Research priority setting in Barrett's oesophagus and gastro-oesophageal reflux disease

James Britton, Lisa Gadeke, Laurence Lovat, Shaheen Hamdy, Chris Hawkey, John McLaughlin, Yeng Ang

The incidence of gastro-oesophageal reflux disease and Barrett's oesophagus is increasing. Barrett's oesophagus is the main precursor to oesophageal adenocarcinoma, which has a poor prognosis. In view of the vast potential burden of these diseases on patients and health-care resources, there is a real need to define and focus research efforts. This priority setting exercise aimed to produce a list of the top ten uncertainties in the field that reflect the priorities of patients and health-care providers. We adopted the robust and transparent methodologies previously outlined by the James Lind Alliance. This qualitative approach firstly involves an ideas gathering survey that, once distilled, generates a longlist of research uncertainties. These uncertainties are then prioritised via an interim ranking survey and a final workshop to achieve consensus agreement. The initial 629 uncertainties, generated from a survey of 170 individual respondents (47% professional, 53% non-professional) and one workshop, were narrowed down to the final top ten uncertainties of priority for future research. These priorities covered a range of issues, including a need for improved patient risk stratification, alternative diagnostic and surveillance tests, efficacy of a dedicated service for Barrett's oesophagus, cost-effectiveness and appropriateness of current surveillance, advances in development of non-drug treatments for gastro-oesophageal reflux disease, safety of long-term drug treatment, and questions regarding the durability and role of different endoscopic therapies for dysplastic Barrett's oesophagus. This is the first patient-centred assessment of priorities for researchers in this chronic disease setting. We hope that recognition and dissemination of these results will shape the future direction of research and translate into meaningful gains for patients.

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Division of Diabetes, Endocrinology and Gastroenterology, School of Medical Sciences, Faculty of Biology, Medicine and Health, University of Manchester, Manchester, UK (J Britton MB ChB, Prof S Hamdy PhD, Prof J McLaughlin PhD, Y Ang MD)**; Manchester Academic Health Sciences Centre, Manchester, UK** (J Britton, Prof S Hamdy, Prof J McLaughlin, Y Ang)**; Wrightington, Wigan and Leigh NHS Trust, Wigan, UK** (J Britton)**; Queen Alexandra Hospital, Portsmouth, UK** (L Gadeke PG Dip)**; Division of Surgery & Interventional Science, University College London, London, UK** (Prof L Lovat PhD)**; Wellcome EPSRC Centre for Surgical & Interventional Science, University College London, UK** (Prof L Lovat)**; University College London Hospitals, London, UK** (Prof L Lovat)**; Salford Royal NHS Foundation Trust, Salford, UK** (Prof S Hamdy, Prof J McLaughlin, Y Ang)**; and Queen's Medical Centre Campus, University of Nottingham, Nottingham, UK** (Prof Chris Hawkey F Med Sci)

Correspondence to: Dr Yeng Ang, Salford Royal NHS Foundation Trust, Salford M6 8HD, UK **yeng.ang@srft.nhs.uk**

Introduction

Research could be considered a well established concept that aims to address important and relevant uncertainties. Who determines key research priorities is somewhat less clear. Why do some areas of research receive focus and funding, leaving others perhaps overlooked? Research is typically funded by the government (the public), industry (pharmaceutical and medical device companies), and charities. Past financial constraints on public research spending has produced strong links between academic researchers and industry,[1] conceivably affecting the selection of research areas. The misalignment of priorities between researchers and research users (patients and health-care staff) could potentially have serious deleterious consequences.[2,3] Tallon and colleagues[4] first described this imbalance in the setting of osteoarthritis, where an inappropriate focus on drug treatments in ongoing clinical trials stood in stark contrast to results of surveys and focus groups showing that patients, rheumatologists, physiotherapists, and general practitioners all sought strengthened emphasis on research into non-drug treatments.[4] Historically, researchers have not routinely engaged with the agendas of the research user; those researchers who did used varying methods and levels of research-user involvement, indicating the lack of consensus as to the best approaches.[5] The gap between researchers and research users is being closed by an increase in patient and public involvement when setting research agendas (appendix p 3). The publication of top ten research priorities has become a potentially powerful influence on the direction of future research.[6,7] The James Lind Alliance is a non-profit initiative dedicated to bringing together clinicians, patients, and carers to discuss research priorities in a variety of disease and health-care settings. Their methodologies have been recognised by the UK's National Institute for Health Research[8] and should guide those seeking to define research uncertainties in their own field of interest.[9]

There is no patient-centred assessment of priorities for research in the field of Barrett's oesophagus or gastro-oesophageal reflux disease. In view of the growing incidence of these diseases, their future burden on health-care resources, and the poor advances in oesophageal adenocarcinoma survivorship, future research efforts must be defined and focused.[10,11] Our aim was to facilitate balanced input in the priority setting process for Barrett's oesophagus and gastro-oesophageal reflux disease and to reach a consensus on the top ten uncertainties in the field, with the hope of influencing the direction of future research agendas.

Methodology

The project was launched at the 10th National Barrett's Symposium in April, 2016. Attendees, including professionals, patients, and charity representatives, were invited to participate in an interactive workshop on research priority setting. Volunteers from this workshop formed a steering committee that identified the broader interested parties (panel 1). The project was facilitated by the research charity of the British Society of Gastroenterology (CORE) within the setting of a publicly funded National Health Service (NHS). The University of Manchester acted as an academic adviser throughout.

The process of identifying research priorities is outlined in the figure (appendix pp 1–3). The first step involved an initial data collection survey, distributed by charities and organisations (panel 2), to generate a longlist of research

See Online for appendix

For the **James Lind Alliance** see http://www.jla.nihr.ac.uk

uncertainties. These uncertainties were then subjected to rigorous review against the current evidence base to ensure that they are true unknowns (appendix p 4), after which we conducted an interim prioritisation survey with the aim of ranking uncertainties to generate a more concise list. The shortlisted uncertainties were then deliberated on in a final group workshop, during which a modified Nominal Group Technique[12] was used to identify and rank the final top ten uncertainties.

Panel 1: **Interested parties**

Professionals
- Gastroenterologists
- Upper gastrointestinal surgeons
- Registrar trainees
- Nurse endosopists and endoscopy nurses
- Histopathologists
- Clinical researchers and clinician scientists

Non-professionals
- Patients (Barrett's oesophagus, gastro-oesophageal reflux disease, and oesophageal adenocarcinoma)
- Family members or friends of patients
- Charities

Excluded
- Non-clinical researchers
- Associated industry employees (eg, drug and medical device companies)

Findings

The initial survey generated 629 uncertainties from 170 survey respondents, including 301 from non-professionals (n=90), 320 from professionals (n=80), and eight from the initial workshop. Of the 629 uncertainties, 107 met the criteria for immediate exclusion (48 from professionals, and 59 from non-professionals; appendix p 4). The remaining 522 uncertainties were assigned to broad categories to facilitate distillation of the content; repeated and similar uncertainties were then combined to form a single research question. The distillation process was done by an analyst (JB, a gastroenterology specialist) and overseen by the University of Manchester academic adviser (JM). This process was then repeated for each category, ultimately producing a provisional longlist of 50 research questions. These 50 questions were reviewed by a professional subgroup of the steering committee, resulting in the exclusion of 13 questions as not true unknowns. One further uncertainty was deemed

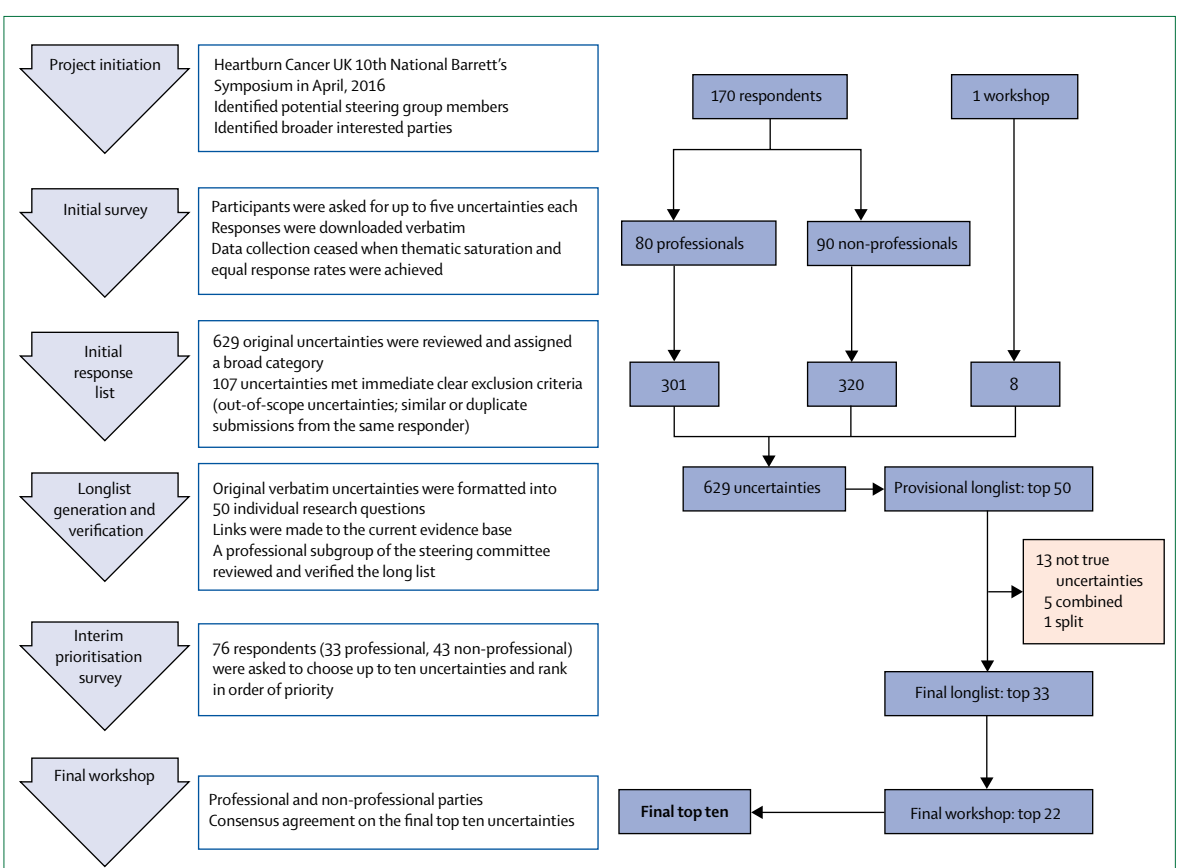

Figure: **Summary of the methodology**

to ask two separate questions and was therefore split, and five other uncertainties had substantial crossover and were combined. This verification process produced a final longlist of 33 unique questions for the interim prioritisation survey (table 1).

The professional and non-professional rankings from the interim prioritisation survey were combined to produce a ranked list. The list was once again reviewed by the subgroup of the steering committee, and the top 22 ranking uncertainties were taken forward to the final workshop (table 1). This cutoff was chosen because of the clear agreement between professionals and non-professionals on the low-priority status of the 11 excluded uncertainties. We also did not want to overload participants in the final workshop with an unmanageable number of questions to process and rank.

The final workshop included 13 participants, five of whom were health-care professionals (three consultant gastroenterologists and two specialist nurses) and eight of whom were patient representatives. Participants were divided into three small groups with a balanced representation. The groups were in unanimous agreement about five uncertainties to be included in the top ten list, including those that should rank in the top three positions. After deliberation among all workshop participants, five uncertainties were deemed to overlap with others and were therefore combined, facilitating agreement on the remaining uncertainties to be included in the final top ten list (table 2). This discussion also allowed some important elements from low-ranked uncertainties to be pulled into the final top ten list. Such priorities might not have made the final selection on their own merit. For example, elements of the shortlisted priority, how the current surveillance practice across the UK compares to the current national guideline and would a national Barrett's oesophagus audit or registry improve standards or care, were combined with a more popular priority relating to the efficacy of a dedicated Barrett's oesophagus clinic. Secondary review of excluded uncertainties gave participants an opportunity to voice any final concerns or opinions. The final top ten research priorities are listed in table 2.

Panel 2: Charities and organisations invited to distribute the survey

Professional

- British Society of Gastroenterology
- Association of Upper GI Surgeons
- Primary Care Society for Gastroenterology

Non-professional

- CORE—Fighting Gut and Liver Disease
- Action Against Heartburn
- Barrett's Oesophagus Campaign
- Barrett's Wessex
- Cancer Research UK
- Campaign Against Reflux Disease
- Fighting Oesophageal Reflux Together
- Gutsy Group—Patient Support Group
- Heartburn Cancer UK
- Humberside Oesophageal Support Group
- Michael Blake Foundation—Oesophageal Cancer Awareness and Prevention.
- Oesophagoose—Oesophageal and Gastric Cancer Awareness Campaign
- Oxfordshire Oesophageal and Stomach Organisation
- OCHRE Charity—Promoting Awareness of Oesophageal Cancer. Scotland.
- Oesophageal Patients Association

Discussion

This exercise in research priority setting outlines ten key areas in which research efforts and resources should be focused. We think these priorities highlight crucial areas that can facilitate important long-term benefits to patients while equipping medical staff with knowledge, improved treatments, and enhanced services.

The incidence of gastro-oesophageal reflux disease and subsequent diagnoses of Barrett's oesophagus is increasing. Considering that most people with reflux do not have Barrett's oesophagus, this poses a huge problem for future health-care resources, an issue that is reflected strongly in our top ten list of uncertainties. An improved understanding of who to screen (first priority), coupled with an accurate and cost-effective primary care screening test (third priority) would obviate the need for invasive endoscopy in many patients. Not only might this be more acceptable to patients, but it would dramatically reduce some of the pressures in many endoscopy departments. The first and third priorities were originally ranked much lower in the interim priority-setting survey (combined ranks of 14 and 18, respectively), particularly by non-professionals. It is not uncommon for discrepancies to exist between the final workshop results and those of the interim survey. One of the roles of the final workshop is to highlight imbalances between professionals and non-professionals and to identify areas that might be important to a minority group or that might have been under-represented during the process. For example, the discrepancy seen here could reflect differences in the composition of the non-professional group that participated in the initial survey and that of the group involved in the interim survey. The latter group might have more direct experience with Barrett's oesophagus and relatively less vested interest in the gastro-oesophageal reflux disease population, the area to which these priorities relate. During the final workshop, all non-professional participants agreed on the importance of these issues after considering the wider implications to the population and initial survey responses.

Insufficient evidence exists to accurately stratify risk in patients diagnosed with Barrett's oesophagus (second and seventh priority).[13] Most patients will therefore have

long-term surveillance, for which the evidence of efficacy is limited.[14] Data suggest that most patients with Barrett's oesophagus have low malignant potential and are perhaps more likely to die from other diseases than oesophageal adenocarcinoma.[15,16] Thus, blanket surveillance might not be cost-effective or beneficial to most patients (ninth priority).[17] Without improved risk stratification, this chronic disease could impose an unnecessary burden on endoscopy provisions and on patients—this is clearly frustrating for both clinicians and patients and is echoed by several items in the top ten list. P53 is the only biomarker recommended for histopathological diagnosis of Barrett's oesophagus in a clinical setting,[18] but the efficacy of this biomarker has been challenged in a recent consensus statement.[19] To date, it has been very challenging to predict the progression of non-dysplastic Barrett's oesophagus using biomarkers, and there has been little success in translating research advances into routine clinical use.[20] The mutational profile of Barrett's oesophagus appears highly heterogeneous, with mutations already occurring in non-dysplastic tissue. More recent developments in genomic sequencing are promising, and further research is clearly warranted (seventh priority).[21] We expect that improved individual risk stratification would reshape surveillance practices with improved identification and treatment of patients at high risk while safely relaxing follow-up intervals or even discontinuing surveillance for others.

Advances in screening and risk stratification will take years to fully develop before they influence standard care.

	Professional rank	Non-professional rank	Combined rank
Included after interim prioritisation			
How can we identify which patients with Barrett's oesophagus are at most risk of developing cancer to target surveillance more appropriately?	1	2	1
How does the patient's genetic make-up and family history relate to their risk of disease progression (from gastro-oesophageal reflux disease to Barrett's oesophagus to precancerous disease to cancer) and potential response to treatments?	7	9	2
When should we intervene with Barrett's oesophagus; is there a role for endoscopic intervention (ablation) of Barrett's oesophagus with no precancerous changes?	9	7	2
What are the most appropriate intervals for surveillance? And when can it be discontinued?	10	8	4
Which endoscopic therapy and techniques (eg, radiofrequency ablation) are most effective, safest, and economical when treating Barrett's oesophagus at precancer stages (dysplasia)? Is there a role for other methods (eg, cryoablation or argon plasma coagulation)?	2	18	5
How effective are lifestyle interventions (eg, diet, exercise, weight loss, smoking cessation) in improving reflux symptoms, and can they alter an individual's risk of Barrett's oesophagus or cancer?	16	5	6
Should surveillance and new patient clinics for Barrett's oesophagus be done by a dedicated service rather than by all general endoscopists? What effect would this have on patients, particularly precancer diagnosis rates, patient education, and satisfaction?	3	21	7
What key factors can be identified at a cellular level in the progression from a normal oesophagus to Barrett's oesophagus to precancerous disease to cancer? Are these factors the same in young and elderly patients or those after endoscopic treatment (ablation), for example?	22	3	8
Are there any long-term complications or risks with prolonged proton-pump inhibitor use? Could there be particular effects on bone density, blood electrolytes, kidney function, and cognitive impairment?	24	1	8
Are proton-pump inhibitors the only long-term option for treating reflux? What other treatment options are available for patients who are intolerant, unresponsive, or unwilling to take proton-pump inhibitors (eg, surgery, minimally invasive techniques, and new medications)?	21	4	8
What is the long-term effectiveness of endoscopic treatment for precancerous Barrett's oesophagus or early cancers? Are response rates sustained? How does this affect the need for future endoscopic surveillance in these patients?	12	13	8
Is there any role for the new, less invasive, techniques in controlling reflux, such as electrical stimulation of the lower oesophagus from a device implanted underneath abdominal skin (Endostim) or radiofrequency energy to the lower oesophageal muscle via endoscopy (Stretta)?	8	19	12
How can we raise the public awareness and profile of acid reflux and its links to Barrett's oesophagus and cancer?	18	10	13
How can we accurately identify people at high risk from the general population to target Barrett's oesophagus screening?	5	24	14
Can Barrett's oesophagus be reversed or its progression to cancer halted by drug therapy (chemoprophylaxis)?	19	10	14
Is there a role for anti-reflux surgery to prevent Barrett 's oesophagus with no precancerous changes from progressing or to prevent disease recurrence after endoscopic treatment for precancer or early cancer?	13	16	14
What key factors contribute to gastro-oesophageal reflux disease? How important is the presence of a hiatus hernia with respect to reflux severity, symptoms, and cancer risk?	26	6	17
Is there a more acceptable, cost-effective, and accurate test for surveillance and screening of Barrett's oesophagus in a primary care setting (ie, in general practitioners' surgeries)?	4	30	18
How do we cope with the increasing demand for diagnostic and surveillance services? Is blanket surveillance of all patients with Barrett's oesophagus beneficial to patients or cost-effective in its current model?	13	22	19
Are we able to distinguish between bile reflux and stomach acid reflux? What implications does this have on the development of Barrett's oesophagus, cancer risk, and treatments?	26	12	20
How does existing surveillance practice across the UK compare with the national guideline by the British Society of Gastroenterology? Would a national Barrett's Oesophagus audit or registry improve standards or care?	11	27	20
Is there a role for acetic acid or endoscopic-image enhancers in routine surveillance of Barrett's oesophagus? What effect would this have on precancer diagnosis, patient outcome, and patient satisfaction?	6	32	20

(Table 1 continues on next page)

	Professional rank	Non-professional rank	Combined rank
(Continued from previous page)			
Excluded after interim prioritisation			
How does primary care (ie, general practitioners, nurse practitioners, and pharmacists) perceive gastro-oesophageal reflux disease and Barrett's oesophagus? Does this have an effect on patients' health behaviour, endoscopy referrals, or prescribing practices, for example?	23	17	23
Is Barrett's oesophagus over-diagnosed or under-diagnosed at endoscopy? What training resources could improve the accuracy and prevent inappropriate surveillance and burden to patients?	15	26	24
What is the effect of Barrett's oesophagus and its care pathways on patients' daily quality of life?	17	24	24
Do patients with night-time acid reflux have more severe disease and greater cancer risk than patients with daytime acid reflux? How can these symptoms be optimally treated?	30	15	26
How common is Barrett's oesophagus in the general population and is the incidence increasing in young people?	33	13	27
How can we accurately identify and treat the less obvious, non-oesophageal symptoms that can be caused by reflux (eg, a recurrent cough)?	24	23	28
Are any identifiable patient risk factors or triggers associated with breakthrough and treatment-resistant symptoms?	20	28	29
How can the various associated charities and patient support groups work together more effectively?	29	20	30
Do environmental factors affect the number of people, from one region to another, diagnosed with gastro-oesophageal reflux disease, Barrett's oesophagus, or oesophageal cancer?	26	31	31
Is there a role for mobile phones and apps to create an interactive network for patients with gastro-oesophageal reflux disease or Barrett's oesophagus? Could these devices be used to support patients and also rapidly provide large amounts of research data?	31	29	32
What is the role of pH testing (measuring acid reflux via a probe in the oesophagus) in Barrett's oesophagus? What other parameters are available to measure reflux severity and effect?	32	33	33

Endostim=electrical stimulation of the lower oesophagus from a device implanted underneath abdominal skin. Stretta=radiofrequency energy to the lower oesophageal muscle via endoscopy.

Table 1: **Interim prioritisation of long-list ranking**

Some uncertainties therefore focused on an immediate need to improve service delivery and quality (fourth priority). An assessment of the effect of a dedicated service for patients with Barrett's oesophagus (endoscopy surveillance and Barrett's clinic) should provide some insight into the efficacy and acceptability of existing treatment delivery pathways. Some historical evidence suggests that patients with Barrett's oesophagus have often received haphazard and inconsistent follow-up care,[22] but the true effect of Barrett's oesophagus and its follow-up care on patients remains unknown. The design and implementation of a dedicated service must consider the patient's perspective, and its success should be measured using both clinical outcomes and patient-centred outcomes. A randomised intervention study to assess the suitability and efficacy of a dedicated service compared with current practice would provide valuable insight and could help to shape future health-care delivery for patients with this disease. We envisage the establishment of dedicated surveillance endoscopy services and new patient clinics managed by trained nurse endoscopists alongside a consultant gastroenterologist with an interest in Barrett's oesophagus and oesophageal adenocarcinoma.

Some uncertainties might be oriented specifically towards either patients or professionals. One particular area that received consistent patient interest was safe and effective treatment of acid reflux (sixth and eighth priorities). Many patients with gastro-oesophageal reflux disease and most patients with Barrett's oesophagus need long-term treatment with proton-pump inhibitors (PPIs), sometimes for decades. Patients are rightly concerned about long-term drug safety, which has been questioned on the basis of findings from observational studies.[23] Although no causality can be proven in these studies, long-term drug safety is an important area that needs further clarity, particularly in view of the vast unmonitored use of these drugs. This uncertainty seems to have been overlooked or possibly dismissed by professionals on the basis of limitations of epidemiological and observational studies. To address this crucially important patient question, future studies should be more specific and definitive in focus and prospective in design.[24] For example, Jo and colleagues[25] prospectively examined the effect of PPI use on parameters of bone health. The results of this small randomised controlled trial showed that 8 weeks of PPI therapy might directly alter bone metabolism, particularly in people older than 60 years.

Substantial proportions of patients are intolerant, poorly responsive, or unwilling to take PPIs; this issue was also deemed crucially important to the non-professionals involved in this process. Such patients can be difficult to treat since there are few adequately developed or widely available alternatives to PPIs. This issue was echoed in the top ten list by an interest in newer, minimally invasive, or surgical non-drug treatments (eighth priority) and perhaps reflects a need for a low-risk, long-term treatment strategy and concerns associated with lifelong oral medication. Some minimally invasive surgical and endoscopic anti-reflux techniques have shown promise. However, many of these trials were small and uncontrolled, with no clear standardised methods of assessing subjective or objective endpoints. Stretta—radiofrequency energy delivered to the lower oesophageal muscle via endoscopy—has been used for

	Final rank
How can we accurately identify the people at high risk from the general population to target Barrett's oesophagus screening?	1
How can we achieve individual risk stratification of patients with Barrett's oesophagus to target surveillance more appropriately?	2
Is there a more acceptable, cost-effective, and accurate test for surveillance and screening of Barrett's oesophagus in a primary care setting?	3
Should surveillance and new patient clinics for Barrett's oesophagus be done by a dedicated service? How would this compare with existing standards of practice in the UK, and what effect would this have on patients (eg, precancer diagnosis rates, patient education, quality of life, and satisfaction)?*	4
What is the long-term effectiveness of endoscopic treatment (radiofrequency ablation) for precancerous Barrett's oesophagus or early cancers? How does this affect the need for future endoscopic surveillance in these patients? Is there a role for other methods such as cryoablation or argon plasma coagulation in these care pathways?*	5
Are there any long-term complications or risks with prolonged proton-pump inhibitor use? Could there be particular effects on bone density, blood electrolytes, kidney function, and cognitive impairment?	6
How does the patient's genetic makeup relate to their risk of disease progression at a cellular level (from gastro-oesophageal reflux to Barrett's oesophagus to precancerous disease to cancer), particularly in younger patient groups, those with a strong family history, and those with disease recurrence after endoscopic treatment (ablation)?*	7
Are proton-pump inhibitors the only long-term option for treating reflux? What other treatment options are available for patients who are intolerant, unresponsive, or unwilling to take proton-pump inhibitors (eg, surgery, minimally invasive techniques, and new medications)?*	8
Is blanket surveillance of all patients with Barrett's oesophagus beneficial to patients or cost-effective in its current model? Are current surveillance intervals appropriate, and when can surveillance be safely discontinued?*	9
Is there a role for anti-reflux surgery to prevent Barrett's with no precancerous changes progressing or to prevent disease recurrence after endoscopic treatment for pre-cancer?	10

*This priority was created by merging two priorities from the previous round.

Table 2: **Final top ten research priorities for Barrett's oesophagus and gastro-oesophageal reflux disease**

15 years, yet conflicting reports regarding its efficacy still exist.[26–29] Perhaps increased focus should now be put on new, promising techniques including magnetic sphincter augmentation,[30] Endostim,[31–33] and transoral incisionless fundoplication.[34,35] Assessment of the efficacy and durability of these approaches will necessitate large, multicentre, randomised studies (fifth and tenth priorities). Researchers must also consider a standardised approach for assessing primary and secondary outcomes to draw clear between-study comparisons and more definitive conclusions.

Advances in radiofrequency ablation technologies and regimens have led to substantial improvements in the safety and efficacy of treatment for dysplastic Barrett's oesophagus. This is reflected by durability data from the Halo registry.[36] However, a small group of patients have disease recurrence.[37] Long-term surveillance after endoscopic therapy is therefore imperative. To develop optimal surveillance strategies, we need long-term durability studies coupled with a better appreciation of disease recurrence at a cellular level (fifth and seventh priorities).

Although radiofrequency ablation, particularly circumferential treatments, have become the mainstay of therapy for flat dysplastic Barrett's oesophagus, some controversy around the most effective methods for treating focal disease[38] and the potential roles of adjunctive treatments remains (eg, argon plasma coagulation, cryotherapy).[39,40]

Within the excluded uncertainties, three were perhaps surprising. The first related to the use of radiofrequency ablation to treat non-dysplastic Barrett's oesophagus, which is common in other health-care settings, particularly the private health-care system in the USA.[41] Although this topic ranked highly during interim prioritisation, participants of the final workshop thought further research to investigate this treatment pathway was impractical and too expensive within a publicly funded NHS. Sufficient evidence argues against this practice when one considers non-dysplastic cancer conversion rates, procedural complications, and cost-effectiveness. Second, the role of chemoprophylaxis was highly rated in earlier rounds of prioritisation, and its ultimate exclusion might have been due to the imminent conclusion of the AspECT trial,[42,43] a phase 3 randomised trial of aspirin and esomeprazole chemoprevention in Barrett's oesophagus that will provide some answers to this unknown. Third, the effect of lifestyle on gastro-oesophageal reflux symptoms and progression of Barrett's oesophagus was popular among patient participants during early prioritisation rounds but fell out of favour in the final workshop. One explanation for this might be the difficulty this research question poses in terms of trial design, outcome measures, and the long length of follow-up needed to generate reliable results.

Throughout this process, we tried to engage a diverse, representative group to ensure the democratic legitimacy of the results. Final workshop participants were chosen on the basis of a high level of previous expertise and experience to provide a contributory role. Some people might argue that this group is therefore exclusive and not truly representative of the broader interested parties. However, participants, particularly non-professionals, were empowered to speak on behalf of all patients by supplying them with a wide selection of population data from the previous rounds of voting. This allowed participants to reflect not only on their individual experiences but also the views of the wider patient population.[6,44]

Previous priority-setting partnerships that used the same methodologies have been criticised for generating loosely defined questions that are difficult to transform into actual research proposals. We have therefore attempted to formulate detailed, well defined uncertainties that still reflect the original scope of responses.

The methodologies are somewhat selective by nature. First, the survey was done in the English language and was primarily internet-based with no means of calculating response rates.[45] Second, many respondents, particularly those associated with charities, are likely to be white, middle class, and with a high background educational level. By comparison, individuals who are harder to reach, such as people in low socioeconomic groups and vulnerable patients, might have the greatest unmet needs and stand the most to gain.[46] However, engaging the disengaged is extremely challenging, especially with finite financial resources and manpower. Third, to distil the original verbatim responses into a representative shortlist, a degree of interpretation must occur. Ideas or information might have been lost or misunderstood during this process.

Our study has a smaller sample size than some studies using James Lind Alliance techniques, especially in view of the prevalence of Barrett's oesophagus and gastro-oesophageal reflux disease. This limitation was counteracted by asking respondents to choose up to five initial uncertainties. The subsequent qualitative elements within the methodologies ensures that the success of the project does not rely purely on a majority vote. Clear thematic saturation of research uncertainties was achieved during the initial survey, allowing progression through the ranking stages. Considered deliberation in the final workshop also allowed for the inclusion of priorities originally generated by minority groups. Finally, Barrett's oesophagus and gastro-oesophageal reflux disease are diseases that affect people everywhere and are particularly prevalent in the developed world. This study is representative of patients and front-line staff in the UK's NHS, and other countries with different health-care provisions might produce different priorities.

Effective dissemination of these research priorities to the appropriate audience is essential for the success of this project. This initiative is the first to tackle this important issue in Barrett's oesophagus and gastro-oesophageal reflux disease, and we hope that it will be taken into consideration by researchers and potential funders, such as the National Institute for Health Research, the Association for Medical Charities, and the Medical Research Council. Further dissemination via conference presentation and communication of the results via CORE will be essential.

The immediate effects of these results are of interest and can be assessed in terms of the number of research projects undertaken, developed, or funded within the next 1–2 years. Assessing the long-term and broader population benefits of this work will be much more difficult. Previous priority-setting partnerships have been successful for several reasons. Some have highlighted areas previously overlooked or not considered.[45,47] Others have substantially influenced the immediate direction of research; most notably, the priority-setting partnership for urinary incontinence helped attract funding and research developments in six of ten priorities within 12 months.[7]

Conclusions

The advent of patient and public involvement in both research and health-care improvement is undoubtedly essential. The identification of research priorities is perhaps where their greatest effect can be achieved. This top ten list of patient-centred research questions is the first for Barrett's oesophagus and gastro-oesophageal reflux disease. We hope these priorities will help focus researchers' efforts and influence future funding of areas in which meaningful gains can be made for patients. In view of the prevalence of Barrett's oesophagus and gastro-oesophageal reflux disease, this priority list has the potential to affect many patients and health-care providers. As the research advances, this process should be repeated to maintain a relevant and up-to-date focus for researchers.

Contributors

All authors contributed to this work. This project was initially instigated and the prioritisation exercise led by CH and JM. JB was the main coordinator and analyst. After the exercise, JB and YA led on writing the paper. All authors helped facilitate data collection, data analysis, and interpretation. All authors had a role in writing and revision of the manuscript prior to submission.

Declaration of interests

We declare no competing interests.

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