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## Remote care through telehealth for people with inflammatory bowel disease (Protocol)

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[Intervention Protocol]

# Remote care through telehealth for people with inflammatory bowel disease

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## ABSTRACT

### Objectives

This is a protocol for a Cochrane Review (intervention). The objectives are as follows:

To identify the communication technologies used for remote healthcare sessions, how they are used, their accessibility, and their potential benefits and drawbacks for people with inflammatory bowel disease.

## BACKGROUND

### Description of the condition

Inflammatory bowel disease (IBD) is an umbrella term that encompasses three main disease subtypes that affect the gastrointestinal tract: ulcerative colitis (UC), Crohn's disease (CD), and IBD unclassified. It affects approximately 1/1000 people in Western countries, and its incidence is rapidly rising in developing countries (Gasparetto 2013). It has no known cure but can be managed; therefore, it places a huge financial burden on healthcare systems (Ghosh 2015). Approximately 25% of cases are diagnosed before 18 years of age, and the main treatment modalities are pharmacological therapy, dietary therapy, and surgery. Guided management and care can improve disease activity, symptoms, clinical outcomes (e.g. need for surgery), and quality of life (Elkjaer 2012). After diagnosis, intensive follow-up is required to optimise IBD care, necessitating the need for frequent consultations, at least for some stages of the disease course (Bernstein 2011).

### Description of the intervention

IBD telehealth management is the delivery of healthcare management from the healthcare professional to the person with IBD, at a distance (McLean 2011). It includes consulting by phone, instant messenger, video, text message, or web-based services. It can take place live, such as a telephone conversation, or with delayed communication, such as email communication (McLean 2009). During a telehealth session, the person provides information about their condition and their health status. The information becomes electronically available to the clinician or other healthcare professional, and they use it to provide feedback to the person, based on their professional judgement (McLean 2011; Sood 2007). Telehealth can be beneficial for certain subgroups of people with IBD who might face problems with accessing traditional healthcare resources that require their physical presence, such as older people, people from socioeconomically disadvantaged backgrounds, and people with physical or learning disabilities. However, accessing telehealth resources for these subgroups might have its own separate set of challenges (Choi 2014; Forducey 2012; Rimmer 2013).

### How the intervention might work

Telehealth consultations work similarly to face-to-face consultations. The only difference is that any procedure that requires physical presence cannot occur (for example, blood tests or physical examination (Heida 2018)). Therefore, while they might be a useful substitute in cases when face-to-face consultations are not possible or recommended, it is not known how effective they are compared to face-to-face consultations. The breadth of available telehealth options also means that each option has its own advantages and disadvantages.

Telehealth consultations provide the potential to reduce potential barriers to multi-disciplinary team communication across multiple team members and organisations, and achieve this in real time. This can lead to improved outcomes of consultation. It can facilitate more timely data monitoring, and more timely sharing of questions and concerns voiced by the person with IBD with the entire multi-disciplinary team, including the primary care professionals (Cross 2012).

### Why it is important to do this review

It is important to systematically review the evidence on the types of remote or telehealth approaches that can be deployed for IBD care, and their effectiveness. This is particularly relevant given the COVID-19 pandemic, which has necessitated increases in self- and remote-management, which these means can facilitate (Al-Ani 2020). It is also key to ascertain the attributes of remote or telehealth packages, so they can be replicated and disseminated.

## OBJECTIVES

To identify the communication technologies used for remote healthcare sessions, how they are used, their accessibility, and their potential benefits and drawbacks for people with inflammatory bowel disease.

## METHODS

### Criteria for considering studies for this review

#### Types of studies

All published, unpublished, and ongoing randomised controlled trials (RCTs) that compare the use of telecommunication technologies for the management of inflammatory bowel disease (IBD), with face-to-face interventions, or no interventions. Cross-over studies and cluster RCTs will be included if identified.

We will not include studies on digital patient information resources (e.g. information on IBD organisation websites, such as Crohn's and Colitis UK), or education resources alone, unless they form part of a wider package that includes an element of telehealth as defined in this review. A concurrent review, focussing on education resources for people with IBD is being conducted separately (Gordon 2021).

#### Types of participants

People with a confirmed IBD diagnosis of all ages

#### Types of interventions

We will include studies on IBD management interventions that take place via phone, instant messaging, video, text message, or web-based services, or any other means of remote communication, whether they use live communication (e.g. telephone conversations) or delayed communication (e.g. email communication).

We will consider any control intervention, such as face-to-face interventions or no intervention, including studies in which the control intervention is another telehealth intervention.

We will separately analyse trials that compare the addition of telehealth to traditional consultations, and those that replace traditional consultations with telehealth.

#### Types of outcome measures

Both dichotomous and continuous outcome measures will be included in the review.

#### Primary outcomes

- Disease activity at study end, using a recognised disease activity scoring system, described in the trial report

- Flare-ups or relapses, measured clinically, endoscopically, or histologically
- Quality of life at study end, using validated scales or tools

### Secondary outcomes

- Number of episodes of accessing health care (outpatient, remote, or inpatient)
- Change in disease activity, using a recognised score
- Change in quality of life, using a validated tool
- Medication adherence
- Attendance or engagement rate (number of planned appointments attended, number of planned interactions attended)

### Qualitative outcomes

- Programme attributes (technology type, design, cost, user guidance, live contact, and management of delayed contact, contact with other members of the multidisciplinary team, time to response, data security)
- Programme requirements (cost, software, infrastructure, training needs, user requirement to access - for the person with IBD and healthcare provider)

## Search methods for identification of studies

### Electronic searches

We will search the following sources from the inception of each database to the date of search and will place no restrictions on the language of publication:

- Cochrane Central Register of Controlled Trials (CENTRAL) via Ovid Evidence-Based Medicine Reviews Database (EBMR) (from inception; [Appendix 1](#));
- MEDLINE and MEDLINE ALL via Ovid (from 1946; [Appendix 2](#));
- Embase via Ovid (from 1974; [Appendix 3](#));
- PsycINFO via Ovid (from 1806; [Appendix 4](#));
- AMED (Allied and Complementary Medicine database) via Ovid (from 1985; [Appendix 5](#));
- CINAHL (Cumulative Index to Nursing and Allied Health Literature) via EBSCO (from 1937; [Appendix 6](#))

We will search the following trial registries by combining terms related to IBD and telemedicine:

- Cochrane Gut group Group Specialized Register
- ClinicalTrials.gov ([www.clinicaltrials.gov](http://www.clinicaltrials.gov));
- World Health Organization International Clinical Trials Registry Platform (ICTRP; [www.who.int/trialsearch](http://www.who.int/trialsearch)).

### Searching other resources

As complementary search methods, we will carefully check the references of relevant systematic reviews for studies that we may potentially include in our review. We will also scrutinise the references of studies we included in our review. We will seek unpublished trials by contacting experts in the field, and we will scan the internet and relevant conference abstracts that identified in the search (EMBASE and CENTRAL), to capture any studies presented, but not yet published in full.

We will attempt to obtain translations of papers when necessary.

### Data collection and analysis

We will carry out data collection and analysis according to the methods recommended in the *Cochrane Handbook for Systematic Reviews of Interventions* ([Higgins 2020](#)).

### Selection of studies

Two review authors will independently screen the titles and abstracts identified from the literature search. We will discard studies that do not meet the inclusion criteria. We will then obtain the full report of studies that appear to meet our inclusion criteria, or for which there is insufficient information to make a final decision. When these articles are obtained, two review authors will independently assess them to establish whether the studies meet the inclusion criteria. We will resolve disagreements by discussion, and consult with a third review author if resolution is not possible. We will enter studies rejected at this or subsequent stages in the 'Characteristics of excluded studies' tables and record the main reason for exclusion. We will outline the selection process in a PRISMA flowchart ([Page 2021](#)).

### Data extraction and management

Two authors will independently extract data, using piloted data extraction forms. We will extract relevant data from full-text articles that meet the inclusion criteria. If reported, we will collect information on:

- Trial setting: country and number of trial centres
- Trial registration details: registration number, date of registration, registered outcomes
- Methods: study design, total study duration and date
- Participant characteristics: age, sociodemographics, ethnicity, disease status, disease type, diagnostic criteria, and total number
- Eligibility criteria: inclusion and exclusion criteria
- Intervention and comparator: type of telehealth and control intervention, who is delivering the intervention, required resources for the delivery of the intervention, time to response, who has access to the intervention, data security
- Outcomes: outcome definition, unit of measurement, and time of collection
- Results: number of participants allocated to each group, missing participants, sample size
- Funding source and conflicts of interest

### Assessment of risk of bias in included studies

During data extraction, two review authors will independently assess all studies meeting the inclusion criteria for risk of bias, using criteria outlined in the *Cochrane Handbook for Systematic Reviews of Interventions Version 5.1* ([Higgins 2011](#)). The domains that will be assessed are as follows:

- Sequence generation (selection bias)
- Allocation concealment (selection bias)
- Blinding of participants and personnel (performance bias)
- Blinding of outcome assessment (detection bias)
- Incomplete outcome data (attrition bias)

- Selective reporting (reporting bias)
- Other bias

We will judge the studies to be at low, high, or unclear risk of bias for each domain assessed, based on the guidance in [Higgins 2011](#).

After data extraction, the two review authors will compare the extracted data, to discuss and resolve discrepancies before the data are transferred into the 'Characteristics of included studies' table in [Review Manager 2020](#).

We will judge risk of bias for cluster-RCTs as prescribed in Section 16.3.2 of the *Cochrane Handbook for Systematic Reviews of Interventions Version 5.1* ([Higgins 2011](#)).

### Measures of treatment effect

For the dichotomous outcomes, we will express treatment effect as risk ratios (RR) with corresponding 95% confidence interval (CI). For continuous outcomes, we will express the treatment effect as mean difference (MD) with 95% CI. However, if the studies assess the same continuous outcome differently, we will estimate the treatment effect using the standardised mean difference (SMD). We will present SMDs as standard deviation units and interpret as follows: 0.2 represents a small effect, 0.5 a moderate effect, and 0.8 a large effect.

### Unit of analysis issues

The participant will be the unit of analysis. For studies comparing more than two intervention groups, we will make multiple pair-wise comparisons between all possible pairs of intervention groups. To avoid double counts, we will divide shared intervention groups evenly among the comparisons. For dichotomous outcomes, we will divide both the number of events and the total number of participants. For continuous outcomes, we will only divide the total number of participants, and leave the means and standard deviations unchanged.

We will include cross-over studies, but we will only pool their data if they are reported separately before and after cross-over, and we will only use pre-cross-over data. In the case of cluster-RCTs, we will only use study data if the trial authors have used appropriate statistical methods in taking the clustering effect into account.

We will exclude cluster-RCTs in a sensitivity analysis to assess their impact on the results.

### Dealing with missing data

We will contact authors when there are missing data, or studies have not reported data in sufficient detail. We will attempt to estimate missing standard deviations using relevant statistical tools and calculators if studies report standard errors. We will judge studies that fail to report measures of variance at high risk of selective reporting bias.

### Assessment of heterogeneity

We will scrutinise studies to ensure that they are clinically homogenous in terms of participants, interventions, comparators, and outcomes. To test for statistical heterogeneity, we will use a  $\chi^2$  test. A P value of less than 0.1 will give an indication of the presence of heterogeneity. Inconsistency will be quantified and

represented by the  $I^2$  statistic. We will interpret the thresholds as follows ([Higgins 2020](#)):

- 0% to 40%: might not be important
- 30% to 60%: may represent moderate heterogeneity
- 50% to 90%; may represent substantial heterogeneity
- 75% to 100%: considerable heterogeneity

We will examine possible explanations for heterogeneity when sufficient data are available, including factors such as participant characteristics (e.g. age, sex), condition severity, healthcare system, and country.

We will not pool data in a meta-analysis if a considerable degree of statistical heterogeneity is detected ( $I^2 > 75\%$ ). In the case of considerable statistical heterogeneity, we will investigate whether this can be explained on clinical grounds or risk of bias, in which case, we will conduct sensitivity analyses. If we cannot find reasons for the considerable statistical heterogeneity, we will present the results narratively, in detail.

### Assessment of reporting biases

Our use of an inclusive search strategy will minimise most reporting biases. We will investigate publication bias using a funnel plot if there are 10 or more studies. We will determine the magnitude of publication bias by visual inspection of the asymmetry of the funnel plot. We will also test funnel plot asymmetry by performing a linear regression of the intervention effect estimate against its standard error, weighted by the inverse of the variance of the intervention effect estimate ([Egger 1997](#)).

### Data synthesis

We will summarise the study characteristics in a narrative synthesis of all the included studies. We will then carry out a meta-analysis if two or more studies have assessed similar populations, interventions, and outcomes. We will analyse studies on paediatric populations, adult populations, and different sub-intervention types separately, using Review Manager 5.4 ([Review Manager 2020](#)). We will synthesise data using the random-effects model. We will combine effect estimates of studies, which report data in a similar way, in the meta-analysis. We will pool risk ratios (RR) for dichotomous outcomes and mean differences (MD), or standardised mean differences (SMD) for continuous outcomes, alongside 95% confidence intervals (CI). When we are unable to carry out a meta-analysis (e.g. due to lack of uniformity in data reporting), we will present a narrative summary of the included studies.

We will group qualitative outcomes by the key attributes defined above, and present them in an additional table. We will also present summary descriptive statistics (number of specific remote telehealth solutions used, mean costs, resources, etc.), to help readers ascertain the core attributes across studies. We will present this data narratively.

### Subgroup analysis and investigation of heterogeneity

If we detect heterogeneity, we will investigate possible causes, and address them using methods described in [Higgins 2020](#). We will also undertake subgroup analyses of potential effect modifiers if enough data are available, such as technology type used, age, gender, and disease type. We may also use key qualitative

outcome data to inform specific subgroup analysis, or to investigate heterogeneity, if these attributes appear to be the source of such issues.

We recognise that the nature of the studies likely to be included in this review may be capricious and heterogeneous in a number of key clinical and methodological ways that cannot be fully predicted. If such factors are identified and become relevant to ensure the integrity of the analysis, we may need to modify this list. The review authors will fully report these changes.

### Sensitivity analysis

Where possible, we plan to undertake sensitivity analyses on the primary outcomes to assess whether the findings of the review are robust to the decisions made during the review process. In particular, we intend to exclude studies at high or unclear risk of bias due to allocation bias and performance bias from analyses that include studies with different risk of bias judgements. Where data analyses include studies with reported and estimated standard deviations, we plan to exclude those with estimated standard deviations, to assess whether this affects the findings of the review. We will investigate whether the choice of model (fixed-effect versus random-effects) impacts the results to explore heterogeneity in case of major inconsistencies between the results of the two models.

### Summary of findings and assessment of the certainty of the evidence

We will present the main results in a summary of findings table. We will export data for each comparison and primary outcome to GRADEpro software so we can assess the evidence for certainty (GRADEpro GDT). We will include all three primary outcomes in the summary of findings table.

Based on risk of bias, inconsistency, imprecision, indirectness, and publication bias, we will rate the certainty of the evidence for each outcome as high, moderate, low, or very low. The GRADE Working Group has defined these ratings as follows:

- High certainty: we are very confident that the true effect lies close to that of the estimate of the effect. Moderate certainty: we are moderately confident in the effect estimate; the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.
- Low certainty: our confidence in the effect estimate is limited; the true effect may be substantially different from the estimate of the effect.
- Very low certainty: we have very little confidence in the effect estimate; the true effect is likely to be substantially different from the estimate of effect.

We will justify all decisions to downgrade the certainty of the evidence using footnotes, and we will make comments to aid the reader's understanding of the review where necessary.

### ACKNOWLEDGEMENTS

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Dr. Yuhong Yuan (Information Specialist at the Cochrane Gut Group) designed the search strategies.



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## APPENDICES

### Appendix 1. CENTRAL Search strategy (via Ovid Evidence-Based Medicine Reviews Database)

1. exp Inflammatory bowel diseases/
2. (inflammatory bowel disease\* or IBD or UC or CD).tw,kw.
3. crohn\*.tw,kw.
4. (colitis or regional enteritis or proctocolitis or coloproctitis).tw,kw.
5. or/1-4
6. (phone\* or phoning or telephone\* or telecom or telecommunicat\* or tele-communicat\* or teleconferenc\* or tele-conferenc\* or telegraph\* or tele-graph\*).tw,kw.
7. exp Telecommunications/
8. (Electronic Mail\* or email\* or e-mail\* or Telefacsimile or fax or telehealth or tele-health or telemed\* or tele-med\* or ehealth or e-health or mhealth or m-health).tw,kw.
9. (instant messag\* or SMS or text or texting).tw,kw.
- 10.(webcast\* or webina\* or virtual conferenc\*).tw,kw.
- 11.((web or internet or online or video or virtual or mobile or digital\*) adj5 (care or communicat\* or health\* or medicine\* or medical or clinic\* or physician\* or treat\* or therap\* or intervention\* or conferenc\* or connect\*)).tw,kw.
- 12.(mobile or hotline or videoconferenc\* or wireless).tw,kw.
- 13.exp mobile applications/ or exp web browser/
- 14.(remote\* adj5 (care or communicat\* or health\* or medicine\* or medical or clinic\* or physician\* or treat\* or therap\* or intervention\* or conferenc\* or connect\*)).tw,kw.
- 15.(GoToMeeting or GoToWebinar or zoom meeting or spotMe or TurboMeeting or Livestorm).tw,kw.
- 16.(Google Meet\* or Cisco Webex or Microsoft Teams or join\*me).tw,kw.
- 17.or/6-16
- 18.5 and 17

### Appendix 2. MEDLINE Search strategy (via Ovid)

1. exp Inflammatory bowel diseases/
2. (inflammatory bowel disease\* or IBD or UC or CD).tw,kw.
3. crohn\*.tw,kw.
4. (colitis or regional enteritis or proctocolitis or coloproctitis).tw,kw.
5. or/1-4
6. (phone\* or phoning or telephone\* or telecom or telecommunicat\* or tele-communicat\* or teleconferenc\* or tele-conferenc\* or telegraph\* or tele-graph\*).tw,kw.
7. exp Telecommunications/
8. (Electronic Mail\* or email\* or e-mail\* or Telefacsimile or fax or telehealth or tele-health or telemed\* or tele-med\* or ehealth or e-health or mhealth or m-health).tw,kw.
9. (instant messag\* or SMS or text or texting).tw,kw.
- 10.(webcast\* or webina\* or virtual conferenc\*).tw,kw.
- 11.((web or internet or online or video or virtual or mobile or digital\*) adj5 (care or communicat\* or health\* or medicine\* or medical or clinic\* or physician\* or treat\* or therap\* or intervention\* or conferenc\* or connect\*)).tw,kw.
- 12.(mobile or hotline or videoconferenc\* or wireless).tw,kw.
- 13.exp mobile applications/ or exp web browser/
- 14.(remote\* adj5 (care or communicat\* or health\* or medicine\* or medical or clinic\* or physician\* or treat\* or therap\* or intervention\* or conferenc\* or connect\*)).tw,kw.
- 15.(GoToMeeting or GoToWebinar or zoom meeting or spotMe or TurboMeeting or Livestorm).tw,kw.
- 16.(Google Meet\* or Cisco Webex or Microsoft Teams or join\*me).tw,kw.
- 17.or/6-16
- 18.5 and 17
- 19.randomized controlled trial.pt.
- 20.controlled clinical trial.pt.
- 21.random\*.ab.
- 22.placebo.ab.

23.trial.ab.  
24.groups.ab.  
25.or/19-24  
26.exp animals/ not humans.sh.  
27.25 not 26  
28.18 and 27

Note: Lines 19-27. RCT filter: "Cochrane Highly Sensitive Search Strategy for identifying randomized trials in MEDLINE: sensitivity-maximizing version (2008 revision); Ovid format". We made the following minor revisions: we used "random\*" instead of "randomized.ab" or "randomly.ab." to capture word variations such as "randomised, randomization, random"; we removed "drug therapy.fs." from the above filter as this review is not related to drug therapy."

### Appendix 3. Embase Search strategy (via Ovid)

1. exp inflammatory bowel disease/
2. (inflammatory bowel disease\* or IBD or UC or CD).tw,kw.
3. crohn\*.tw,kw.
4. (colitis or regional enteritis or proctocolitis or coloproctitis).tw,kw.
5. or/1-4
6. (phone\* or phoning or telephone\* or telecom or telecommunicat\* or tele-communicat\* or teleconferenc\* or tele-conferenc\* or telegraph\* or tele-graph\*).tw,kw.
7. telecommunication/ or telephone/ or text messaging/ or fax/
8. (Electronic Mail\* or email\* or e-mail\* or Telefacsimile or fax or telehealth or tele-health or telemed\* or tele-med\* or ehealth or e-health or mhealth or m-health).tw,kw.
9. (instant messag\* or SMS or text or texting).tw,kw.
- 10.(webcast\* or webina\* or virtual conferenc\*).tw,kw.
- 11.((web or internet or online or video or virtual or mobile or digital\*) adj5 (care or communicat\* or health\* or medicine\* or medical or clinic\* or physician\* or treat\* or therap\* or intervention\* or conferenc\* or connect\*)).tw,kw.
- 12.(mobile or hotline or videoconferenc\* or wireless).tw,kw.
- 13.e-mail/ or hotline/ or mobile phone/ or videoconferencing/ or webcast/ or wireless communication/ or exp web browser/
- 14.(remote\* adj5 (care or communicat\* or health\* or medicine\* or medical or clinic\* or physician\* or treat\* or therap\* or intervention\* or conferenc\* or connect\*)).tw,kw.
- 15.(GoToMeeting or GoToWebinar or zoom meeting or spotMe or TurboMeeting or Livestorm).tw,kw.
- 16.(Google Meet\* or Cisco Webex or Microsoft Teams or join\*me).tw,kw.
- 17.or/6-16
- 18.5 and 17
- 19.random:.tw.
- 20.placebo:.mp.
- 21.double-blind:.tw.
- 22.or/19-21
- 23.exp animal/ not human/
- 24.22 not 23
- 25.18 and 24

Note: Line 19-22. Hedge Best balance of sensitivity and specificity filter for identifying "therapy studies" in Embase. [https://hiru.mcmaster.ca/hiru/HIRU\\_Hedges\\_EMBASE\\_Strategies.aspx](https://hiru.mcmaster.ca/hiru/HIRU_Hedges_EMBASE_Strategies.aspx)

### Appendix 4. PsycInfo Search strategy (via Ovid)

1. exp ulcerative colitis/
2. (inflammatory bowel disease\* or IBD or UC or CD).tw.
3. crohn\*.tw.
4. (colitis or regional enteritis or proctocolitis or coloproctitis).tw.
5. or/1-4
6. (phone\* or phoning or telephone\* or telecom or telecommunicat\* or tele-communicat\* or teleconferenc\* or tele-conferenc\* or telegraph\* or tele-graph\*).tw.
7. exp Telecommunications/

8. (Electronic Mail\* or email\* or e-mail\* or Telefacsimile or fax or telehealth or tele-health or telemed\* or tele-med\* or ehealth or e-health or mhealth or m-health).tw.
9. (instant messag\* or SMS or text or texting).tw.
- 10.(webcast\* or webina\* or virtual conferenc\*).tw.
- 11.((web or internet or online or video or virtual or mobile or digital\*) adj5 (care or communicat\* or health\* or medicine\* or medical or clinic\* or physician\* or treat\* or therap\* or intervention\* or conferenc\* or connect\*)).tw.
- 12.(mobile or hotline or videoconferenc\* or wireless).tw.
- 13.exp mobile applications/
- 14.(remote\* adj5 (care or communicat\* or health\* or medicine\* or medical or clinic\* or physician\* or treat\* or therap\* or intervention\* or conferenc\* or connect\*)).tw.
- 15.(GoToMeeting or GoToWebinar or zoom meeting or spotMe or TurboMeeting or Livestorm).tw.
- 16.(Google Meet\* or Cisco Webex or Microsoft Teams or join\*me).tw.
- 17.or/6-16
- 18.5 and 17
- 19.random:.tw.
- 20.18 and 19

Note: line 19. PsycINFO RCT filter: Eady AM, Wilczynski NL, Haynes RB. PsycINFO search strategies identified methodologically sound therapy studies and review articles for use by clinicians and researchers. J Clin Epidemiol. 2008;61(1):34-40. [Ovid]- Single term Best sensitivity & Best specificity.

## Appendix 5. AMED Search strategy (via Ovid)

1. exp inflammatory bowel disease/
2. (inflammatory bowel disease\* or IBD or UC or CD).tw.
3. crohn\*.tw.
4. (colitis or regional enteritis or proctocolitis or coloproctitis).tw.
5. or/1-4
6. (phone\* or phoning or telephone\* or telecom or telecommunicat\* or tele-communicat\* or teleconferenc\* or tele-conferenc\* or telegraph\* or tele-graph\*).tw.
7. exp Telecommunications/
8. (Electronic Mail\* or email\* or e-mail\* or Telefacsimile or fax or telehealth or tele-health or telemed\* or tele-med\* or ehealth or e-health or mhealth or m-health).tw.
9. (instant messag\* or SMS or text or texting).tw.
- 10.(webcast\* or webina\* or virtual conferenc\*).tw.
- 11.((web or internet or online or video or virtual or mobile or digital\*) adj5 (care or communicat\* or health\* or medicine\* or medical or clinic\* or physician\* or treat\* or therap\* or intervention\* or conferenc\* or connect\*)).tw.
- 12.(mobile or hotline or videoconferenc\* or wireless).tw.
- 13.(remote\* adj5 (care or communicat\* or health\* or medicine\* or medical or clinic\* or physician\* or treat\* or therap\* or intervention\* or conferenc\* or connect\*)).tw.
- 14.(GoToMeeting or GoToWebinar or zoom meeting or spotMe or TurboMeeting or Livestorm).tw.
- 15.(Google Meet\* or Cisco Webex or Microsoft Teams or join\*me).tw.
- 16.or/6-15
- 17.5 and 16

## Appendix 6. CINAHL (via EBSCO)

S18 S17 (Limiters - Exclude MEDLINE records)

S17 S15 AND S16

S16 MH "treatment outcomes+" OR MH "experimental studies+" or random\*

S15 S3 AND S14

S14 S4 OR S5 OR S6 OR S7 OR S8 OR S9 OR S10 OR S11 OR S12 OR S13

S13 TX Google Meet\* or Cisco Webex or Microsoft Teams or join\*me

S12 TX GoToMeeting or GoToWebinar or zoom meeting or spotMe or TurboMeeting or Livestorm

S11 TX remote\* AND TX ( care or communicat\* or health\* or medicine\* or medical or clinic\* or physician\* or treat\* or therap\* or intervention\* or conferenc\* or connect\* )

S10 TX mobile or hotline or videoconferenc\* or wireless

S9 TX ( web or internet or online or video or virtual or mobile or digital\* ) AND TX ( care or communicat\* or health\* or medicine\* or medical or clinic\* or physician\* or treat\* or therap\* or intervention\* or conferenc\* or connect\* )

S8 TX webcast\* or webina\* or virtual conferenc\*

S7 TX instant messag\* or SMS or text or texting

S6 TX Electronic Mail\* or email\* or e-mail\* or Telefacsimile or fax or telehealth or tele-health or telemed\* or tele-med\* or ehealth or e-health or mhealth or m-health

S5 (MH "Telecommunications")

S4 TX phone\* or phoning or telephone\* or telecom or telecommunicat\* or tele-communicat\* or teleconferenc\* or tele-conferenc\* or telegraph\* or tele-graph\*

S3 S1 OR S2

S2 TX inflammatory bowel disease\* or IBD or crohn\* or colitis or regional enteritis or proctocolitis or colorectitis

S1 (MH "Inflammatory Bowel Diseases+")

Note: line S16: Wong 2006, CINAHL filter for treatment studies [Table 3] Best sensitivity, Ovid format. <https://pubmed.ncbi.nlm.nih.gov/16773925/>

## HISTORY

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## CONTRIBUTIONS OF AUTHORS

MG: conceived the review question; secured funding; and developed, contributed to writing and editing, made an intellectual contribution to, advised on, approved the final version prior to submission, and is a guarantor of the protocol

VS: developed; produced the first draft; contributed to writing and editing; made an intellectual contribution to; approved the final version prior to submission; and is a guarantor of the protocol

SL: made an intellectual contribution to; approved the final version prior to submission

TGH: made an intellectual contribution to; approved the final version prior to submission

KB: made an intellectual contribution to; approved the final version prior to submission

AK: made an intellectual contribution to; advised on; and approved the final version of the protocol prior to submission

## DECLARATIONS OF INTEREST

Morris Gordon. Since August 2016, I have received travel fees to attend international scientific and training meetings from Pharma companies. These grants included no honoraria, inducement, advisory role, or any other relationship, and were restricted to the travel- and meeting-related costs of attending such meetings. These include: Digestive Disease Week (DDW) in May 2017, World Congress of Gastroenterology in October 2017, DDW in May 2018, Advances in IBD in December 2018, DDW in May 2019. The companies include: Biogaia (2017 to 2019), Ferring (2018), Allergan (2017), Synergy (bankrupt - 2018), and Tillots (2017 to 2019). None of these companies had any involvement in any work completed by me, and I have never had any payments for any other activities for them, as confirmed below. From this date onwards, I have made a personal undertaking to take no further funds from any pharmaceutical or formula company, in any form, for travel or other related activities. This is to lift the limitations such funding has on my ability to act as a first and corresponding author on reviews, in line with the Cochrane policies on such matters, and is reported in line with these policies. These current declarations will expire over the next three years, and this statement will be updated regularly to reflect this.

Vassiliki Sinopoulou has nothing to declare.

Anthony Akobeng was the PI of a previously published RCT that investigated the role of telephone consultation in paediatric IBD.

**Remote care through telehealth for people with inflammatory bowel disease (Protocol)**

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Svetlana Lakunina has nothing to declare.

Teuta Gjuladin-Hellon has nothing to declare.

Kelly Bracewell has nothing to declare.

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- KB, SV, TGH, AA, UK

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- All authors, UK

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