**Supplementary Table 1. Details of outcomes, measurement tools, intervention, and control for each study.**

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| **Study ID** | **Author, year** | **Outcomes and Measurement Tools** | **Intervention and Control** |
| 1 | Cross R, 2019 | **Disease activity:** Active disease defined as Harvey Bradshaw Index (HBI) 5+ (for CD) or Simple Clinical Colitis Activity Index (SCCAI) 3+ (for UC/indeterminate colitis)  **Quality of Life (QoL):** IBDQ >168 defined as remission  **Utilization of health care resources** – EMR use 1 year before or after randomization, assessed hospitalizations, surgeries, ER visits, office visits, procedures, IV treatment, telephone/electronic encounters. | **Intervention:** Secure web-portal sent text massages to participants’ mobile devices based on activity zone (green – remission/mild; yellow – moderate; red – severe) to provide individualized action plans and email alerts to participant and nurse coordinator. Technology involved the use of a mobile phone and a decision support server and website.  A TELE-IBD educational curriculum was developed for patients in the intervention groups where they would receive an educational tip twice weekly (in the weekly group) or every week (if in every other week group). They also received “pragmatic| educational messages at the discretion of the provider.  **Control**  Care based on current evidence-based guidelines and as needed visits/calls |
| 2 | Cross R, 2012 | **Disease activity:** Seo index with activity index <120 = clinical remission. Scores of 120 to 150, 151 to 220, and > 222 correlate with mild, moderate, and severe disease respectively. A decrease in the index of 35 correlates with clinical response  **IBDQ questionnaire.** Higher scores associated with better quality of life. Score changes of 16 from baseline are significant.  **Morisky Medication Adherence Score** – Higher scores correlate with better medical adherence | **Intervention**  UCHAT – home unit (netbook computer and electronic weight scale), decision support server, and a web-based clinician portal. Patients provided information about symptoms, side effects and adherence to the support server and received disease-specific education and individualized action plans based on input from medical team.  UCHAT – weekly symptom dairy with 15 questions on well-being, bowel habits, systemic symptoms and extraintestinal manifestations; SE and doses of treatment; audio on how to use the electronic scale; educational material from Crohn’s and Colitis Foundation of America. After completing of self-testing, there was a customized action plan based on response to symptom diary. Patients could send electronic message to nurse coordinator at any time.  **Control**  Based on standard of care and current evidence-based guidelines – comprehensive assessment, a guide-concordant therapy plan, scheduled and as-needed clinic visits/telephone calls, and administration of educational fact sheets |
| 3 | De Jong, 2017 | **Primary outcome:** 1. Number of outpatient visits, 2. Patient reported quality of care (Visual analogue scale with seven domains; 8+ = high quality of care)  **Secondary outcomes:** 1. **Treatment adherence** (8-item Morisky Medication Adherence Scale (<6 = low), 2. **QoL using SIBDQ** (10-item questionnaire; 4 domains), 3. **Self-efficacy** (IBD-SES; 29-items; 4 domains), 4. **Diagnosis and treatment related knowledge** (VAS score); 5. **Smoking behaviors**, 6. **Disease outcomes** (number of flares; IBD-related hospitalizations, ER visits, surgeries, and/or corticosteroid use) | **Intervention**  Telemedicine system (myIBDcoach) that monitors and registers disease activity: questions for disease activity, treatment use, treatment adherence, treatment satisfaction, side effects; questions on factors affecting disease; PRO on quality of life and work productivity.  Monitoring module was performed monthly or every 3 months when patients were in remission. If patients had a flare, they were monitored weekly. They had outpatient visits yearly or when applicable. Patients received patient-tailored information on selected topics in the E-learning modules. Communication and personal care plan were available 24/7.  At least one routine outpatient clinic visit per year with as-needed visits based on alarm symptoms identified through myIBDcoach.  **Control**  Standard care – routine follow-up following local protocol and can schedule extra visit if symptoms relapsed. Questions at baseline and at 12 months. |
| 4 | Elkjaer M, 2010 | **Outcome measures**  CQ: compliance questionnaire  SQ: satisfaction questionnaire (6+ cm = +)  CCKNOW: checks for understanding of IBD, medication, diet, complications of IBD  S-IBDQ: short IBD QoL questionnaire checking for bowel symptoms, systemic symptoms, emotional and social functions (10🡪70)  SF-36 for Denmark and SF-12 for Ireland: health survey  HADS: anxiety and depression questionnaires; 0-7 = normal, 8-10 = borderline, 11+ = anxious/depressed  SCCAI: disease activity; >5 = relapse  FC: Fecal calprotectin; blinded for both investigators and pts until the end of the trial. Then compared with SCCAI to identify overtreatment. ≤ 50 mg/kg = normal | **Intervention**  Web-group receiving disease specific education and self-treatment via http://www.constant-care.dk  All patients/relatives received educational training: 1.5h disease specific + 1.5h training on using website – aim was for patients to recognize relapse and start treatment guided by e-health program.  If there was a relapse, patients completed SCCAI daily until they entered “green zone”, then they would complete SCCAI once a week for 4 weeks. S-IBDQ at the beginning and end of each episode of relapse. 4 gram of 5-ASA daily for 28 days (could extend 28 more days) for acute flare. Additional treatment with topical 5-ASA and/or prednisolone based on patient’s experience.  **Control**  Routine appointments and the possibility to advance appointments if patients experienced symptoms of relapse. If patient’s had a relapse, they would send a paper form of SCCAI and s-IBDQ.  All randomized patients (including control) had visits at baseline, 6 and 12 months where SCCAI, s-IBDQ, CCKNOW, SF-36/SF-12, HADS, and CQ were filled each time. Satisfaction questionnaire (SQ) was filled at 12 mo.  Data analyzed as intention to treat |
| 5 | Krier M, 2011 | **Primary outcomes:** Measurement of clinical experience (Ware Specific Visit Questionnaire; 14-item questionnaire on doctor-patient interactions; based on 5 point scale), patient’s overall satisfaction on quality of audio and visual presentation in the telemedicine group  **Secondary outcomes:** duration of appointment visit, wait time, number of patients seen per clinic day, trainee and physician satisfaction using telemedicine system, utilization of the network to gain insight into bandwidth requirements need for use | **Intervention**  GI fellow at VA Palo Alto obtained evaluated the patient and presented the case to an attending using the Collaborative Imaging system and had real-time or offline consultation with local/remote radiologist, interventional endoscopist, surgeon, and/or pathologist. The GI fellow then returned to the patient-room for a real time Telemedicine Encounter session which included the fellow, patient and remotely located attending.  Telemedicine encounter with IBD specialist remotely located.  **Control**  Standard encounter with fellow and attending in the clinic |
| 6 | Linn AJ, 2018 | **Patient satisfaction:** 29-item questionnaire with three scales.  **Patients’ beliefs about medication:** Beliefs about Medicines Questionnaire (BMQ-Specific). 10-item scale with regards to patients’ concerns about taking their medications.  **Patients’ self-efficacy**  Medication Understanding and Use Self-Efficacy Scale (MUSE). Utilized to assess patients’ self-efficacy of understanding and taking medication.  **Medication adherence**  5-item Medication Adherence Report Scale (MARS) | **Intervention**  Tailored Multimedia Intervention (TMI) to improve medication adherence. Performed by IBD nurses. TMI consisted of an Online Preparatory Assessment (OPA) for nurses and patients, communication skills training for nurses, and personalized text messages for patients. The intervention group was a combination of technology and counseling.  **Control**  Received standard care – usual education. |
| 7 | Akobeng AK, 2015 | **Primary outcome -**  Pediatric IBD-specific IMPACT quality of life (QOL)at 12 months of follow-up  **Secondary outcomes –** patient and parent satisfaction with consultations using Consultation Satisfaction Questionnaire), number of disease relapses defined by abbreviated Pediatric Crohn’s Disease Activity Index (aPCDAI; clinical remission defined as <10) and Pediatric Ulcerative Colitis Activity Index (PUCAI; clinical remission defined as <10)**,** anthropometric measures, number of hospital admissions, proportion of consultations attended, duration of consultations, and costs to the UK National Health Service | **Intervention –** Gastroenterology doctor would contact the patient and parents via telephone number that the parents and patient would provide  **Control –** routine face-to-face care |
| 8 | Carlsen K, 2017 | Patients were required to record data on their disease activity – Pediatric Ulcerative Colitis Activity Index (PUCAI) and the abbreviated Pediatric Crohn’s Disease Activity Index (abbrPCDAI) – using the web program.  **Primary outcomes -** Disease activity, contacts to the hospital, medical adherence (using medication adherence report scale – MARS).  **Secondary outcomes** – school absence and HRQoL (measured using IMPACT III) to the eHealth program | **Intervention** – The pediatric adult eHealth program (www.young.constant-care.com) was based on the adult eHealth web program ([www.constant-care.com](http://www.constant-care.com)). Pediatric symptom scores, QoL and school absence measures were included in the web program. Web program would include symptom score, fecal calprotectin, and algorithm in the web program – cumulative score would be represented in a traffic light system where each color was associated with different guidelines provided to the patient. Every month, the patients had to enter symptoms scores. Every three months, the patient would forward a fecal sample through the mail for measurement of fecal calprotectin and blood samples were also taken. TIBS algorithm (PUCAI/abbrPCDAI + FC).  Patients (and parents if they wanted) received text message reminders before each deadline for entering data, or submitting blood or stool. One planned annual visit plus on-demand outpatient visits.  **Control –** patients were managed according to the national pediatric IBD standard care in Denmark. |
| 9 | Carlsen K, 2017 | Patients were required to record data on their disease activity – Pediatric Ulcerative Colitis Activity Index (PUCAI) and the abbreviated Pediatric Crohn’s Disease Activity Index (PCDAI) – using the web program.  **Primary outcomes –**  Individual treatment intervals were calculated to assess whether the eHealth program was able to facilitate personalization of IFX treatment.  **Secondary outcomes –** safety. Blood samples were taken before IFX infusions to measure trough levels and levels of antibodies.  HRQoL and IMPACT III. | Open-label intervention study of a web-based disease monitoring system to personalize infliximab treatment. TIBS algorithm was used to determine interval between IFX treatments (4 – 12 weeks).  **Intervention –** patients would enter weekly PUCAI/abbrPCDAI weekly until next IFX treatment. A fecal calprotectin stool sample was also collected. The TIBS score was reflected in a traffic light system where alarm symptoms would prompt the families to consult IBD provider for treatment decisions.  **Control –** patients received IFX infusion every 8 weeks but intervals could be altered as needed to gain control of the disease. |
| 10 | Del Hoyo, 2019 | **Primary outcome –** Clinical remission at 24 weeks (Harvey-Bradshaw index [HBI] for Crohn’s patients; Simple Clinical Colitis Activity Index [SCCAI] for UC patients – for remote check-ups. Partial Mayo score was used for face-to-face visits.  Patients with CD and HBI <5 were deemed to be in remission while SCCAI <2 was remission for UC patients and a partial Mayo Score <2 and no individual Mayo subscore >1 was defined as remission.  **Secondary outcomes –** Health-Related Quality of Life (HRQoL) as captured by Inflammatory Bowel Disease Questionnaire 9 (IBDQ-9). Work productivity and activities of daily living with Work Productivity and Activity Impairment (WPAI) questionnaire. Medication adherence was evaluated using the Morisky-Green index. Healthcare utilization and safety. Safety was a composite of ER visits, hospitalizations, IBD-related surgeries, corticosteroid courses, and adverse effects to medication. Patient satisfaction. | **Intervention** – web-based telemanagement system (Telemonitoring of Crohn’s Disease and Ulcerative Colitis – TECCU) for remote monitoring of disease activity in patients on corticosteroids, immunosuppressants, and biological agents.  TECCU is a secure webpage with an application for mobile phones, tablets, and computers. Patients interacted with the platform to inform the medical team regarding their symptoms and possible adverse effects.  Telephone calls or in-persons visits were available to train patients for administration of medications.  **Control –** two groups. Nurse-assisted telephone care or standard face-to-face visits. |
| 11 | Heida A, 2017 | Disease activity was assessed by Pediatric Ulcerative Colitis Activity Index (PUCAI) and the shortened Pediatric Crohn’s Disease Activity Index (shPCDAI).  **Primary outcome –** cumulative incidence of disease flares, which was defined as disease activity requiring treatment intensification (e.g., steroid therapy, exclusive enteral nutrition, aminosalicylate dose escalation or introduction of anti-TNF).  **Secondary outcomes** – quality of life and cost-effectiveness. QoL was measured with IBD-specific IMPACT-III. The cost-effectiveness analysis included direct and indirect medical and non-medical costs. | **Intervention –** Patients received automated email alerts to complete symptom score and send a stool sample for fecal calprotectin assessment. Symptom score and calprotectin stool test was uploaded to an IBD-live website and a color-coded system was used to advise patients the next best course of action.  **Control –** Participants had regular checks and the interval of visits was based on the physician’s discretion. |
| 12 | McCombie A, 2020 | **Primary outcomes –** test whether IBDsmart and IBDoc are noninferior to standard care in terms of IBD symptoms (HBI or SCCAI) and Health Related Quality of Life (HRQOL). HRQOL was measured using IBDQ. Remission was defined as SCCAI <2 or HBI <4.  **Secondary outcomes –** Usability and acceptability of IBDsmart and IBDoc. Adherence as measured by utilization of applications. | **Intervention –**  2 smartphone applications for IBD monitoring and management with IBDsmart and IBDoc. IBDsmart records symptom disease activity indices with Harvey Bradshaw Index (HBI) and the Simple Clinical Colitis Activity Index (SCCAI). The symptom scores are sent to health care providers. IBDoc calculates fecal calprotectin scores from stool samples provided by IBD patients at home. Patients self-completed HBI/SCCAI through the applications at least quarterly while in person visits were at baseline and 12 months.  **Control –** usual IBD care from their physician. |
| 13 | Miloh T, 2017 | Clinical score using Pediatric Crohn Disease Activity Index for patients with Crohn’s and Pediatric Ulcerative Colitis Activity Index for patients with ulcerative colitis.  Medication adherence was assessed using Morisky questionnaire. | **Intervention –** 2-way texting messaging (TM) group to improve medication adherence. Patients and/or caregivers required to use MediM system to log their contact information, frequency of prescribed information and when alerts would be sent to the patient/caregiver. The text messages were sent at individually set times based on patient preference.  **Control –** standard of care  All patients were followed in the pediatric gastroenterology clinic according to their condition and needs for 12 months. They had to complete the adherence questionnaire at entry, 6 months, and after completion of the study at 12 months. |
| 14 | Schliep M, 2020 | Depressive symptoms were assessed with the Mental Health Inventory 5 (MHI-5) and Quality of Life was measured by the Short Form 12 (SF-12). | **Intervention –**  Secure web-portal sent texts to participants based on activity zone (green – remission/mild; yellow – moderate; red – severe) to provide individualized action plans and email alerts to participant and nurse coordinator. TELE-IBD system was designed for bidirectional communication via text messaging only. Patients were also provided with electronic scales where they can record their weights. Healthcare providers had access to a secure decision support server and website that included patient clinical data from their testing sessions. They continued to follow up regularly with their provider and could contact office staff via telephone or electronic messaging.  **Control –**  Care based on current evidence-based guidelines and as needed visits/calls |

HBI: Harvey Bradshaw Index

CD: Crohn’s Disease

UC: Ulcerative Colitis

SCCAI: Simple Clinical Colitis Activity Index

QoL: Quality of Life

EMR: Electronic Medical Record

IBDQ: IBD Questionnaire

IBD: Inflammatory bowel disease

SIBDQ: Short IBD Questionnaire

VAS: Visual analog scale

ER: Emergency room

CQ: Compliance questionnaire

SQ: Satisfaction questionnaire

SF: Short form

HADS: Hospital Anxiety and Depression Scale

FC: Fecal calprotectin

BMQ: Beliefs about Medicines Questionnaire

OPA: Online Preparatory Assessment

MUSE: Medication Understanding and Use Self-Efficacy Scale

PCDAI: Pediatric Crohn’s Disease Activity Index

aPCDAI: abbreviated Pediatric Crohn’s Disease Activity Index

shPCDAI: shortened Pediatric Crohn’s Disease Activity Index

PUCAI: Pediatric Ulcerative Colitis Activity Index

MARS: Medication Adherence Report Scale

IFX: Infliximab

HRQoL: Health-related quality of life

TECCU: Telemonitoring of Crohn’s Disease and Ulcerative Colitis