., *Perianal disease is associated with psychiatric co-morbidity in Crohn's disease in remission*. International Journal of Colorectal Disease, 2014. **29**(10): p. 1285-1290.
99. Gecse, K.B., W.A. Bemelman, M.A. Kamm, et al., *A global consensus on the classification, diagnosis and multidisciplinary treatment of perianal fistulising Crohn's Disease*. Gut, 2014. **63**: p. 1381-1392.
100. Fichera, A. and M. Zoccali, *Guidelines for the surgical treatment of Crohn's perianal fistulas*. Inflamm Bowel Dis, 2015. **21**(4): p. 753-758.
101. de Groof, E.J., S. Sahami, C. Lucas, et al., *Treatment of perianal fistula in Crohn's disease: a systematic review and meta-analysis comparing seton drainage and anti-tumour necrosis factor treatment*. Colorectal Disease, 2016. **18**(7): p. 667-675.
102. Amiot, A., V. Setakhr, P. Seksik, et al., *Long-term outcome of enterocutaneous fistula in patients with Crohn's disease treated with anti-TNF therapy: a cohort study from the GETAID*. American Journal of Gastroenterology, 2014. **109**(9): p. 1443-1449.
103. Burch, J., *The management of enterocutaneous fistulae in inflammatory bowel disease*. Gastrointestinal Nursing, 2011. **9**(2): p. 18-22.
104. Schwartz, D.A., L.J. Ghazi, M. Regueiro, et al., *Guidelines for the multidisciplinary management of Crohn's perianal fistulas: summary statement*. Inflamm Bowel Dis, 2015. **21**(4): p. 723-730.
105. Burch, J., *Caring for stomas and fistulae*, in *Inflammatory Bowel Disease Nursing*, K. Whayman, J. Duncan, and M. O'Connor, Editors. 2011, Quay Books: London.
106. Ruemmele, F.M., *Role of Diet in Inflammatory Bowel Disease*. Annals of Nutrition and Metabolism, 2016. **68**(Suppl.1): p. 33-41.
107. Dixon, L.J., A. Kabi, K.P. Nickerson, et al., *Combinatorial Effects of Diet and Genetics on Inflammatory Bowel Disease Pathogenesis*. Inflamm Bowel Dis, 2017. **21**: p. 912-922.
108. Shah, N.D., A.M. Parian, G.E. Mullin, et al., *Oral diets and nutrition support for inflammatory bowel disease: what is the evidence?* Nutrition in Clinical Practice, 2015. **30**(4): p. 462-473.
109. Limdi, J.K., D. Aggarwal and J.T. McLaughlin, *Dietary Practices and Beliefs in Patients with Inflammatory Bowel Disease*. Inflamm Bowel Dis, 2016. **22**(164): p. 170.
110. Vidarsdottir, J.B., S.E. Johannsdottir, I. Thorsdottir, et al., *A cross-sectional study on nutrient intake and -status in inflammatory bowel disease patients*. Nutrition Journal, 2016. **15**: p. 61-66 pages.
111. Vernia, P., P. Loizos, I. Di Giuseppeantonio, et al., *Dietary calcium intake in patients with inflammatory bowel disease*. Journal of Crohn's and Colitis, 2014. **8**: p. 312-317.

112. Hou, J.K., D. Lee and J. Lewis, *Diet and Inflammatory Bowel Disease: Review of Patient-Targeted Recommendations*. *Clinical Gastroenterology and Hepatology*, 2014. **12**: p. 1592-1600.
113. Durchschein, F., W. Petritsch and H.F. Hammer, *Diet therapy for inflammatory bowel diseases: the established and the new* *World Journal of Gastroenterology*, 2016. **22**(7): p. 2179-2194.
114. Cope, G., *Overview of dietary choices for ulcerative colitis and Crohn's disease*. *Gastrointestinal Nursing*, 2015. **13**(1): p. 35-41.
115. Charlebois, A., G. Rosenfeld and B. Bressler, *The Impact of Dietary Interventions on the Symptoms of Inflammatory Bowel Disease: A Systematic Review*. *Critical Reviews in Food Science and Nutrition*, 2016. **56**(8): p. 1370-1378.
116. Hartman, C., L. Marderfeld, K. Davidson, et al., *Food Intake Adequacy in Children and Adolescents With Inflammatory Bowel Disease*. *Journal of Pediatric Gastroenterology & Nutrition*, 2016. **63**: p. 437-444.
117. Gasparetto, M. and G. Guariso, *Crohn's disease and growth deficiency in children and adolescents* *World Journal of Gastroenterology*, 2014. **20**(37): p. 13219-13233.
118. Penagini, F., D. Dilillo, B. Borsani, et al., *Nutrition in Pediatric Inflammatory Bowel Disease: From Etiology to Treatment. A Systematic Review* *Nutrients*, 2016. **8**(334): p. 27 pages.
119. Konno, M., M. Takahashi, N. Toita, et al., *Long-term therapeutic effectiveness of maintenance enteral nutrition for Crohn's disease* *Pediatrics International*, 2015. **57**: p. 276-280.
120. Eiden, K.A., *Nutritional considerations in inflammatory bowel disease*. *Practical Gastroenterology*, 2003. **5**: p. 33-54.
121. Vagianos, K., S. Bector, J. McConnell, et al., *Nutrition assessment of patients with inflammatory bowel disease*. *Journal of Parenteral and Enteral Nutrition*, 2007. **31**: p. 311-319.
122. Reich, J.S., F.A. Farraye and S.K. Wasan, *Preventative Care in the Patient with Inflammatory Bowel Disease: What Is New?* *Digestive Diseases and Sciences*, 2016. **61**(8): p. 2205-2216.
123. Fletcher, J., *Vitamin D deficiency in patients with inflammatory bowel disease*. *British Journal of Nursing*, 2016. **25**(15): p. 846-851.
124. Toriki, M., A. Gholamrezaei, L. Mirbagher, et al., *Vitamin D deficiency associated with disease activity in patients with inflammatory bowel disease*. *Digestive Diseases and Sciences*, 2015. **60**: p. 3085-3091.

125. Reich, K.M., R.N. Fedorak, K. Madsen, et al., *Vitamin D improves inflammatory bowel disease outcomes: Basic science and clinical review* World Journal of Gastroenterology, 2014. **20**(17): p. 4934-4947.
126. Rossi, R.E., T. Whyand, C.D. Murray, et al., *The role of dietary supplements in inflammatory bowel disease: a systematic review*. European Journal of Gastroenterology & Hepatology, 2016. **28**: p. 1357-1364.
127. Jørgensen, S.P., J. Agnholt, H. Glerup, et al., *Clinical trial: vitamin D3 treatment in Crohn's disease – a randomized double-blind placebo-controlled study*. Alimentary Pharmacology & Therapeutics, 2010. **32**(3): p. 377-383.
128. Battat, R., U. Kopylov, A. Szilagyi, et al., *Vitamin B12 Deficiency in Inflammatory Bowel Disease: Prevalence, Risk Factors, Evaluation, and Management*. Inflamm Bowel Dis, 2017. **20**: p. 1120-1128.
129. Nousiainen, P., L. Merras-Salmio, K. Aalto, et al., *Complementary and alternative medicine use in adolescents with inflammatory bowel disease and juvenile idiopathic arthritis* BMC Complementary and Alternative Medicine, 2014. **14**: p. 124-16 pages.
130. Saez-Lara, M.J., C. Gomez-Llorente, J. Plaza-Diaz, et al., *The role of probiotic lactic acid bacteria and bifidobacteria in the prevention and treatment of inflammatory bowel disease and other related disease: a systematic review of randomized human clinical trials*. Biomed Research International, 2015. **2015**(Article ID:505878): p. 15 pages.
131. Lev-Tzion, R., A.M. Griffiths, O. Ledder, et al., *Omega 3 fatty acids (fish oil) for maintenance of remission in Crohn's disease* Cochrane Database of Systematic Reviews, 2014(2): p. Art. No: CD006320.
132. Cheifitz, A., R. Gianotti, R. Lubner, et al., *Complementary and Alternative Medicines Used by Patients With Inflammatory Bowel Diseases*. Gastroenterology, 2017. **152**: p. 415-429.
133. Akobeng, A.K., M. Elawad and M. Gordon, *Glutamine for induction of remission in Crohn's disease*. Cochrane Database of Systematic Reviews, 2016(2): p. Art.No:CD007348.
134. Triantafyllidi, A., T. Xanthos, A. Papalois, et al., *Herbal and plant therapy in patients with inflammatory bowel disease*. Annals of Gastroenterology : Quarterly Publication of the Hellenic Society of Gastroenterology, 2015. **28**(2): p. 210-220.
135. Triantafyllidis, J.K., A. Triantafyllidi, C. Vagianos, et al., *Favorable results from the use of herbal and plant products in inflammatory bowel disease: evidence from experimental animal studies*. Annals of Gastroenterology : Quarterly Publication of the Hellenic Society of Gastroenterology, 2016. **29**(3): p. 268-281.
136. Prince, A., C.E. Myers, T. Joyce, et al., *Fermentable Carbohydrate Restriction (Low FODMAP Diet) in Clinical Practice Improves Functional Gastrointestinal Symptoms in Patients with Inflammatory Bowel Disease*. Inflamm Bowel Dis, 2016. **22**: p. 1129-1136.

137. Maagaard, L., D.V. Ankersen, Z. V,gh, et al., *Follow-up of patients with functional bowel symptoms treated with a low FODMAP diet* World Journal of Gastroenterology, 2016. **22**(15): p. 4009-4019.
138. Van Assche, G., A. Dignass, J. Panes, et al., *The second European evidence-based Consensus on the diagnosis and management of Crohn's disease: Definitions and diagnosis*. Vol. 4. 2010. 7-27.
139. Triantafillidis, J.K., C. Vagianos and A.E. Papalois, *The role of enteral nutrition in patients with inflammatory bowel disease: current aspects*. Biomed Research International, 2015. **2015**(Article ID:197167): p. 12 pages.
140. Ruemmele, F.M., G. Veres, K.L. Kolho, et al., *Consensus guidelines of ECCO/ESPGHAN on the medical management of pediatric Crohn's disease*. Journal of Crohn's and Colitis, 2014. **8**: p. 1179-1207.
141. Altomare, R., G. Damiano, A. Abruzzo, et al., *Enteral Nutrition Support to Treat Malnutrition in Inflammatory Bowel Disease* Nutrients, 2015. **7**: p. 2125-2133.
142. Hu, D., J. Ren, G. Wang, et al., *Exclusive Enteral Nutritional Therapy Can Relieve Inflammatory Bowel Stricture in Crohn's Disease*. Journal of Clinical Gastroenterology, 2014. **48**: p. 790-795.
143. Li, G., J. Ren, G. Wang, et al., *Preoperative exclusive enteral nutrition reduces the postoperative septic complications of fistulizing Crohn's disease*. European Journal of Clinical Nutrition, 2014. **68**: p. 441-446.
144. Li, Y., L. Zuo, W. Zhu, et al., *Role of Exclusive Enteral Nutrition in the Preoperative Optimization of Patients With Crohn's Disease Following Immunosuppressive Therapy*. Medicine, 2015. **94**(5): p. 1-9.
145. Keogh, A., *Faecal Incontinence in inflammatory bowel disease and its association with anxiety and depression in an Irish tertiary centre*. Journal of Crohn's & Colitis, 2016. **10**(Suppl.1): p. S496.
146. Flor, L., M. Minguez, J. Tosca, et al., *Fecal Incontinence (FI) in patients with inflammatory bowel disease (IBD). Probably as important as prevalent*. Gastroenterology, 2014. **146**(5 (Suppl.1)): p. S-207.
147. Ong, J.P.L., G.J. Edwards and M.C. Allison, *Mode of delivery and risk of fecal incontinence in women with or without inflammatory bowel disease: questionnaire survey*. Inflammatory Bowel Disease, 2007. **13**: p. 1391-1394.
148. Ramage, L., S. Qui, P. Georgiou, et al., *Functional outcomes following ileal pouch-anal anastomosis (IPAA) in older patients: a systematic review*. International Journal of Colorectal Disease, 2016. **31**: p. 481-492.

149. Duncan, J., G. Sebeos-Rogers, O. Poole-Wilson, et al., *Faecal Incontinence in Inflammatory Bowel Disease: we don't ask and they don't tell*. Gut, 2013. **62**(Suppl.1): p. A79-A80.
150. Taft, T., S. Ballou and L. Keefer, *A preliminary evaluation of internalized stigma and stigma resistance in inflammatory bowel disease*. Journal of Health Psychology, 2013. **18**(4): p. 451-460.
151. Norton, C. and L.B. Dibley, *Help-seeking for faecal incontinence in people with inflammatory bowel disease*. Journal of Wound, Ostomy, and Continence Nursing, 2013. **40**(6): p. 631-638.
152. Dibley, L., C. Norton, N. Cotterill, et al., *Development and initial validation of a disease-specific bowel continence questionnaire for inflammatory bowel disease patients: the ICIQ-IBD*. European Journal of Gastroenterology & Hepatology, 2016. **28**: p. 233-239.
153. Lewis, S.J. and K.W. Heaton, *Stool form scale as a useful guide to intestinal transit time*. Scandinavian Journal of Gastroenterology, 1997. **32**(9): p. 920-924.
154. Vitton, V., H. Damon, S. Roman, et al., *Transcutaneous posterior tibial nerve stimulation for fecal incontinence in inflammatory bowel disease: a therapeutic option?* Inflamm Bowel Dis, 2009. **15**(3): p. 402-405.
155. Butcher, L., *Clinical skills: nursing considerations in patients with faecal incontinence*. British Journal of Nursing, 2004. **13**: p. 760-767.
156. Sanders, J.N., L.M. Gawron and S. Friedman, *Sexual satisfaction and inflammatory bowel diseases: an interdisciplinary clinical challenge*. American Journal of Obstetrics & Gynecology, 2016. **215**(1): p. 58-62.
157. van der Woude, C.J., S. Ardizzone, M.B. Bengtson, et al., *The Second European Evidence-Based Consensus on Reproduction and Pregnancy in Inflammatory Bowel Disease*. Journal of Crohn's and Colitis, 2015. **9**(2): p. 107-124.
158. Trachter, A.B., A.I. Rogers and S.R. Leiblum, *Inflammatory Bowel Disease in Women: impact on relationship and sexual health*. Inflamm Bowel Dis, 2002. **8**(6): p. 413-421.
159. Timmer, A., A. Bauer, D. Kemptner, et al., *Determinants of male sexual function in inflammatory bowel disease: A survey-based cross-sectional analysis in 280 men*. Inflammatory Bowel Diseases, 2007. **13**(10): p. 1236-1243.
160. Timmer, A., D. Kemptner, A. Bauer, et al., *Determinants of female sexual function in inflammatory bowel disease: a survey-based cross-sectional analysis*. BMC Gastroenterology, 2008. **8**: p. 45.
161. Jedel, S., M.M. Hood and A. Keshavarzian, *Getting personal: a review of sexual functioning, body image, and their impact on quality of life in patients with inflammatory bowel disease*. Inflamm Bowel Dis, 2015. **21**(4): p. 923-938.

162. O'Toole, A., D. Winter and S. Friedman, *Review article: the psychosexual impact of inflammatory bowel disease in male patients*. *Alimentary Pharmacology & Therapeutics*, 2014. **39**: p. 1085-1094.
163. Mantzouranis, G., E. Fafliora, G. Glantzounis, et al., *Inflammatory Bowel Disease and Sexual Function in Male and Female Patients: An Update on Evidence in the Past Ten Years*. *Journal of Crohn's & Colitis*, 2015. **9**(12): p. 1160-1168.
164. Jordan, C., J. Sin, N.T. Fear, et al., *A systematic review of the psychological correlates of adjustment outcomes in adults with inflammatory bowel disease*. *Clinical Psychology Review*, 2016. **47**: p. 28-40.
165. Rosenblatt, E. and S. Kane, *Sex-Specific Issues in Inflammatory Bowel Disease*. *Gastroenterology and Hepatology*, 2015. **11**(9): p. 592-601.
166. Muller, K.R., R. Prosser, P. Bampton, et al., *Female gender and surgery impair relationships, body image and sexuality in inflammatory bowel disease: patient perceptions*. *Inflamm Bowel Dis*, 2010. **16**(4): p. 657-663.
167. Ghazi, L.J., S.A. Patil and R.K. Cross, *Sexual dysfunction in inflammatory bowel disease*. *Inflamm Bowel Dis*, 2015. **21**(4): p. 939-947.
168. Dibble, S., M. Eliason and M. Christiansen, *Chronic illness care for lesbian, gay and bisexual individuals*. *Nursing Clinics of North America*, 2007. **42**(4): p. 655-674.
169. Cant, B., *Exploring the implications for health professionals of men coming out as gay in healthcare settings*. *Health and Social Care in the Community*, 2005. **14**(1): p. 9-16.
170. Wilton, T., *Sexualities in health and social care*. 2000, Buckingham: Open University Press.
171. Dibley, L., C. Norton, J. Schaub, et al., *The experience of gay and lesbian people with inflammatory bowel disease: a mixed methods study* *Gastrointestinal Nursing*, 2014.
172. Bielefeldt, K., B. Davis and D.G. Binion, *Pain and inflammatory bowel disease*. *Inflamm Bowel Dis*, 2009. **15**(5): p. 778-788.
173. Annese, V., A. Latiano, O. Palmieri, et al., *Dissecting genetic predisposition to inflammatory bowel disease: current progress and prospective application*. *Expert Review in Clinical Immunology*, 2007. **3**(3): p. 287-98.
174. Lix, L., Graff, LA. Walker, JR. Clara, I. Rawsthorne, P. Rogala, L. Miller, N. Ediger, J. Pretorius, T. Bernstein, CN., *Longitudinal study of quality of life and psychological functioning for active, fluctuating, and inactive disease patterns in inflammatory bowel disease*. *Inflammatory Bowel Diseases*, 2008. **14**(11): p. 1575-84.
175. Docherty, M.J., R.C. Jones Iii and M.S. Wallace, *Managing pain in inflammatory bowel disease*. *Gastroenterology and Hepatology*, 2011. **7**: p. 592-601.

176. Fuller-Thomson, E., Sulman, J., *Depression and inflammatory bowel disease: findings from two nationally representative Canadian surveys*. Inflammatory bowel disease, 2006. **12**.
177. Farrokhyar, F., J.K. Marshall, B. Easterbrook, et al., *Functional gastrointestinal disorders and mood disorders in patients with inactive inflammatory bowel disease: prevalence and impact on health*. Inflammatory Bowel Disease, 2006. **12**: p. 38-46.
178. Simren, M., J. Axelsson, R. Gillberg, et al., *Quality of life in inflammatory bowel disease in remission: the impact of IBS-like symptoms and associated psychological factors*. American Journal of Gastroenterology, 2002. **97**: p. 389-396.
179. Zeitz J, Ak M, Muller-Mottet S, et al., *Pain in IBD patients; very frequent and frequently insufficiently taken into account*. PLoS One, 2016. **11**(6): p. e0156666.
180. Srinath, A., E. Young and E. Szigethy, *Pain management in patients with inflammatory bowel disease: translational approaches from bench to bedside*. Inflammatory Bowel Disease, 2014. **20**(12): p. 2433-2449.
181. Kaplan, M.A. and B.I. Korelitz, *Narcotic dependence in inflammatory bowel disease*. Journal of Clinical Gastroenterology, 1988. **10**: p. 275-278.
182. Grunkemeier, D.M., J.E. Cassara, C.B. Dalton, et al., *The narcotic bowel syndrome: clinical features, pathophysiology, and management*. Clinical Gastroenterology and Hepatology, 2007. **5**: p. 1126-1139.
183. Lichtenstein, G.R., B.G. Feagan, R.D. Cohen, et al., *Serious infections and mortality in association with therapies for Crohn's disease: TREAT registry*. Clinical Gastroenterology and Hepatology, 2006. **4**(5): p. 621-630.
184. Kurlander, J.E. and D.A. Drossman, *Diagnosis and treatment of narcotic bowel syndrome*. Nature Reviews Gastroenterology and hepatology, 2014. **11**(7): p. 410-418.
185. Iskandar, H.N., B. Cassell, N. Kanuri, et al., *Tricyclic antidepressants for management of residual symptoms in inflammatory bowel disease*. Journal of Clinical Gastroenterology, 2014. **48**(5): p. 423-429.
186. McCormick, M., B. Reed-Knight, J.D. Lewis, et al., *Coping skills for reducing pain and somatic symptoms in adolescents with IBD*. Journal of Clinical Gastroenterology, 2014. **48**(5): p. 423-429.
187. Jelsness-Jørgensen, L., B. Moum, T. Grimstad, et al., *Validity, Reliability, and Responsiveness of the Brief Pain Inventory in Inflammatory Bowel Disease*. Canadian Journal of Gastroenterology, 2016. **56**:24261: p. 10.
188. McCombie, A.M., R.T. Mulder and R.B. Geary, *Psychotherapy for inflammatory bowel disease: a review and update*. Journal of Crohn's & Colitis, 2013. **7**(12): p. 935-949.

189. Mikocka-Walus, A.A., P. Bampton, D.J. Hetzel, et al., *Cognitive-Behavioural Therapy for Inflammatory Bowel Disease: 24-Month Data from a Randomised Controlled Trial*. International Journal of Behavioral Medicine, 2017. **24**(1): p. 127-135.
190. Song, W., L.H. Eaton, D.B. Gordon, et al., *Evaluation of Evidence-based Nursing Pain Management Practice*. Pain Management Nursing, 2015. **16**(4): p. 456-463.
191. Danese, S., G. Fiorino, T. Raine, et al., *ECCO Position Statement on the Use of Biosimilars for Inflammatory Bowel Disease—An Update*. Journal of Crohn's and Colitis, 2017. **11**(1): p. 26-34.
192. Rahier, J.F., F. Magro, C. Abreu, et al., *Second European evidence-based consensus on the prevention, diagnosis and management of opportunistic infections in inflammatory bowel disease*. Journal of Crohn's & Colitis, 2014. **8**(6): p. 443-468.
193. Chebli J, Gaburri P, Cheli L, et al., *A guide to prepare patients with inflammatory bowel diseases for anti TNFa therapy*. Medical Science Monitor, 2014. **20**: p. 487-98.
194. Siegel, C.A., L.C. Levy, T. Mackenzie, et al., *Patient perceptions of the risks and benefits of infliximab for the treatment of inflammatory bowel disease*. Inflamm Bowel Dis, 2008. **14**: p. 1-6.
195. Connell, W., T. Samyue, P.R. Gibson, et al., *Changing face of care for patients with moderate to severe inflammatory bowel disease: the role of specialist nurses in the governance of anti-TNF prescribing*. Internal Medicine Journal, 2015. **45**(11): p. 1161-1166.
196. Siegel, C.A., *Review article: explaining risks of inflammatory bowel disease therapy to patients*. Alimentary Pharmacology & Therapeutics, 2011. **33**: p. 22-32.
197. De Silva, S., S. Devlin and R. Panaccione, *Optimizing the safety of biologic therapy for IBD*. Nature Reviews.Gastroenterology and hepatology, 2010. **7**(2): p. 93-101.
198. ECCO. *Tool kits for therapies in IBD*. 2016 [cited 2018 16 January].
199. IBD Standards Group., *Quality care service standards for the healthcare of people who have inflammatory bowel disease*. 2013: London.
200. National Patient Safety, A., *Promoting safer use of injectable medicines: patient safety alert*. 2007, The National Patient Safety Agency: London.
201. Mason, I., *A vision of the future: celebrating the increasing sphere of influence, in Inflammatory Bowel Disease Nursing*, K. Whayman, G. Duncan, and M. O'Connor, Editors. 2011, Quay Books: London.
202. Royal College of, N., *Assessing, managing and monitoring biologic therapies for inflammatory arthritis: guidance for rheumatology practitioners*. 2009, Royal College of Nursing: London.

203. Stansfield, C., J. Duncan, M. O'Connor, et al., *Developing the role of the clinical nurse specialist in IBD*, in *Inflammatory Bowel Disease Nursing*, K. Whayman, J. Duncan, and M. O'Connor, Editors. 2011, Quay Books: London.
204. Ward, M., *Managing compassionate therapy - the role of the virtual clinic*. *Journal of Gastroenterology and Hepatology*, 2016. **31**(Suppl 1): p. 44-45.
205. Eliadou, E., V. Reid, M. Kirkbride, et al., *PTH-060 Better Care for IBD Biologic Patients: The Impact of A Multi-Disciplinary Virtual Clinic*. *Gut*, 2016. **65**(Suppl 1): p. A248-A249.
206. Abegunde, A.T., B.H. Muhammad and T. Ali, *Preventive health measures in inflammatory bowel disease*. *World Journal of Gastroenterology*, 2016. **22**(34): p. 7625-7644.
207. Harlan, W.R., A. Meyer and J. Fisher, *Inflammatory Bowel Disease: Epidemiology, Evaluation, Treatment, and Health Maintenance*. *North Carolina Medical Journal*, 2016. **77**(3): p. 198-201.
208. Centres for Disease, C. and Prevention, *Immunization Recommendations*. 2017.
209. van Vugt-van Pinxteren, M.W.J. and P. de Jong, *Effect of smoking in patients with Crohn's disease*. *Gastrointestinal Nursing*, 2014. **12**(7): p. 47-54.
210. Manolakis, C.S. and B.D. Cash, *Health Maintenance and Inflammatory Bowel Disease*. *Current Gastroenterology Reports*, 2014. **16**(10): p. 402-404.
211. Piodi, L.P., A. Poloni and F.M. Ulivieri, *Managing osteoporosis in ulcerative colitis*. *World Journal of Gastroenterology*, 2014. **20**(39): p. 14087-14098.
212. Magro, F., L. Peyrin-Biroulet, H. Sokol, et al., *Extra-intestinal malignancies in inflammatory bowel disease: Results of the 3rd ECCO Pathogenesis Scientific Workshop (III)*. *Journal of Crohn's and Colitis*, 2014. **8**(1): p. 31-44.
213. Dezfoli, S. and G.Y. Melmed, *Vaccination issues in patients with inflammatory bowel disease receiving immunosuppression*. *Gastroenterology and Hepatology*, 2012. **8**(8): p. 504-512.
214. Kimmel, J.N., T.H. Taft and L. Keefer, *Inflammatory Bowel Disease and Skin Cancer: An Assessment of Patient Risk Factors, Knowledge, and Skin Practices*. *Journal of Skin Cancer*, 2016. **Article ID: 4632037**: p. 7 pages.
215. Minderhoud, I., B. Oldenburg, P. van Dam, et al., *High prevalence of fatigue in inflammatory bowel disease is not related to adrenocortical insufficiency*. *American Journal of Gastroenterology*, 2003. **98**(5): p. 1088-1093.
216. Piper, B.F., A.M. Lindsey and M.J. Dodd, *Fatigue mechanisms in cancer patients: developing nursing theory*. *Oncology Nursing Forum*, 1987. **14**: p. 17-23.
217. Opheim, R., M.S. Fagermoen, T. Bernklev, et al., *Fatigue interference with daily living among patients with inflammatory bowel disease*. *Quality of Life Research*, 2014. **23**: p. 709-719.

218. Römken, T., van Vugt-van P, M. Nagengast, et al., *High prevalence of fatigue in inflammatory bowel disease: A case control study*. Journal of Crohn's and Colitis, 2011. **5**(4): p. 332-337.
219. Czuber-Dochan, W., J. Armes, E. Ream, et al., *Exploring fatigue in inflammatory bowel disease - a descriptive phenomenological study*. Gut, 2016. **65**(1): p. A154.
220. Czuber-Dochan, W., C. Norton, F. Bredin, et al., *Healthcare professionals' perceptions of fatigue experienced by people with IBD*. Journal of Crohn's and Colitis, 2014. **8**(8): p. 835-844.
221. Kreijne, J., G. Fuhler, C.J. van der Woude, et al., *Common genetic predisposition between fatigue-related syndromes and inflammatory bowel disease: a systematic review*. Journal of Crohn's & Colitis, 2016. **10**(Suppl.1): p. S475-S476.
222. van Langenberg, D.R., P. Della Gatta, S.A. Warmington, et al., *Objectively measured muscle fatigue in Crohn's disease: correlation with self-reported fatigue and associated factors for clinical application*. Journal of Crohn's & Colitis, 2014. **8**: p. 137-146.
223. Gasche, C., M.C. Lomer, I. Cavill, et al., *Iron, anaemia, and inflammatory bowel disease*. Gut, 2004. **53**: p. 1190-1197.
224. Goldenberg, B.A., L.A. Graff, I. Clara, et al., *Is iron deficiency in the absence of anemia associated with fatigue in inflammatory bowel disease?* American Journal of Gastroenterology, 2013. **108**: p. 1392-1397.
225. Bager, P., R. Befrits, O. Wikman, et al., *Fatigue in out-patients with inflammatory bowel disease is common and multifactorial*. Alimentary Pharmacology & Therapeutics, 2012. **35**: p. 133-141.
226. Jelsness-Jorgensen, L.P., T. Bernklev, M. Henriksen, et al., *Chronic fatigue is associated with impaired health-related quality of life in inflammatory bowel disease*. Alimentary Pharmacology & Therapeutics, 2011. **33**: p. 106-114.
227. Bager, P., C. Vestergaard, T. Juul, et al., *Fatigue in IBD must be compared to the background population - generation of normative data for the IBD-F*. Journal of Crohn's & Colitis, 2017. **11**(Suppl.1): p. S488-S499.
228. Banovic, I., D. Gilibert and J. Cosnes, *Crohn's disease and fatigue: constancy and co-variations of activity of the disease, depression, anxiety and subjective quality of life*. Psychology, Health & Medicine, 2010. **15**(4): p. 394-405.
229. Cohen, B., H. Zo%oga, S.A. Shah, et al., *Fatigue is highly associated with poor health-related quality of life, disability and depression in newly-diagnosed patients with inflammatory bowel disease, independent of disease activity*. Alimentary Pharmacology & Therapeutics, 2014. **39**: p. 811-822.

230. van Langenberg, D.R. and P.R. Gibson, *Factors associated with physical and cognitive fatigue in patients with Crohn's disease: a cross-sectional and longitudinal study*. *Inflamm Bowel Dis*, 2014. **20**(1): p. 115-125.
231. Graff, L.A., I. Clara, J.R. Walker, et al., *Changes in fatigue over 2 years are associated with activity of inflammatory bowel disease and psychological factors*. *Clinical Gastroenterology and Hepatology*, 2013. **11**: p. 1140-1146.
232. Huppertz-Hauss, G., M.L. Høivik, L.P. Jelsness-Jørgensen, et al., *Fatigue in a population-based cohort of patients with inflammatory bowel disease 20 years after diagnosis: The IBSEN study*. *Scandinavian Journal of Gastroenterology*, 2017. **52**(3): p. 351-358.
233. Jelsness-Jørgensen, L.P., T. Bernklev and B. Moum, *Fatigue and disease-related worries among inflammatory bowel disease patients in remission: is it a reflection of coexisting IBS-like symptoms? A short report*. *Journal of Psychosomatic Research*, 2012. **73**: p. 469-472.
234. Graff, L.A., N. Vincent, J.R. Walker, et al., *A population-based study of fatigue and sleep difficulties in inflammatory bowel disease*. *Inflammatory Bowel Disease*, 2011. **17**(9): p. 1882-1889.
235. Hashash, J.G., C. Ramos-Rivers, A. Youk, et al., *Quality of sleep and coexistent psychopathology have significant impact on fatigue burden in patients with inflammatory bowel disease*. *Journal of Clinical Gastroenterology*, 2016: p. 8 pages.
236. Grimstad, T., K.B. Norheim, K. Isaksen, et al., *Fatigue in Newly Diagnosed Inflammatory Bowel Disease*. *Journal of Crohn's & Colitis*, 2015. **9**(9): p. 725-730.
237. Grimstad, T., K.B. Norheim, J.T. Kvaløy, et al., *Conventional treatment regimens for ulcerative colitis alleviate fatigue – an observational cohort study*. *Scandinavian Journal of Gastroenterology*, 2016. **51**(10): p. 1213-1219.
238. Kreijne, J., M. Lie, L. Vogelaar, et al., *Practical guideline for fatigue management in inflammatory bowel disease*. *Journal of Crohn's & Colitis*, 2016. **10**(1): p. 105-111.
239. Whayman, K., *Supporting and educating patients*, in *Inflammatory Bowel Disease Nursing*, K. Whayman, J. Duncan, and M. O'Connor, Editors. 2011, Quay Books: London.
240. Artom, M., W. Czuber-Dochan, J. Sturt, et al., *The contribution of clinical and psychosocial factors to fatigue in 182 patients with inflammatory bowel disease*. *Alimentary Pharmacology & Therapeutics*, 2017. **45**: p. 403-416.
241. Artom, M., W. Czuber-Dochan, J. Sturt, et al., *Targets for Health Interventions for Inflammatory Bowel Disease-fatigue*. *J Crohns Colitis*, 2016. **10**(7): p. 860-9.
242. Czuber-Dochan W, A.J.R.E.N.C.A.M., *Exploring fatigue in inflammatory bowel disease - a descriptive phenomenological study*. *Gut*, 2016. **65**(1): p. A154.

243. Beck, A., P. Bager, P.E. Jensen, et al., *How fatigue is experienced and handled by female outpatients with inflammatory bowel disease*. *Gastroenterology Research and Practice*, 2013. **2013**(Article ID 153818): p. 8 pages.
244. International Council of, N., *Nurse Practitioner/Advanced Practice Nurse: Definition and Characteristics*. 2009, Geneva: ICN.
245. Department of Health, C.N.O.D.P.L.T., *Advanced Level Nursing: A Position Statement*. 2010: Department of Health, UK.
246. The Royal College of, N., *Roles descriptors for inflammatory bowel disease nurse specialists - RCN guidance*. 2007, The Royal College of Nursing.
247. Stahl, A.M., D. Nardi and M.A. Lewandowski, *Developing an empirical base for clinical nurse specialist education*. *Clinical nurse specialist CNS*, 2008. **22**(0887-6274; 0887-6274; 3): p. 143-148.
248. Goodyear, R., *ICN International Nurse Practitioner/Advanced Practice Nursing Network Scope of Practice and Standards*. 2005, International Nurse Practitioner/Advanced Practice Nursing Network.
249. Bell, L. and A. Duffy, *A concept analysis of nurse-patient trust*. *Br J Nurs*, 2009. **18**: p. 46-51.
250. Royal College, o.N., *Advanced nurse practitioners - an RCN guide to advanced nursing practice, advanced nurse practitioners and programme accreditation*. 2012, The Royal College of Nursing: London.
251. Ball, J., *Maxi nurses: advanced and specialist roles*. 2005, Royal College of Nursing: London.
252. Leary, A. and S. Oliver, *Clinical nurse specialists: adding value to care*. 2010, Royal College of Nursing Rheumatology Forum.
253. Thompson, C.J. and P. Nelson-Marten, *Clinical nurse specialist education: actualizing the systems leadership competency*. *Clin Nurse Spec*, 2011. **25**: p. 133-139.
254. Royal College of Nursing, L., *Advanced nurse practitioner - an RCN guide to the advanced practitioner role, competencies and programme accreditation*. 2010, Royal College of Nursing: London.
255. Hicks, C., *The shortfall in published research: a study of nurses' research and publication activities*. *J Adv Nurs*, 1995. **21**: p. 594-604.
256. Large, S., A. Macleod, G. Cunningham, et al., *A multiple-case study evaluation of the RCN Clinical Leadership Programme in England*. 2005, The Royal College of Nursing: London.
257. NHS Leadership, C., *NHS Leadership*. 2012, NHS: London.

258. Begley, C., N. Elliot, J. Laylor, et al., *Differences between clinical specialist and advanced practitioner clinical practice, leadership and research roles, responsibilities and perceived outcomes (the SCAPE study)*. *Journal of Advanced Nursing*, 2012. **69**(6): p. 1365-2648.
259. Coenen, S., E. Weyts, S. Vermeire, et al., *Effects of introduction of an inflammatory bowel disease nurse position on the quality of delivered care*. *Eur J Gastroenterol Hepatol*, 2017. **29**(6): p. 646-650.
260. Nightingale, A., W. Middleton, S. Middleton, et al., *Evaluation of the effectiveness of a specialist nurse in the management of inflammatory bowel disease*. *European Journal of Gastroenterology & Hepatology*, 2000. **12**.
261. Kemp, k., J. Griffiths, S. Campbell, et al., *An exploration of the follow up care needs of patients with inflammatory bowel disease*. *Journal of Crohns and Colitis*, 2013. **7**: p. e386-e395.
262. Smith, G., Watson, R. Roger, D. McRorie, E. Hurst, N. Luman, W. Palmer, KR., *Impact of a nurse-led counselling service on quality of life in patients with inflammatory bowel disease*. *Journal of Advanced Nursing*, 2002. **38**(2): p. 152-160.
263. Pearson, J., *Demonstrating the impact of an inflammatory bowel disease nurse specialist*. *CME Journal Gastroenterology, Hepatology and Nutrition*, 2005. **7**: p. 15-19.
264. Norton, C., L.B. Dibley, A. Hart, et al., *Faecal incontinence intervention study (FINS): self-management booklet information with or without nurse support to improve continence in people with inflammatory bowel disease: study protocol for a randomized controlled trial*. *Trials*, 2015. **16**: p. 444-015-0962-0.
265. López, M., A. Dosal, A. Villoria, et al., *A Nurse-Driven Outpatient Clinic for Thiopurine-Treated Inflammatory Bowel Disease Patients Reduces Physician Visits and Increases Follow-Up Efficiency*. *Gastroenterology Nursing*, 2015. **38**(2): p. 116-120.
266. Guarini, A., F. Marinis, A. Kohn, et al., *Inflammatory bowel disease nurse specialists for patients on biological therapies: a nationwide Italian survey*. *Ann Gastroenterol*, 2016. **29**(4): p. 492-496.
267. Morar, P., J. Read, S. Arora, et al., *Defining the optimal design of the inflammatory bowel disease multidisciplinary team: results from a multicentre qualitative expert-based study*. *Frontline Gastroenterology*, 2015. **6**(4): p. 290-297.
268. Castledine, G., *The role and criteria of an advanced nurse practitioner*. *Br J Nurs*, 1996. **5**: p. 288-289.
269. Duncan, J., *Nursing Assessment*, in *Inflammatory Bowel Disease Nursing*, K. Whayman, J. Duncan, and M. O'Connor, Editors. 2011, Quay Books: London.
270. Harvey, R.F. and J.M. Bradshaw, *A simple index of Crohn's-disease activity 8*. *Lancet*, 1980. **1**(0140-6736; 0140-6736; 8167): p. 514.

271. Walmsley, R.S., R.C. Ayres, R.E. Pounder, et al., *A simple clinical colitis activity index 9*. *Gut*, 1998. **43**(0017-5749; 0017-5749; 1): p. 29-32.
272. Hibberts, F. and C. Bushell, *Physical assessment in gastroenterology: abdominal examination*. *Gastrointestinal Nursing*, 2007. **5**: p. 24-30.
273. Snaith, R.P. and A.S. Zigmond, *The hospital anxiety and depression scale*. *British medical journal (Clinical research ed.)*, 1986. **292**(0267-0623; 0267-0623; 6516): p. 344.
274. Guyatt, G., A. Mitchell, E.J. Irvine, et al., *A new measure of health status for clinical trials in inflammatory bowel disease*. *Gastroenterology*, 1989. **96**(0016-5085; 0016-5085; 3): p. 804-810.
275. Boonen, A., P.C. Dagnelie, A. Feleus, et al., *The impact of inflammatory bowel disease on labor force participation: results of a population sampled case-control study*. *Inflamm Bowel Dis*, 2002. **8**: p. 382-389.
276. Bernklev, T., J. Jahnsen, M. Henriksen, et al., *Relationship between sick leave, unemployment, disability, and health-related quality of life in patients with inflammatory bowel disease*. *Inflammatory Bowel Diseases*, 2006. **12**(5): p. 402-12.
277. Rogala, L., N. Miller, L.A. Graff, et al., *Population-based controlled study of social support, self-perceived stress, activity and work issues, and access to health care in inflammatory bowel disease*. *Inflammatory bowel diseases*, 2008. **14**(1078-0998; 1078-0998; 4): p. 526-535.
278. Andrews, J., . Mountfield, RE, Van Langenberg, DR, Bampton, PA, Holtman, GJ., *Un-promoted issues in inflammatory bowel disease: opportunities to optimise care*. *Internal Medicine Journal.*, 2010. **40**: p. 173-182.
279. Belling, R., Woods, L. McLaren, S., *Stakeholder perceptions of specialist inflammatory bowel disease nurses' role and personal attributes*. *International Journal of Nursing Practice* 2008. **14**: p. 7.
280. Van Der Eijk, I., F.W. Verheggen, M.G. Russel, et al., *"Best practice" in inflammatory bowel disease: an international survey and audit*. *Eur J Intern Med*, 2004. **15**: p. 113-120.
281. Beaulieu, D.B. and S. Kane, *Inflammatory bowel disease in pregnancy*. *World J Gastroenterol*, 2011. **17**: p. 2696-2701.
282. Bager, P., M. Julsgaard, T. Vestergaard, et al., *Adherence and quality of care in IBD*. *Scandinavian Journal of Gastroenterology*, 2016. **51**(11): p. 1326-1331.
283. Norton, C. and L. Dibley, *Help-seeking for fecal incontinence in people with inflammatory bowel disease*. *Journal of wound, ostomy, and continence nursing : official publication of The Wound, Ostomy and Continence Nurses Society*, 2013. **40**(6): p. 631-8; quiz E1-2.

284. Kane, S., D. Huo, J. Aikens, et al., *Medication nonadherence and the outcomes of patients with quiescent ulcerative colitis*. *Am J Med*, 2003. **114**: p. 39-43.
285. Squires, S.I., A.J. Boal and G.D. Naismith, *The financial impact of a nurse-led telemedicine service for inflammatory bowel disease in a large district general hospital*. *Frontline Gastroenterol*, 2016. **7**(3): p. 216-221.
286. Sechi, A., E. Sawyer, W. Ng, et al., *Proving cost-effectiveness through implementation of a nurse-led inflammatory bowel disease (IBD) patient advice line and virtual clinic (CHEAP)*. *The Journal of the Gastroenterological Nurses College of Australia*, 2016. **26**(2): p. 4-6.
287. Nightingale, A., *Diagnosis and management of inflammatory bowel disease*. *Nurse Prescribing*, 2007. **5**: p. 289-295.
288. Bager, P., U. Chauhan, K. Greveson, et al., *Systematic review: advice lines for patients with inflammatory bowel disease*. *Scandinavian Journal of Gastroenterology*, 2017.
- <https://doi.org/10.1080/00365521.2017.1401116>(epub ahead of print).
289. Younge, L. and C. Norton, *Contribution of specialist nurses in managing patients with IBD*. *British Journal of Nursing*, 2007. **16**(4).
290. Royal College, o.N., *Using telephone advice for patients with long-term conditions: an RCN guide to using technology to complement nursing practice*. 2012, Royal College of Nursing: London.
291. Coleman, A., *Where do I stand? Legal implications of telephone triage*. *J Clin Nurs*, 1997. **6**: p. 227-231.
292. Corbett, S., M. Welfare, E. McColl, et al., *Implementing a colitis education and support programme*. *Gastrointestinal Nursing*, 2006. **4**(5): p. 12-20.
293. Mukewar, S., P. Mani, X. Wu, et al., *YouTube and inflammatory bowel disease*. *Journal of Crohn's & colitis*, 2013. **7**(5): p. 392-402.
294. Fortinsky, K.J., M.R. Fournier and E.I. Benchimol, *Internet and electronic resources for inflammatory bowel disease: a primer for providers and patients*. *Inflammatory bowel diseases*, 2012. **18**(6): p. 1156-1163.
295. Promislow, S., J.R. Walker, M. Taheri, et al., *How well does the Internet answer patients' questions about inflammatory bowel disease?* *Can J Gastroenterol*, 2010. **24**: p. 671-677.
296. Sephton, M., K. Kemp and V. Ridgway, *An evaluation study of a pilot group education programme for inflammatory bowel disease*. *Frontline Gastroenterology*, 2016. **7**(2): p. 135-140.
297. Jaghult, S., J. Larson, R. Wredling, et al., *A multiprofessional education programme for patients with inflammatory bowel disease: A randomized controlled trial*. *Scandinavian Journal of Gastroenterology*, 2007. **42**: p. 1452-1459.

298. Oxelmark, L., A. Magnusson, R. Lofberg, et al., *Group-based intervention program in inflammatory bowel disease patients: effects on quality of life*. *Inflammatory Bowel Diseases*, 2007. **13**(2): p. 182-90.
299. Waters, B., L. Jensen and R. Fedorak, *Effects of formal education for patients with inflammatory bowel disease: a randomized controlled trial*. *Canadian Journal of Gastroenterology*, 2005. **19**(4): p. 235-44.
300. Verma, S., H.H. Tsai and M.H. Gjaffer, *Does better disease-related education improve quality of life? A survey of IBD patients*. *Dig Dis Sci*, 2001. **46**: p. 865-869.
301. Protheroe, J., A. Rogers, A.P. Kennedy, et al., *Promoting patient engagement with self-management support information: a qualitative meta-synthesis of processes influencing uptake*. *Implement Sci*, 2008. **3**: p. 44.
302. Robinson, A., D. Thompson, D. Wilkin, et al., *Guided self management and patient directed follow up of ulcerative colitis: a randomised trial*. *The Lancet*, 2001. **358**.
303. Barlow, C., Cooke, D. Mullighan, K. Beck, E. Newman, S. , *A critical review of self management and educational interventions in inflammatory bowel disease*. *Gastroenterology Nursing*, 2010. **33**(1): p. 7.
304. Richardson, G., M. Sculpher, A. Kennedy, et al., *Is self-care a cost-effective use of resources? Evidence from a randomized trial in inflammatory bowel disease*. *Journal of Health Services & Research Policy*, 2006. **11**(4): p. 225-30.
305. Bodenheimer, T., K. Lorig, H. Holman, et al., *Patient self-management of chronic disease in primary care*. *JAMA*, 2002. **288**: p. 2469-2475.
306. Moradkhani, A., L. Kerwin, S. Dudley-Brown, et al., *Disease-specific knowledge, coping, and adherence in patients with inflammatory bowel disease*. *Digestive diseases and sciences*, 2011. **56**(1573-2568; 0163-2116; 10): p. 2972-2977.
307. Bernstein, K.I., S. Promislow, R. Carr, et al., *Information needs and preferences of recently diagnosed patients with inflammatory bowel disease*. *Inflamm Bowel Dis*, 2011. **17**: p. 590-598.
308. de Jong, M.J., A.E. van der Meulen-de Jong, M.J. Romberg-Camps, et al., *Telemedicine for management of inflammatory bowel disease (myIBDcoach): a pragmatic, multicentre, randomised controlled trial*. *The Lancet*, 2017. **390**(10098): p. 959-968.
309. Huang, V.W., K.M. Reich and R.N. Fedorak, *Distance management of inflammatory bowel disease: systematic review and meta-analysis*. *World journal of gastroenterology*, 2014. **20**(3): p. 829-842.
310. Jackson, B.D., K. Gray, S.R. Knowles, et al., *EHealth Technologies in Inflammatory Bowel Disease: A Systematic Review*. *Journal of Crohn's and Colitis*, 2016. **10**(9): p. 1103-1121.

311. Aguas Peris, M., J. Del Hoyo, P. Bebia, et al., *Telemedicine in inflammatory bowel disease: opportunities and approaches*. *Inflammatory bowel diseases*, 2015. **21**(2): p. 392-399.
312. Pedersen, N., *EHealth: self-management in inflammatory bowel disease and in irritable bowel syndrome using novel constant-care web applications*. *EHealth by constant-care in IBD and IBS*. *Danish medical journal*, 2015. **62**(12): p. B5168.
313. Elkjaer, M., M. Shuhaibar, J. Burisch, et al., *E-health empowers patients with ulcerative colitis: a randomised controlled trial of the web-guided 'Constant-care' approach*. *GUT*, 2010. **59**: p. 1652-1661.
314. Cross, R., N. Cheevers, A. Rustgi, et al., *Randomised controlled trial of home telemanagement in patients with ulcerative colitis (UC HAT)*. *Inflammatory bowel disease*, 2012. **18**(6): p. 1018-1025.
315. Philpott, J.R., *Transitional care in inflammatory bowel disease*. *Gastroenterol Hepatol (N Y)*, 2011. **7**(1): p. 26-32.
316. Abraham, B.P. and S.A. Kahn, *Transition of Care in Inflammatory Bowel Disease*. *Gastroenterology & Hepatology*, 2014. **10**(10): p. 633-640.
317. Bryant, R.V., M.J. Trott, A. Bennett, et al., *Transition of care in inflammatory bowel disease: mind the gap! Theory, practice and recommendations for an Australian context*. *Intern Med J*, 2013. **43**(11): p. 1171-6.
318. Hait, E.J., R.M. Barendse, J.H. Arnold, et al., *Transition of adolescents with inflammatory bowel disease from pediatric to adult care: a survey of adult gastroenterologists*. *J Pediatr Gastroenterol Nutr*, 2009. **48**(1): p. 61-5.
319. Goodhand, J., C.R. Hedin, N.M. Croft, et al., *Adolescents with IBD: The importance of structured transition care*. *Journal of Crohn's and Colitis*, 2011. **5**(6): p. 509-519.
320. Brooks, A.J., P.J. Smith, R. Cohen, et al., *UK guideline on transition of adolescent and young persons with chronic digestive diseases from paediatric to adult care*. *Gut*, 2017. **66**(6): p. 988-1000.
321. van Rheenen, P.F., M. Aloï, I.A. Biron, et al., *European Crohn's and Colitis Organisation Topical Review on Transitional Care in Inflammatory Bowel Disease*. *J Crohns Colitis*, 2017. **11**(9): p. 1032-1038.
322. Committee, C.Q.o.C.S., *Australian IBD Standards of healthcare for people with inflammatory bowel disease in Australia*. 2016, Crohn's & Colitis Australia: Australia.
323. Committee, C.Q.o.C.S., *Inflammatory Bowel Disease Quality of Care Program (IBD Audit Report)*. 2016, Crohn's & Colitis Australia: Australia.

324. Kemp, K., R. Driscoll and I. Arnott, *UK inflammatory bowel disease audit: nurse correlations between 2006 and 2008* Gut, 2010. **59**(A39): p. OC-094.
325. Rahier, J.F., F. Magro, C. Abreu, et al., *Second European evidence-based consensus on the prevention, diagnosis and management of opportunistic infections in inflammatory bowel disease*. Journal of Crohn's and Colitis, 2014. **8**(6): p. 443-468.
326. Ben-Horin, S., Y. Bujanover, S. Goldstein, et al., *Travel-associated health risks for patients with inflammatory bowel disease*. Clin Gastroenterol Hepatol, 2012. **10**(2): p. 160-5, 165.e1.
327. Wasan, S.K., S.E. Baker, P.R. Skolnik, et al., *A practical guide to vaccinating the inflammatory bowel disease patient*. Am J Gastroenterol, 2010. **105**(6): p. 1231-8.
328. Kotton, C.N., *Vaccines and inflammatory bowel disease*. Dig Dis, 2010. **28**(3): p. 525-35.
329. Rahier, J.F., M. Moutschen, A. Van Gompel, et al., *Vaccinations in patients with immune-mediated inflammatory diseases*. Rheumatology (Oxford), 2010. **49**(10): p. 1815-27.
330. Esteve, M., C. Loras and E. Garcia-Planella, *Inflammatory bowel disease in travelers: choosing the right vaccines and check-ups*. World J Gastroenterol, 2011. **17**(22): p. 2708-14.
331. Ericsson, C.D., *Travellers with pre-existing medical conditions*. Int J Antimicrob Agents, 2003. **21**(2): p. 181-8.
332. Spira, A.M., *Preparing the traveller*. Lancet, 2003. **361**(9366): p. 1368-81.
333. Greveson, K., T. Shepherd, J.P. Mulligan, et al., *Travel health and pretravel preparation in the patient with inflammatory bowel disease*. Frontline Gastroenterol, 2016. **7**(1): p. 60-65.
334. Soonawala, D., A.M. van Eggermond, H. Fidder, et al., *Pretravel preparation and travel-related morbidity in patients with inflammatory bowel disease*. Inflamm Bowel Dis, 2012. **18**(11): p. 2079-85.
335. Goel, A., C. Hill and J. Limdi, *PTU-060 Vaccinating patients with IBD - Still to begin, at the beginning*, in *British Society of Gastroenterology Annual General Meeting*. 2014. p. A64-5.
336. Yeung, J.H., K.J. Goodman and R.N. Fedorak, *Inadequate knowledge of immunization guidelines: a missed opportunity for preventing infection in immunocompromised IBD patients*. Inflamm Bowel Dis, 2012. **18**(1): p. 34-40.
337. Wasan, S.K., J.A. Coukos and F.A. Farraye, *Vaccinating the inflammatory bowel disease patient: deficiencies in gastroenterologists knowledge*. Inflamm Bowel Dis, 2011. **17**(12): p. 2536-40.
338. Gupta, A., F.A. Macrae and P.R. Gibson, *Vaccination and screening for infections in patients with inflammatory bowel disease: a survey of Australian gastroenterologists*. Intern Med J, 2011. **41**(6): p. 462-7.

339. Wasan, S.K., A.H. Calderwood, M.D. Long, et al., *Immunization rates and vaccine beliefs among patients with inflammatory bowel disease: an opportunity for improvement*. *Inflamm Bowel Dis*, 2014. **20**(2): p. 246-50.
340. Charity, I.P. *Evidence-based information and support for people travelling with IBD*. 2014 [cited 2017 10th April]; Available from: <http://www.ibdpassport.com/>.
341. Baird, D.D., M. Narendranathan and R.S. Sandler, *Increased risk of preterm birth for women with inflammatory bowel disease*. *Gastroenterology*, 1990. **99**(4): p. 987-94.
342. Selinger, C.P., J. Eaden, W. Selby, et al., *Inflammatory bowel disease and pregnancy: Lack of knowledge is associated with negative views*. *Journal of Crohn's and Colitis*, 2013. **7**(6): p. e206-e213.
343. Hudson, M., G. Flett, T.S. Sinclair, et al., *Fertility and pregnancy in inflammatory bowel disease*. *Int J Gynaecol Obstet*, 1997. **58**(2): p. 229-37.
344. Selinger, C.P., J. Ghorayeb and A. Madill, *What Factors Might Drive Voluntary Childlessness (VC) in Women with IBD? Does IBD-specific Pregnancy-related Knowledge Matter?* *Journal of Crohn's and Colitis*, 2016. **10**(10): p. 1151-1158.
345. Carbery, I., J. Ghorayeb, A. Madill, et al., *Pregnancy and inflammatory bowel disease: Do we provide enough patient education? A British study of 1324 women*. *World Journal of Gastroenterology*, 2016. **22**(36): p. 8219-8225.
346. Selinger, C.P., J. Eaden, W. Selby, et al., *Patients' knowledge of pregnancy-related issues in inflammatory bowel disease and validation of a novel assessment tool ('CCPknow')*. *Aliment Pharmacol Ther*, 2012. **36**(1): p. 57-63.
347. Kane, S., *Inflammatory bowel disease, women, and pregnancy*. *Gastroenterol Hepatol (N Y)*, 2013. **9**(741-743).
348. Waljee, A., J. Waljee, A.M. Morris, et al., *Threefold increased risk of infertility: a meta-analysis of infertility after ileal pouch anal anastomosis in ulcerative colitis*. *Gut*, 2006. **55**(11): p. 1575-80.
349. Ørding, O., S. Juul, I. Berndtsson, et al., *Ulcerative colitis: female fecundity before diagnosis, during disease, and after surgery compared with a population sample*. *Gastroenterology*, 2002. **122**: p. 15-19.
350. O'Morain, C., P. Smethurst, C.J. Dore, et al., *Reversible male infertility due to sulphasalazine: studies in man and rat*. *Gut*, 1984. **25**(10): p. 1078-84.
351. Birnie, G.G., T.I. McLeod and G. Watkinson, *Incidence of sulphasalazine-induced male infertility*. *Gut*, 1981. **22**(6): p. 452-5.
352. Toovey, S., E. Hudson, W.F. Hendry, et al., *Sulphasalazine and male infertility: reversibility and possible mechanism*. *Gut*, 1981. **22**(6): p. 445-51.

353. Sussman, A. and J. Leonard, *Psoriasis, methotrexate, and oligospermia*. Arch Dermatol, 1980. **116**: p. 215-217.
354. Abhyankar, A., M. Ham and A.C. Moss, *Meta-analysis: the impact of disease activity at conception on disease activity during pregnancy in patients with inflammatory bowel disease*. Aliment Pharmacol Ther, 2013. **38**(5): p. 460-6.
355. Siegel, C.A., *Making Therapeutic Decisions in IBD: The Role of Patients*. Current Opinion in Gastroenterology, 2009. **25**(4): p. 334-338.
356. Mountifield, R., P. Bampton, R. Prosser, et al., *Fear and fertility in inflammatory bowel disease: a mismatch of perception and reality affects family planning decisions*. Inflamm Bowel Dis, 2009. **15**(5): p. 720-5.
357. Alstead, E.M., *Inflammatory bowel disease in pregnancy*. Postgrad Med J, 2002. **78**(915): p. 23-6.
358. Fonager, K., H.T. Sorensen, J. Olsen, et al., *Pregnancy outcome for women with Crohn's disease: a follow-up study based on linkage between national registries*. Am J Gastroenterol, 1998. **93**(12): p. 2426-30.
359. Selinger, C.P., R.W. Leong and S. Lal, *Pregnancy related issues in inflammatory bowel disease: evidence base and patients' perspective*. World J Gastroenterol, 2012. **18**(21): p. 2600-8.
360. Mahadevan U, C. Martin, Sandler RS, et al., *PIANO: a 1000 patient prospective registry of pregnancy outcomes in women with IBD exposed to immunomodulators and biologic therapy*. Gastroenterology, 2012. **142**(issue 5 suppl 1): p. S-149.
361. Rajaratnam, S.G., T.W. Eglinton, P. Hider, et al., *Impact of ileal pouch-anal anastomosis on female fertility: meta-analysis and systematic review*. Int J Colorectal Dis, 2011. **26**(11): p. 1365-74.
362. Oza, S.S., V. Pabby, L.E. Dodge, et al., *In Vitro Fertilization in Women With Inflammatory Bowel Disease Is as Successful as in Women From the General Infertility Population*. Clin Gastroenterol Hepatol, 2015. **13**(9): p. 1641-6.e3.
363. Mountifield, R.E., R. Prosser, P. Bampton, et al., *Pregnancy and IBD treatment: this challenging interplay from a patients' perspective*. J Crohns Colitis, 2010. **4**(2): p. 176-82.
364. Nguyen, G.C., C.H. Seow, C. Maxwell, et al., *The Toronto Consensus Statements for the Management of Inflammatory Bowel Disease in Pregnancy*. Gastroenterology, 2016. **150**(3): p. 734-757.e1.
365. Julsgaard, M., M. Norgaard, C.L. Hvas, et al., *Self-reported adherence to medical treatment, breastfeeding behaviour, and disease activity during the postpartum period in women with Crohn's disease*. Scand J Gastroenterol, 2014. **49**(8): p. 958-66.

366. Moffatt, D.C., A. Ilnyckyj and C.N. Bernstein, *A population-based study of breastfeeding in inflammatory bowel disease: initiation, duration, and effect on disease in the postpartum period*. *Am J Gastroenterol*, 2009. **104**(10): p. 2517-23.
367. Duncan, J. and L. Younge, *Fertility, pregnancy and IBD*, in *Inflammatory Bowel Disease Nursing*, K. Whayman, Duncan, J, O'Connor, M Editor. 2011, Quay Books: London. p. 241-58.
368. Bager, P., R. Befrits, O. Wikman, et al., *High burden of iron deficiency and different types of anemia in inflammatory bowel disease outpatients in Scandinavia: a longitudinal 2-year follow-up study*. *Scand J Gastroenterol*, 2013. **48**(11): p. 1286-93.
369. Filmann, N., J. Rey, S. Schneeweiss, et al., *Prevalence of anemia in inflammatory bowel diseases in european countries: a systematic review and individual patient data meta-analysis*. *Inflamm Bowel Dis*, 2014. **20**(5): p. 936-45.
370. WHO., UNICEF. and UNU., *Iron deficiency anaemia: assessment, prevention, and control. A guide for programme managers*. 2001, World Health Organisation: Geneva.
371. Dignass, A.U., C. Gasche, D. Bettenworth, et al., *European consensus on the diagnosis and management of iron deficiency and anaemia in inflammatory bowel diseases*. *J Crohns Colitis*, 2015. **9**(3): p. 211-22.
372. Magro, F., P. Gionchetti, R. Eliakim, et al., *Third European Evidence-based Consensus on Diagnosis and Management of Ulcerative Colitis. Part 1: Definitions, Diagnosis, Extra-intestinal Manifestations, Pregnancy, Cancer Surveillance, Surgery, and Ileo-anal Pouch Disorders*. *J Crohns Colitis*, 2017. **11**(6): p. 649-670.
373. van Gennep, S., S. Sahami, C.J. Buskens, et al., *Comparison of health-related quality of life and disability in ulcerative colitis patients following restorative proctocolectomy with ileal pouch-anal anastomosis versus anti-tumor necrosis factor therapy*. *European Journal of Gastroenterology & Hepatology*, 2017. **29**(3): p. 338-344.
374. Nursing., R.C.o., *Clinical Nurse Specilaist: Stoma Care*. 2009, RCN: London, UK.
375. Brown, C., P.R. Gibson, A. Hart, et al., *Long-term outcomes of colectomy surgery among patients with ulcerative colitis*. *Springerplus*, 2015. **4**: p. 573.
376. Uzzan, M., J. Kirchgerner, N. Oubaya, et al., *Risk of Rectal Neoplasia after Colectomy and Ileorectal Anastomosis for Ulcerative Colitis*. *J Crohns Colitis*, 2017. **11**(8): p. 930-935.
377. Mukewar, S., X. Wu, R. Lopez, et al., *Ethnicity and the risk of development of Crohn's disease of the ileal pouch*. *J Crohns Colitis*, 2013. **7**(5): p. e178-85.
378. Sturm, A., C. Maaser, M. Mendall, et al., *European Crohn's and Colitis Organisation Topical Review on IBD in the Elderly*. *Journal of Crohn's and Colitis*, 2017. **11**(3): p. 263-273.
379. John, E.S., K. Katz, M. Saxena, et al., *Management of Inflammatory Bowel Disease in the Elderly*. *Curr Treat Options Gastroenterol*, 2016. **14**(3): p. 285-304.

380. Erusalimsky, J.D., J. Grillari, T. Grune, et al., *In Search of 'Omics'-Based Biomarkers to Predict Risk of Frailty and Its Consequences in Older Individuals: The FRAILOMIC Initiative*. Gerontology, 2016. **62**(2): p. 182-90.
381. Greenwald, D.A. and L.J. Brandt, *Inflammatory Bowel Disease After Age 60*. Curr Treat Options Gastroenterol, 2003. **6**(3): p. 213-225.
382. Nimmons, D. and J.K. Limdi, *Elderly patients and inflammatory bowel disease*. World Journal of Gastrointestinal Pharmacology and Therapeutics, 2016. **7**(1): p. 51-65.
383. Young, J., *Fit for Frailty Part 1 Consensus best practice guidance for the care of older people living in community and outpatient settings: A report by the British Geriatrics Society in association with the Royal College of General Practitioners and Age UK*. 2014, British Geriatrics Society: London.
384. Juneja, M., L. Baidoo, M.B. Schwartz, et al., *Geriatric inflammatory bowel disease: phenotypic presentation, treatment patterns, nutritional status, outcomes, and comorbidity*. Dig Dis Sci, 2012. **57**(9): p. 2408-15.
385. Panara, A.J., A.J. Yarur, B. Rieders, et al., *The incidence and risk factors for developing depression after being diagnosed with inflammatory bowel disease: a cohort study*. Aliment Pharmacol Ther, 2014. **39**(8): p. 802-10.
386. Long, M.D., M.D. Kappelman, C.F. Martin, et al., *Risk factors for depression in the elderly inflammatory bowel disease population*. J Crohns Colitis, 2014. **8**(2): p. 113-9.
387. Fried, L.P., L. Ferrucci, J. Darer, et al., *Untangling the concepts of disability, frailty, and comorbidity: implications for improved targeting and care*. J Gerontol A Biol Sci Med Sci, 2004. **59**(3): p. 255-63.
388. Katz, S. and D.S. Pardi, *Inflammatory bowel disease of the elderly: frequently asked questions (FAQs)*. Am J Gastroenterol, 2011. **106**(11): p. 1889-97.
389. Zimmerman, J., D. Gavish and D. Rachmilewitz, *Early and late onset ulcerative colitis: distinct clinical features*. J Clin Gastroenterol, 1985. **7**(6): p. 492-8.
390. Bourgeois, F.T., M.W. Shannon, C. Valim, et al., *Adverse drug events in the outpatient setting: an 11-year national analysis*. Pharmacoepidemiol Drug Saf, 2010. **19**(9): p. 901-10.
391. Buckley, J.P., M.D. Kappelman, J.K. Allen, et al., *The burden of comedication among patients with inflammatory bowel disease*. Inflamm Bowel Dis, 2013. **19**(13): p. 2725-36.
392. Boyd, C.M., J. Darer, C. Boulton, et al., *Clinical practice guidelines and quality of care for older patients with multiple comorbid diseases: implications for pay for performance*. Jama, 2005. **294**(6): p. 716-24.
393. Belling, R., S. McLaren and L. Woods, *Specialist nursing interventions for inflammatory bowel disease*. Cochrane Database Syst Rev, 2009(4): p. CD006597.

394. Mikocka-Walus, A., J.M. Andrews, D. Rampton, et al., *How can we improve models of care in inflammatory bowel disease? An international survey of IBD health professionals*. Journal of Crohn's and Colitis, 2014. **8**(12): p. 1668-1674.
395. Hernández-Sampelayo, P., M. Seoane, L. Oltra, et al., *Contribution of nurses to the quality of care in management of inflammatory bowel disease: A synthesis of the evidence*. Journal of Crohn's and Colitis, 2010. **4**(6): p. 611-622.
396. Calvet, X., J. Panes, N. Alfaro, et al., *Delphi consensus statement: Quality Indicators for Inflammatory Bowel Disease Comprehensive Care Units*. J Crohns Colitis, 2014. **8**(3): p. 240-51.
397. Greveson, K. and S. Woodward, *Exploring the role of the inflammatory bowel disease nurse specialist*. Br J Nurs, 2013. **22**(16): p. 952-4, 956-8.
398. Duncan, J., S. Caulfield, A. Clark, et al., *A multidisciplinary virtual biologic clinic: is it worthwhile?* Journal of Crohns & Colitis, 2010. **4**(1).
399. Schoultz, M., L. Macaden and A.J.M. Watson, *Co-designing inflammatory bowel disease (Ibd) services in Scotland: findings from a nationwide survey*. BMC Health Services Research, 2016. **16**: p. 231.
400. Sack, C., V. Phan, R. Grafton, et al., *A chronic care model significantly decreases costs and healthcare utilisation in patients with inflammatory bowel disease*. Journal of Crohn's and Colitis, 2012. **6**(3): p. 302-310.
401. Abraham, B.P. and S.A. Kahn, *Transition of Care in Inflammatory Bowel Disease*. Gastroenterol Hepatol (N Y), 2014. **10**(10): p. 633-40.
402. Goodhand, J., C.R. Hedin, N.M. Croft, et al., *Adolescents with IBD: the importance of structured transition care*. J Crohns Colitis, 2011. **5**(6): p. 509-19.
403. Paine, C.W., N.B. Stollon, M.S. Lucas, et al., *Barriers and facilitators to successful transition from pediatric to adult inflammatory bowel disease care from the perspectives of providers*. Inflamm Bowel Dis, 2014. **20**(11): p. 2083-91.
404. Sebastian, S., H. Jenkins, S. McCartney, et al., *The requirements and barriers to successful transition of adolescents with inflammatory bowel disease: differing perceptions from a survey of adult and paediatric gastroenterologists*. J Crohns Colitis, 2012. **6**(8): p. 830-44.
405. Mason, I., K. Holbrook, K. Kemp, et al., *Inflammatory Bowel Disease nursing: Results of an audit exploring roles, responsibilities and activity of nurses with specialist / advanced roles*. 2012, Royal College of Nursing: London.
406. Taylor, N.S., M. Bettey, J. Wright, et al., *The impact of an inflammatory bowel disease nurse-led biologics service*. Frontline Gastroenterol, 2016. **7**(4): p. 283-288.

407. Lopez-Parra, A.M., *A review of nursing consultancy to control patients with inflammatory bowel disease treated with thiopurines: Analysis and implementation of improvements.* Journal of Crohn's and Colitis, 2014. **8**.
408. Leary, A., *Proving your worth.* Nursing Standard, 2011. **25** (31): p. 62-66.
409. Kemp, K., E. Fernandez and I. Arnott, *P483 Impact of inflammatory bowel disease nurse specialist on quality of the patient journey.* Journal of Crohns and Colitis, 2013. **7**(Supplement 1): p. S203.
410. Price, T., K. Lithgo and M.W. Johnsson, *Cost savings and outpatient clinic appointments saved: A 2 year review of a nurse led telephone advice line for inflammatory bowel disease.* Gut, 2013. **62**.
411. Andersson, G. and E. Marsden, *Audit of an inflammatory bowel disease telephone helpline set up and managed by IBD specialist nurses.* Gastrointestinal Nursing, 2012. **10**: p. 24-30.
412. O'Connor, M., *Criteria for success using an inflammatory bowel disease nurse telephone service.* Gastrointestinal Nursing, 2011. **Vol. 9** (2): p. 36-42.
413. Bager, P., *The impact of nurse-led annual telephone follow-up of patients with inflammatory bowel disease.* BMJ quality improvement reports, 2014. **3**(1): p. 10.1136/bmjquality.u206365.w2574. eCollection 2014.
414. Rejler, M., A. Spangeus, J. Tholstrup, et al., *Improved population based care: implementing patient and demand- directed care for inflammatory bowel disease and evaluating the redesign with a population-based registry.* Q Manage Health Care, 2007. **16**(1): p. 12.
415. Hueppe, A., J. Langbrandtner and H. Raspe, *Inviting patients with inflammatory bowel disease to active involvement in their own care: a randomized controlled trial.* Inflammatory bowel diseases, 2014. **20**(6): p. 1057-1069.
416. Bager, P., . Hentze R, Markussen T, *IBD patients in remission strongly prefer annual telephone calls by IBD nurses compared to outpatient visits.* Inflammatory bowel disease, 2011. **5**(1): p. S175.
417. Mukherjee, S., P. Sloper and R. Lewin, *The meaning of parental illness to children: the case of inflammatory bowel disease.* Child: Care, Health & Development, 2002. **28**(6): p. 479-485.
418. Louis, E., I. Dotan, S. Ghosh, et al., *Optimising the Inflammatory Bowel Disease Unit to Improve Quality of Care: Expert Recommendations.* J Crohns Colitis, 2015. **9**(8): p. 685-91.
419. Hall, A., *Recognizing the depth of the IBD nurse specialist role.* Gastrointestinal Nursing, 2011. **9**: p. 46-49.
420. Mowat, C., A. Cole, A. Windsor, et al., *Guidelines for the management of inflammatory bowel disease in adults.* GUT, 2011. **60**(36): p. 571-607.

421. Davies, N.J., *Improving self-management for patients with long-term conditions*. Nurs Stand, 2010. **24**(25): p. 49-56; quiz 58, 60.
422. Sidhu, S., *Which 5-ASA? Understanding the choices in ulcerative colitis therapy*. Gastrointestinal Nursing, 2014. **12**: p. 17-26.
423. Stansfield, C., *Implementation of an IBD nurse-led self-management programme*. Gastrointestinal Nursing, 2008: p. 12-18.
424. Gethins, M., *Self-management programme for patients with long term in inflammatory bowel disease*. Gastrointestinal Nursing, 2011. **9**.
425. Lakatos, P.L., *Prevalence, predictors, and clinical consequences of medical adherence in IBD: How to improve it?* World Journal of Gastroenterology : WJG, 2009. **15**(34): p. 4234-4239.
426. LeLeiko, N.S., D. Lobato, S. Hagin, et al., *Rates and Predictors of Oral Medication Adherence in Pediatric Patients with IBD*. Inflammatory Bowel Diseases, 2013. **19**(4): p. 832-839.
427. Lopez, A., V. Billioud, C. Peyrin-Biroulet, et al., *Adherence to Anti-TNF Therapy in Inflammatory Bowel Diseases: A Systematic Review*. Inflammatory Bowel Diseases, 2013. **19**(7): p. 1528-1533.
428. Kennedy, A., E. Nelson, D. Reeves, et al., *A randomised controlled trial to assess the effectiveness and cost of a patient orientated self management approach to chronic inflammatory bowel disease*. Gut, 2004. **53**(11): p. 1639-1645.
429. Hunter, J., S. James, D. Chan, et al., *Virtual inflammatory bowel disease clinics in the real world*. Gut, 2010. **59**(S1).
430. Ludlow, H., J. Hurley and S. Dolwani, *Using email and text messaging to improve patient compliance with blood monitoring*. Nurs Times, 2009. **105**(28): p. 26-8.
431. Carlsen, K., C. Jakobsen, G. Houen, et al., *Self-managed eHealth Disease Monitoring in Children and Adolescents with Inflammatory Bowel Disease: A Randomized Controlled Trial*. Inflamm Bowel Dis, 2017. **23**(3): p. 357-365.
432. Lynch, T., *A qualitative study of youth living with Crohn's disease*. Gastroenterology Nursing, 2007: p. 224-230.
433. Pihl Lesnovska, K., H. Hjortswang, A. Ek, et al., *Patients' Perspective of Factors Influencing Quality of Life While Living With Crohn Disease*. Gastroenterolgy Nursing, 2009: p. 37-44.
434. Jelsness-Jørgensen, L., T. Bernklev, M. Henriksen, et al., *Is patient reported outcome (PRO) affected by different follow-up regimens in inflammatory bowel disease (IBD)? A one year prospective, longitudinal comparison of nurse-led versus conventional follow-up*. Journal of Crohn's and Colitis, 2012. **6**(9): p. 887-894.

435. Czuber-Dochan, W., L.B. Dibley, H. Terry, et al., *The experience of fatigue in people with inflammatory bowel disease: an exploratory study*. Journal of Advanced Nursing, 2012. **69**(9): p. 1987-1999.
436. Jelsness-Jorgensen, L.P., T. Bernklev, M. Henrickson, et al., *Chronic fatigue is associated with increased disease-related worries and concerns in inflammatory bowel disease*. World Journal of Gastroenterology, 2012. **18**(5): p. 445-452.
437. Dibley, L., P. Bager, W. Czuber-Dochan, et al., *Identification of Research Priorities for Inflammatory Bowel Disease Nursing in Europe: a Nurses-European Crohn's and Colitis Organisation Delphi Survey*. J Crohns Colitis, 2017. **11**(3): p. 353-359.

Accepted Manuscript