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AFCOS: The development of a cryptoglandular Anal Fistula Core Outcome Set

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And the AFCOS consensus meeting collaborators

Short title: Anal Fistula Core Outcome Set

Structured Abstract

Objective: To develop a cryptoglandular Anal Fistula Core Outcome Set: a minimum set of outcomes that should be measured in all studies of cryptoglandular anal fistula treatment.

Background: Variability in the outcomes that are reported in studies of cryptoglandular anal fistula treatment hampers systematic evidence synthesis to identify the best treatment.

Methods: This study followed guidance from the Core Outcome Measures in Effectiveness Trials (COMET) initiative and consisted of three stages; 1) generation of candidate outcomes through systematic review of the literature and qualitative patient interviews 2) prioritization of outcomes by key stakeholders, including patients, surgeons, gastroenterologists and radiologists in an online Delphi consensus process and 3) determination of the final COS in a consensus meeting attended by patients and clinicians.

Results: 64 outcomes were presented in the first Delphi survey round. A total of 191 participants from over 30 countries ranked these outcomes according to their importance in defining treatment success (57.6% surgeons and gastroenterologists, 8.9% radiologists, 33.5% patients). Following two rounds, fifty-three outcomes were identified as important and discussed in the consensus meeting attended by 10 patients and 12 clinicians. A final 10

outcomes were voted into the COS: clinical fistula healing, radiological healing, recurrence, development of additional fistulas, fistula symptoms, incontinence, psychological impact of treatment, complications and reinterventions, patient satisfaction and quality of life.

Conclusion: The final COS represents an international, multi-disciplinary, patient-centered attempt to establish consistency in fistula research, with a substantial focus on patient priorities for treatment.

Key words: Anal fistula, outcomes, core outcome set, Delphi consensus

INTRODUCTION

A cryptoglandular anal fistula is an abnormal, epithelialized tract connecting the luminal surface of the anorectum to the perianal skin, with an underlying infective aetiology (1). Despite the simplicity of its description, anatomical complexity, recurrent disease and the risk of continence impairment can make fistulas challenging to treat. The number of interventions available reflects the ongoing difficulty of achieving lasting fistula closure, with many treatments demonstrating modest success rates that decline over time (2). This places emphasis on conducting well-designed research studies and clinical trials to inform clinical practice. One of the main difficulties in assessing treatment effectiveness is the heterogeneity of outcomes used in research, which limits evidence synthesis and meta-analysis (3). As a result, there is wide variation in the treatments used based on surgeon experience and geographic location (4), and a lack of consensus on some treatments in published fistula guidelines (5).

Core Outcome Sets (COS) have been proposed to reduce outcome heterogeneity by establishing a minimum set of outcomes that should be reported in all studies for a given health condition (6,7). A COS should include the outcomes that are key to demonstrating treatment effectiveness for all involved stakeholders, but not be too numerous for researchers and clinical trialists to implement. Similarly, a COS is not intended to be restrictive, rather it allows additional outcomes to be reported at the researcher's discretion. Involving patients in COS development promotes the inclusion of patient-centred outcomes, as research studies typically report those outcomes deemed important by clinicians and clinical trialists (6).

The aim of this study is to develop a COS for all adult patients undergoing medical, surgical or combination treatment for cryptoglandular anal fistula, to be used in clinical trials and research studies.

METHODS

This study was conducted in three stages. A systematic review of current literature and qualitative patient interviews were conducted to create a longlist of outcomes, followed by an online Delphi survey to shortlist the most important outcomes. The final COS was established during a consensus meeting in accordance with guidance provided by the Core Outcome Measures in Effectiveness Trials (COMET) initiative (6).

The COS was registered with the COMET database in May 2018 (https://comet-initiative.org/Studies/Details/1145) and the study protocol has been published (8). The study was planned and executed by the AFCOS study management group, consisting of clinicians and researchers and patient representatives. Study findings are reported in line with the Core Outcome Set- STAndards for Reporting (COS-STAR) statement (9).

Participants

The key stakeholders involved in all stages of COS development were patients with an anal fistula, or those who had undergone successful treatment within the preceding 6 months, researchers with experience of assessing the outcomes of fistula treatment and clinicians involved in the management of fistula patients. The latter group included general and colorectal surgeons, gastroenterologists, proctologists and radiologists. Participants were recruited via their clinicians and social media posts. Clinicians were also recruited through the European Society of Coloproctology (ESCP) newsletter and website, and emails were sent to ESCP national representatives to disseminate amongst their respective networks. Papers on cryptoglandular anal fistula published in the preceding two years were screened and the corresponding authors were contacted via email.

Stage I: Systematic review and patient interviews

A longlist of outcomes was developed by reviewing those that are currently reported in studies of anal fistula through systematic review of the literature (3). This was supplemented by qualitative patient interviews conducted in both the UK and the Netherlands (10) to identify outcomes important to patients.

The study management team then convened to refine the longlist. Each outcome was discussed, where it was determined whether: 1) a true outcome was represented (a specific, measurable result of treatment), 2) the outcome was not duplicated by another item on the longlist, 3) the outcome could be used in a generic COS for all fistula treatments and was not procedure specific and 4) the outcome fit the scope of the COS. Outcomes were mapped to domains within the COMET taxonomy (11), to understand distribution across clinical and non-clinical domains and outcomes could be refined or added if not adequately covered in the existing longlist. Outcome wording and lay-person definitions for the Delphi survey were determined with the assistance of patient representatives.

Stage II: Delphi Survey

The longlist of outcomes was presented to stakeholders in an online Delphi survey, in order to shortlist and move towards establishing consensus on critical outcomes. To facilitate international recruitment, the Delphi surveys were conducted in Italian and Dutch and run in parallel with the English language survey. Translations were reviewed by native Italian and Dutch speaking lay-people and clinicians independent of the study management team to ensure readability and consistency of meaning across all translated documents.

Delphi Surveys: DelphiManager software, developed and maintained by the COMET initiative, was used to undertake the Delphi survey according to previously described methods (12). In brief, participants were presented with the longlist of outcomes and asked to rate their importance in determining whether treatment for a fistula had been successful on a

9-point Likert scale. Consensus thresholds were determined a priori (Table 1) and participants could suggest new outcomes to be included in round 2. At the end of round 1, outcomes that met the definition for 'Consensus out' were excluded from further consideration, whereas those meeting criteria for 'Consensus In' went forward for discussion in the consensus meeting. Newly suggested outcomes and those that had been determined to be 'No consensus' were presented in a second Delphi survey round with an anonymised graphical summary of how each stakeholder panel rated the outcome and a reminder of the participant's own score. Participants were given the opportunity to change their score if they wished.

A third round was only planned if additional outcomes were suggested at the end of round 1 that were determined to be 'No consensus' at the end of round 2 and therefore required review with anonymised stakeholder panel feedback.

Stage III: Consensus meeting

A consensus meeting was planned to take place at the ESCP annual meeting, to enable representatives from all panels to discuss the remaining outcomes and determine the final core outcome set. Participants who completed all rounds of the Delphi survey and indicated an interest in attending were eligible. Participants were invited to allow for gender and geographical diversity, in addition to ensuring that for patients there was equal distribution of age and duration of disease.

During the meeting, 'no consensus' and 'consensus in' outcomes were presented along with anonymised summary of stakeholder voting in the last Delphi round, before deciding whether the outcome should be included in the final COS. Votes were cast for 'Yes' or 'No'. If there was 70% agreement for either option, the result of the first vote was accepted. If however, <70% agreement was reached, an open discussion was held prior to a 2nd vote. If this vote

reached 70% agreement for all participants, or 80% agreement for the patient stakeholder group, the vote was accepted with no further discussion.

At the end of voting, participants reviewed all outcomes that were voted into the COS and were given the opportunity to combine and refine the final list of outcomes.

Ethics and consent: Ethical approval was received from the National Research Ethics Service West Midlands- Black Country Research Ethics Committee (Ref: 19/WM/0296) for all stages of this study. Full information regarding the relevant stage of the study was provided to all participants who expressed an interest and consent was obtained during Delphi registration.

RESULTS

Protocol deviations

The majority of clinicians identified as being both clinicians and researchers, with very few being researchers alone. The stakeholder panels were therefore revised to consist of: 1) Patients, 2) Surgeons, Gastroenterologists and Proctologists and 3) Radiologists, with each clinician panel including clinicians, researchers and those having both roles.

Following round 1, a large majority of outcomes were deemed to be ‘consensus in’ according to the a priori definitions (Table 1) as a result of having a mean patient rating of >7. Analysis of these outcomes revealed that the consensus thresholds could not discriminate between those outcomes where the patient rating was skewed positively (e.g. having ratings of 5-8 and a mean rating of >7) and those outcomes that the true majority of patients rated between 7-9. For this reason, the consensus definitions were revised as described in Table 2, with the aim of identifying the outcomes that patients deemed most important and reducing the number of outcomes discussed in the consensus meeting.

At the end of round 1, it was noted that for five outcomes, more than 1/3 of the patient participants selected 'unable to rate' with outcome specific feedback suggesting that patients may not have fully understood the outcome definition. The study management team recognised the risk of excluding these outcomes due to lack of patient understanding rather than lack of importance, and so agreed to carry these outcomes through to round 2 with revised definitions.

Due to the Coronavirus pandemic the consensus meeting was held virtually using Microsoft Teams and all voting was conducted using an online platform (Poll Everywhere www.pollev.com).

Candidate outcomes for the Delphi survey

The outcomes derived from systematic review and patient interviews have been detailed elsewhere (3,10). The 64 outcomes presented to participants in the Delphi survey are displayed alongside their source, lay definition and COMET taxonomy domain in supplemental table 1, http://links.lww.com/SLA/D831.

Delphi Survey

The Delphi survey ran from October to December 2020. A total of 227 participants registered for round 1, with 219 submitting ratings (56% surgeons & gastroenterologists, 9% radiologists, 35% patients) and 215 participants submitting ratings for all 64 outcomes, giving a completion rate of 95%. There were 191 participants in round 2 (13% attrition), with 187 providing ratings for all 30 outcomes (98% completion rate). A summary of participant demographics for both rounds is displayed in supplemental table 2, http://links.lww.com/SLA/D831

An overview of the Delphi voting results is shown in Figure 1. Outcomes with revised definitions and the newly suggested outcomes moving forward to round 2 are displayed in Supplemental table 3, http://links.lww.com/SLA/D831 There was no requirement for a third round of voting.

Consensus meeting

Prior to the consensus meeting, the list of outcomes to be discussed was reviewed by the study management team, where it was decided to combine the outcomes of 'Radiological failure to heal on MRI', 'Endoanal ultrasound showing a persistent fistula' and 'Radiological healing'. It was felt that these outcomes represented various facets of the outcome of

'Radiological healing', either through terminology (failure versus healing) or measurement instrument (endoanal ultrasound). Therefore, a total of 53 outcomes were discussed in the consensus meeting (Figure 1, Supplemental table 4, http://links.lww.com/SLA/D831).

Some 12 clinicians and 10 patients participated in the virtual consensus meeting (Table 3). Participants cast anonymous votes for all 53 outcomes. After discussion, 29 outcomes were voted into the Core Outcome Set, the final voting results are shown in supplemental table 4, http://links.lww.com/SLA/D831 These were further discussed and combined to give a list of 10 final core outcomes, displayed in Table 4. Specific points of discussion are highlighted below.

Removal of candidate outcomes: Avoiding having a stoma & Avoiding having a permanent seton

Both outcomes originated from patient interviews and were given critical ratings by patients in the Delphi rounds (patient median scores of 9 and 8 respectively). However, the discussion highlighted that the success of fistula treatment cannot be accurately judged by how well it minimises the likelihood of receiving another treatment, and poses a specific problem when one of the treatments being assessed is a stoma or a seton. Furthermore, whilst permanent setons and stomas may be considered drastic measures for patients in the early stages of disease, for patients at a much later stage, these may be the only viable, and in some situations, most appropriate treatment option. As the COS is intended to be valid for a patient at any stage of treatment, the group acknowledged the importance of seton and stoma avoidance from a patient perspective, but agreed that it could not be a core outcome with universal application.

The final COS

Clinical fistula healing*:* The consensus meeting agreed that four items voted into the COS could be combined (Table 4). Fistula persistence was agreed to be the inverse of healing. Healing of the internal opening was deemed to be particularly important as it may influence the likelihood of recurrence (13,14) and determines discharge and the passage of wind

through the fistula tract, having a significant effect on patient quality of life. However, the group agreed that it is difficult to accurately assess both clinically and radiologically, and would therefore be unreasonable to require mandatory reporting as a stand-alone outcome.

Radiological healing*:* The group agreed that confirmation of radiological healing was important due to its sensitivity for lasting, durable healing over that determined clinically. Radiological healing has been correlated with long-term healing (15) and a proportion of patients who demonstrate clinical healing have undetected abscesses or tracts on MRI (16), which ultimately result in recurrence (17–19). Due to its correlation with better long-term clinical outcomes, the clinician panel emphasised the importance of assessing radiological healing when assessing the efficacy of fistula treatment. In both the consensus meeting and the qualitative patient interviews, patients emphasised the need for objective evidence of healing, as this provided psychological reassurance, particularly for those who had chronic or recurrent fistulae. However, there was discussion with regards to whether all patients should be committed to having post-operative imaging, particularly in clinical situations when there may be no symptoms to support its indication, or when managing fistula in the developing world where access to radiology may be limited. The group acknowledged that in a clinical trial setting, particularly when assessing new or experimental procedures, demonstration of radiological healing would be used as a surrogate for long-term clinical outcomes rather than confirmation of the clinical condition. For these reasons, the panel agreed that radiological healing should be demonstrated where feasible.

Recurrence & Development of additional fistulae*:* Research studies use the terms of fistula persistence, recurrence and the development of additional fistulas interchangeably (3). The consensus panel agreed that a distinction should be made between non-healing (fistula persistence), and a fistula that recurs after having initially closed. The difference between healing and recurrence would largely be defined by the time period at which recurrence is

measured, and this should be considered in the development of a core measurement set, where the measurement of each core outcome and time point is defined.

Fistula symptoms*:* Symptom-related outcomes shortlisted by the Delphi survey were centred around pain and discharge. The patient panel agreed that the presence and volume of discharge, regardless of its content were the most important aspects to retain in the COS, particularly due to its impact on quality of life. Pain and discomfort were seen to be on a continuum and their differentiation was largely subjective. Patients also expressed that it can be challenging to differentiate between fistula related pain and that from an operative incision, however all agreed that an overall assessment of fistula symptoms, addressing frequency and intensity of overall pain and discharge, and the associated burden of these symptoms was a crucial indicator of treatment success.

Incontinence: This outcome was agreed to encapsulate all the varied clinical manifestations of incontinence, from urgency to post defaecation soiling, to the inability to control wind or liquid or solid stools.

Psychological impact of treatment: The psychological impact of treatment was an outcome that emerged from patient interviews, where themes of uncertainty, embarrassment, isolation and recurrent physical and mental trauma of requiring repeated dressing changes and packing were cited (10). Its importance was reiterated by the patient panel during the consensus meeting, and as a construct was considered to be sufficiently unique from other outcomes, such as quality of life.

Complications and reinterventions*:* This outcome represents any complication from treatment, whether systemic or localised, as well as any additional medical or surgical interventions required, including antibiotic use and abscess drainage. The panel discussion

emphasised that the occurrence of complications and the need for reinterventions do not necessarily mean a failure of treatment, and so is a key outcome alongside fistula healing.

Patient satisfaction*:* The panel acknowledged that several factors will influence overall satisfaction, including patient and clinician attitudes, expectations and organisational factors. Despite this, its inclusion in the COS reflects the strength of connection with resolution of symptoms and acknowledges the importance that patients place on factors that influence the perceived standard of care. This was illustrated in the qualitative interviews, where patients emphasised the importance of honest, effective communication, management of expectations and recognition of patient preferences and perspective (10).

Quality of life: The majority of outcomes summarised by quality of life were derived from patient interviews, and are frequently overlooked in research studies. This reflects the wide-ranging impact that having a fistula has on all aspects of daily living and was considered, particularly by patients, to be a critical indicator of treatment success.

DISCUSSION

This paper describes the development of a COS representing the minimum set of outcomes that should be reported in all studies of treatment for cryptoglandular anal fistula. The COS includes 10 outcomes: clinical fistula healing, radiological healing, recurrence, development of additional fistulas, fistula symptoms, incontinence, psychological impact of treatment, complications and reinterventions, patient satisfaction and quality of life.

This COS includes outcomes that are frequently reported in research studies, such as healing, incontinence and recurrence, but also includes those less commonly considered, such as patient satisfaction and radiological healing, reported in 5% and 1-2% of studies respectively, and the psychological impact of treatment, which to our knowledge, is rarely reported (3). This reflects our patient-centred approach to developing the COS. Given that most research

studies traditionally reflect the views of clinicians and researchers, a strong patient voice was maintained throughout this study, with active involvement of patient representatives on the study management team, supplementation of the longlist of outcomes from literature with those elicited from patient interviews and prioritisation of patient important outcomes throughout the Delphi process and consensus meeting. As a result, we see those outcomes that are less frequently reported in research studies take centre stage, challenging clinicians and researchers to adopt a more holistic approach to defining treatment success. This is much needed, as the interviews conducted as part of the COS development process demonstrated how patients felt that clinicians often failed to acknowledge the extensive impact of fistula symptoms and treatment (10). The inclusion of quality of life and the psychological impact of treatment in the COS will force clinicians and researchers to address these issues in planning management strategies, facilitating the alignment of patient and clinician goals. Furthermore, the inclusion of patient satisfaction requires focus on how care is delivered, emphasising the need for timely and unambiguous communication from healthcare professionals and consistency in after care, which is often lacking in the treatment of cryptoglandular anal fistula (10).

By definition, the COS has identified what should be measured when treating anal fistula in the context of a clinical trial, but the crucial next step is to identify how these outcomes should be measured. This is particularly important when variance in measurement methods can mean the difference between success and failure, for example, when a fistula has closed clinically but persists on imaging, or when a fistula has clinically healed at short term follow up, but recurs after several months. We previously identified a range of methods, definitions and time points for assessing healing and recurrence, so it is essential that a standard of assessment is established (3). One of the challenges of having infrequently cited outcomes in the COS is knowing how best to report them. Generic measurement instruments are used to

assess quality of life in fistula patients, and it might be that similar, global scales can be used to assess patient satisfaction and the psychological impact of treatment, such as the Patient Satisfaction Questionnaire (PSQ)(20) or the Hospital Anxiety and Depression Scale (21). Selection of appropriate measurement instruments for the COS should follow the methods outlined by the Consensus-based Standards for the selection of health Measurement Instruments (COSMIN) initiative, which broadly involves identifying and critically appraising the measurement properties of all relevant instruments (22).

The strengths of this COS are in sourcing candidate outcomes from an extensive review of fistula literature, in-depth patient interviews and suggestions from key stakeholders participating in the Delphi survey, ensuring that the starting point from which the final COS was developed was broad and incorporated the multiple domains of disease impact. The online Delphi survey was presented in multiple languages and facilitated involvement of a large number of international stakeholders, ensuring that the shortlisted outcomes were as relevant to current fistula research as possible.

However, there are limitations that should be noted. Although international representation was present for clinicians, the majority of patients were female, Caucasian and recruited from the UK and the Netherlands. The study could therefore be criticised for including a narrow patient perspective which could have affected the study outcome. For instance, the impact of a fistula on the performance of religious activities was an outcome suggested during the Delphi survey, however was voted out in the 2nd Delphi round. Greater importance may have been placed on this outcome had there been greater representation of particular religious and ethnic groups. In addition, the majority of clinicians were from Europe and North America, meaning that clinical perspectives from Africa, the Indian subcontinent and South America were critically underrepresented or completely absent.

CONCLUSION

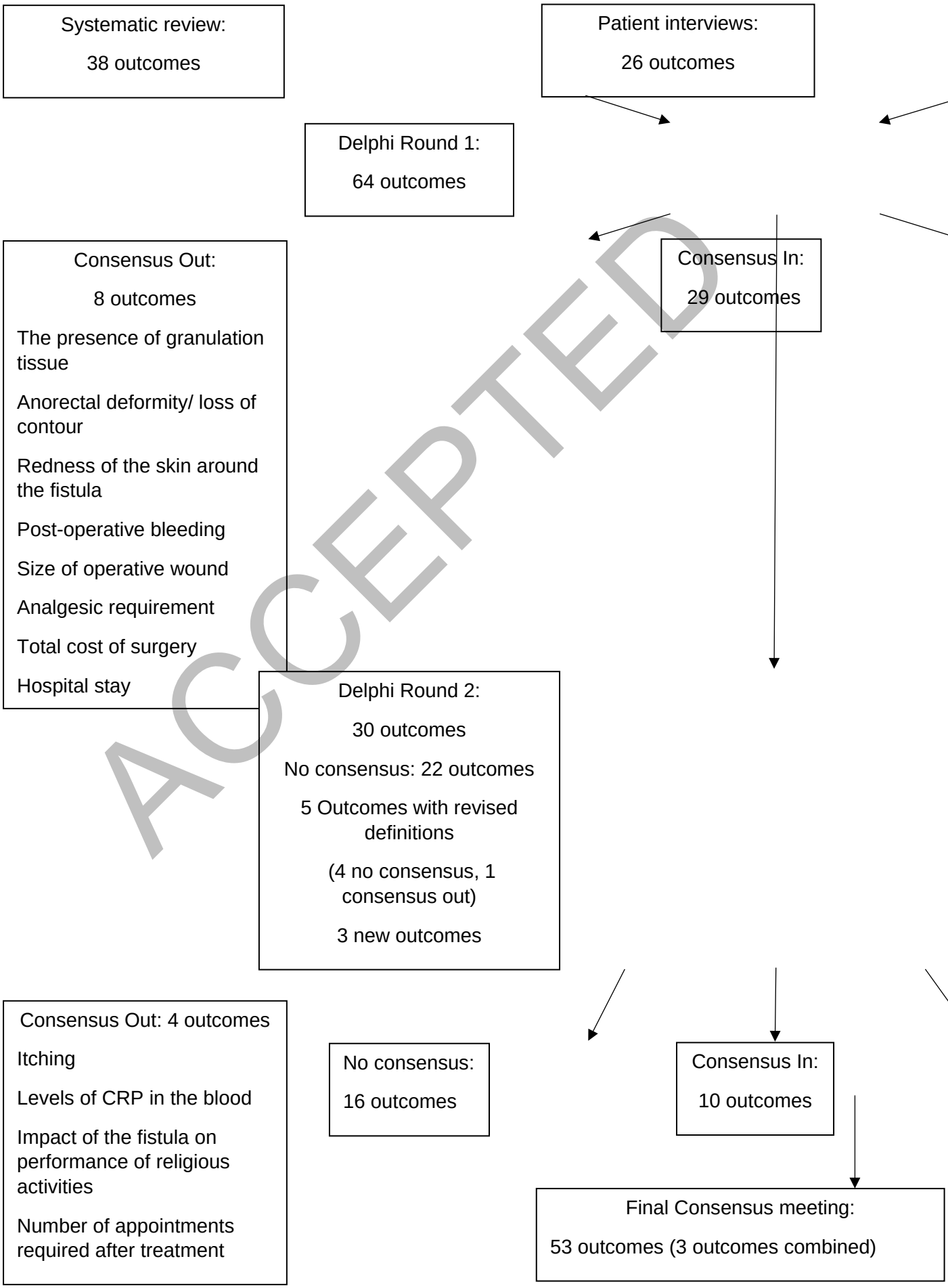
We have described the development of a Core Outcome Set for use in clinical trials of treatment for cryptoglandular anal fistula. It includes clinical fistula healing, radiological healing, recurrence, development of additional fistulas, fistula symptoms, incontinence, psychological impact of treatment, complications and reinterventions, patient satisfaction and quality of life. This COS represents a much-needed area of research and is the first step in establishing standards of assessment in clinical trials for patients with cryptoglandular anal fistula. Future research should focus on how these outcomes should be measured by establishing a Core Measurement Set.

AFCOS consensus meeting collaborators: Estefania Guzman Cordero, Neil Gardiner, Ibrahim Ethem Gecim, Lester Gottesman, Ingrid Han, Piet Keizers, Deborah Keller, Aikaterini Leventi, Lilli Lundby, Phillip Lung, Gary Marshall, Catherine Mulrenan, K Pugh, Carlo Ratto, Heather Whitehead, David Zimmerman

Disclosure of conflicts

All authors confirm that they have no conflicts of interest

Figure 1: Flow of outcomes through COS stages



References

1. Parks A, Gordon P, Hardcastle J. A classification of fistula-in-ano. Br J Surg. 1976;63(1):1–12.

2. Kontovounisios C, Tekkis P, Tan E, Rasheed S, Darzi A, Wexner SD. Adoption and success rates of perineal procedures for fistula-in-ano: a systematic review. Colorectal Dis. 2016 May;18(5):441–58.

3. Machielsen AJHM, Iqbal N, Kimman ML, Sahnan K, Adegbola SO, Kane G, et al. Heterogeneity in outcome selection, definition and measurement in studies assessing the treatment of cryptoglandular anal fistula: findings from a systematic review. Techniques in Coloproctology. Springer International Publishing; 2021. 761–830 p.

4. Ratto C, Grossi U, Litta F, Di Tanna GL, Parello A, De Simone V, et al. Contemporary surgical practice in the management of anal fistula: results from an international survey. Tech Coloproctol. 2019 Jul;

5. de Groof EJ, Cabral VN, Buskens CJ, Morton DG, Hahnloser D, Bemelman WA. Systematic review of evidence and consensus on perianal fistula: An analysis of national and international guidelines. Color Dis. 2016;18(4):O119–34.

6. Williamson PR, Altman DG, Bagley H, Barnes KL, Blazeby JM, Brookes ST, et al. The COMET Handbook: Version 1.0. Trials. 2017;18(Suppl 3):1–50.

7. Williamson PR, Altman DG, Blazeby JM, Clarke M, Devane D, Gargon E, et al. Developing core outcome sets for clinical trials: Issues to consider. Trials. 2012;13(1):1.

8. Machielsen AJHM, Iqbal N, Kimman ML, Sahnan K, Adegbola SO, Kleijnen J, et al.

The development of a cryptoglandular Anal Fistula Core Outcome Set (AFCOS): an international Delphi study protocol. United Eur Gastroenterol J. 2020;8(2):220–6.

9. Kirkham JJ, Gorst S, Altman DG, Blazeby JM, Clarke M, Devane D, et al. Core Outcome Set–STAndards for Reporting: The COS-STAR Statement. PLoS Med. 2016;13(10):1–11.

10. Iqbal N, Machielsen AJHM, Breukink SO, Woodcock R, Kane G, Alrubaiy L, et al. Living with cryptoglandular anal fistula: a qualitative investigation of the patient's experience through semi-structured patient interviews. Qual Life Res. 2022;Feb 17(Epub ahead of print).

11. Dodd S, Clarke M, Becker L, Mavergames C, Fish R, Williamson PR. A taxonomy has been developed for outcomes in medical research to help improve knowledge discovery. J Clin Epidemiol. 2017/12/28. 2018 Apr;96:84–92.

12. Sahnan K, Tozer PJ, Adegbola SO, Lee MJ, Heywood N, McNair AGK, et al. Developing a core outcome set for fistulising perianal Crohn's disease. Gut. 2018;1–13.

13. Garcia-Aguilar J, Belmonte C, Wong WD, Goldberg SM, Madoff RD. Anal fistula surgery. Factors associated with recurrence and incontinence. Dis Colon Rectum. 1996;39(7):723–9.

14. Mei Z, Wang Q, Zhang Y, Liu P, Ge M, Du P, et al. Risk Factors for Recurrence after anal fistula surgery: A meta-analysis. Int J Surg. 2019;69(August):153–64.

15. Garg P, Yagnik VD, Kaur B, Menon GR, Dawka S. Role of MRI to confirm healing in complex high cryptoglandular anal fistulas: long-term follow-up of 151 cases. Color Dis. 2021;23(9):2447–55.

16. Garg P. Comparison of Preoperative and Postoperative MRI After Fistula-in-Ano Surgery: Lessons Learnt from An Audit of 1323 MRI At a Single Centre. World J Surg. 2019;

17. Spencer J, Chapple K, Wilson K, Ward J, Windsor A, Ambrose N. Outcome After Surgery for Perianal Fistula: Predictive Valueof MR Imaging. Am J Roentgenol. 1998;171:403–6.

18. Buchanan G, Halligan S, Williams A, Cohen CRG, Tarroni D, Phillips RKS, et al. Effect of MRI on clinical outcome of recurrent fistula-in-ano. Lancet. 2002;360:1661–2.

19. Halligan S, Buchanan G. MR imaging of fistula-in-ano. Eur J Radiol. 2003;47(2):98–107.

20. Ware JE, Snyder MK, Wright WR, Davies AR. Defining and measuring patient satisfaction with medical care. Eval Program Plann. 1983;6(3):247–63.

21. Mykletun A, Stordal E, Dahl AA. Hospital Anxiety and Depression (HAD) scale: Factor structure, item analyses and internal consistency in a large population. Br J Psychiatry. 2001;179(DEC.):540–4.

22. Prinsen CAC, Vohra S, Rose MR, Boers M, Tugwell P, Clarke M, et al. How to select outcome measurement instruments for outcomes included in a "Core Outcome Set" - a practical guideline. Trials. 2016;17(1):1–10.

Table 1: A Priori consensus definitions (7)

Consensus classification	**Definition**	**Description**
Consensus In	>70% of the participants in each panel rating the outcome 7-9 OR: <70% of the clinicians and researchers rating the outcome 7-9 but an average patient rating of >7	Important outcome
Consensus Out	<70% of the clinicians and researchers rating the outcome 7-9 AND an average patient rating of <7	Unimportant outcome
No Consensus	Anything else	Fairly important outcome

Table 2: Revised consensus definitions

Consensus classification	**Definition**	**Description**
Consensus In	>70% of the participants in each panel rating the outcome 7-9 OR <70% of the clinicians rating the outcome 7-9 but a patient median rating of >7 AND 70% of the patients rating the outcome 7-9	Important outcome
Consensus Out	<70% of the clinicians rating the outcome 7-9 AND a patient median rating of <7	Unimportant outcome
No consensus	Anything else	Fairly important outcome

Table 3: Consensus meeting participants

	Clinicians	Patients
Male	7	4
Female	5	6
Subspecialty		
Colorectal surgeon with interest in fistula	11	
Specialist GI radiologist	1	
No. patients seen annually		
21-50	1	
51-100	3	
>100	8	
Role		
Clinician	2	
Clinician & researcher	10	
Age		
21-30		2
31-40		3
41-50		1
51-60		2
61-70		2
Duration of fistula		
0-6 months		2
7-12 months		2
>12 months		5
I do not have a fistula		1
Current fistula status		
Undergone treatment but fistula still active		7
Other		3
All participants		
Region of residence*		
Central		3
East		2
West		15
Other		2

*Regions defined by the European Society of Coloproctology

Table 4: The final anal fistula core outcome set

Outcomes voted in	Final Core Outcome Set
Clinical fistula healing	Clinical fistula healing
Healing of the internal opening	
Perianal incision wound healing	
Fistula persistence	
Radiological healing	Radiological healing (where feasible)
Recurrence	Recurrence
Development of additional fistulas	Development of additional fistulas
Pain	Fistula symptoms
Feeling of discomfort from the fistula	
Discharge (including severity)	
Overall symptom burden	
Incontinence	Incontinence
Psychological impact of treatment	Psychological impact of treatment
Complications	Complications and Reinterventions
Reinterventions	
Emergence of a secondary abscess	
Patient satisfaction	Patient satisfaction
Impact on intimacy	Quality of life
Impact on daily life and activities	
The ability to sit comfortably	
Impact on the ability to sleep	
Mobility	
Your ability to drive or commute to work or school	
Your ability to travel to other places	
Your ability to exercise and do sporting activities	
Impact on the ability to work and do your job	
Impact on social life and relationships	
Quality of life	