National Institute for Health and Care Excellence

Final

Diverticular disease: diagnosis and management

[Q] Evidence review for information and support

NICE guideline NG147

Qualitative evidence review

November 2019

Final

This evidence review was developed by the National Guideline Centre

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1 Information for patients

1.1 Review question: What information and support do people with diverticulosis, diverticular disease, and diverticulitis, and their families and carers, need?

1.2 Introduction

In this chapter we give recommendations about the ways clinicians should support patients, their families and carers. At present the support seems to vary greatly from one clinician to another and there is no national standard. Patients require a prompt and reliable diagnosis, with clinicians being alert to symptoms and signs indicative of diverticular disease and possible complications. Patients and their support network will generally wish to understand the anatomy of diverticular disease and to be advised about the extent to which the patient can self-medicate and what symptoms and signs would require further advice from a clinician. Advice about a healthy diet, lifestyle and symptom control will be of great importance. When patients are scheduled for surgery, it may be important to patients and their families that they are given clear advice about the nature of the surgery and what, if any, potential changes in bowel habit and other bodily functions can be expected afterwards. Other matters for consideration will include the advice to be given to patients and their families on discharge from hospital. This might include comprehensive advice about wound care, the care of indwelling catheters (if fitted), the need to avoid strenuous exercise and the likely harm that might ensue if such advice is not followed.

1.3 Characteristics table

For full details see the review protocol in appendix A.

Table 1: Characteristics of review question

Objective	To determine what information and support people with diverticular disease and their families need.
Population and setting	Adults 18 years and over with: • diverticulosis and their families and carers • diverticular disease and their families and carers • diverticulitis and their families and carers
Context	Any type of information and support described by studies.
Review strategy	Synthesis of qualitative research. Results presented in narrative format. Quality of the evidence will be assessed by a GRADE CerQual approach for each review finding.

1.4 Qualitative evidence

1.4.1 Included studies

Two qualitative studies were included in the review;[4, 5] these are summarised in Table 2 below. Key findings from these studies are summarised in Section 1.4.2 below. See also the study selection flow chart in appendix C, study evidence tables in appendix D, and excluded studies lists in appendix E.

1.4.2 Excluded studies

See the excluded studies list in appendix E.

1.4.3 Summary of qualitative studies included in the evidence review

Table 2: Summary of studies included in the review

Study	Design	Population	Research aim	Comments
Kaser 2012[4]	Questionnaires with thematic qualitative and statistical analysis	Patients who had a resection of the rectosigmoid for recurrent diverticulitis N=191	To determine the patients view on the timing of elective resection for sigmoid diverticulitis.	Lack of non-diverticulitis control group, high rate of missing data.
Levack 2012[5]	Series of detailed questionnaires with thematic qualitative and statistical analysis	People with diverticulitis who underwent emergency or elective sigmoidectomy with restoration of continuity. N=325	Document the frequency, severity and predictors of sub-optimal bowel function.	Lack of non-diverticulitis control group, limited preoperative data on the history of bowel impairment symptoms and other conditions such as pelvic floor disorder which could impact the post-surgical symptoms assessed. High rate of missing data.

See appendix D for full evidence tables.

1.4.4 Qualitative evidence synthesis

1.4.4.1 Narrative summary of review findings

Both the studies included in this evidence review focussed on a population with advanced diverticulitis i.e. complicated diverticulitis or recurrent diverticulitis. In both instances, the patient questionnaires revealed positive postoperative outcomes in support of surgery for complicated and recurrent diverticulitis.

Review finding 1: improvement of diverticular symptoms

A population of 117 people who underwent rectosigmoid resection surgery for recurrent diverticulitis (2 episodes of more) responded to a questionnaire regarding their postoperative symptoms. The majority of the population had positive outcomes with 10% experiencing some improvement, 34% experiencing marked improvement and 54% completely resolved of their symptoms. A minority population of 2% felt no improvement in their diverticular symptoms.

Explanation of quality assessment: minor methodological limitations in the study due to the 31% missing people who did not respond to the questionnaire; minor concerns about the adequacy of this finding due to the small population of responders in this single study. There was therefore a judgement of low confidence in this finding.

Review finding 2: timing of surgery

Forty-five people (38%) having had rectosigmoid resection surgery for recurrent diverticulitis (2 episodes of more) would have preferred an earlier operation. Of these 13 people had previously had 2 diverticular attacks, 5 had 3 attacks, 7 had 4 attacks, 4 had 5 attacks and 16 had 6 or more attacks. Multivariate analysis showed that the predicting factors for wanting an earlier surgery were the number of pain episodes; OR 1.23 (95% CI 1.060, 1.423), and the number of inflammatory attacks; OR 1.27 (95% CI 1.002, 1.598).

Explanation of quality assessment: minor methodological limitations in the study due to the 31% missing people who did not respond to the questionnaire; minor concerns about the adequacy of this finding due to the small population of responders in this single study. There was therefore a judgement of low confidence in this finding.

Review finding 3: post-operative bowel function

In a study of 326 people with complicated diverticulitis who had undergone sigmoidectomy with restoration of continuity, 249 people responded to a series of postoperative questionnaires. Of the responders the majority of people (93.9%) had a positive outcome for regular post-operative bowel movements; up to 4 per day. It was found that 26.1% of this population had to use anti-diarrhoea medication to achieve this and 31.8% has to modify their diet.

Explanation of quality assessment: minor methodological limitations in the study due to the 24% missing people who did not respond to the questionnaire and the lack of preoperative patient data. There was therefore a judgement of moderate confidence in this finding.

Review finding 4: Faecal incontinence

In a population of 249 people having undergone sigmoidectomy for complicated diverticulitis, 24.8% had moderate to severe faecal incontinence. Multivariate analysis showed that females were more likely to report faecal incontinence than males; OR 2.3 (95% CI 1.5, 3.7), and having a preoperative intra-abdominal abscess also increased the likelihood of incontinence; OR 1.4 (95% CI 1.1, -2.1).

Explanation of quality assessment: minor methodological limitations in the study due to the 24% missing people who did not respond to the questionnaire and the lack of preoperative patient data. There was therefore a judgement of moderate confidence in this finding.

Review finding 3: Faecal urgency

In a population of 249 people having undergone sigmoidectomy for complicated diverticulitis, a small proportion of people (19.6%) experienced faecal urgency without incontinence. Factors which showed to be risk predictors of faecal urgency from a multivariate analysis were female gender; OR 1.3 (1.1, 2.4), and diverting ileostomy; OR 2.1 (95% CI 1.3, 4.5).

Explanation of quality assessment: minor methodological limitations in the study due to the 24% missing people who did not respond to the questionnaire and the lack of preoperative patient data. There was therefore a judgement of moderate confidence in this finding.

Review finding 4: Incomplete evacuation

In a population of 249 people with complicated diverticulitis, data from post-sigmoidectomy questionnaires reported 20.8% experiencing incomplete evacuation. Multivariate analysis showed incomplete evacuation to be associated with female sex; OR 1.4 (95% CI 1.1, 1.9); and postoperative sepsis; OR 1.9 (95% CI 1.1, 2.9).

Explanation of quality assessment: minor methodological limitations in the study due to the 24% missing people who did not respond to the questionnaire and the lack of preoperative patient data. There was therefore a judgement of moderate confidence in this finding.

1.4.5 Qualitative evidence summary

Table 3: Summary of evidence

Study design and sample size			Quality assessment		
Number of studies contributing to the finding	**Design**	**Finding**	**Criteria**	**Rating**	**Overall assessment of confidence**
Improvement of diverticular symptoms					
1[4] N=117	Postoperative questionnaire	Surgery had a marked improvement in symptoms for 34% and completely resolved symptoms for 54% of the population.	Limitations	Minor concerns about methodological limitations	LOW
			Coherence	No concerns about coherence	
			Relevance	No concerns about relevance	
			Adequacy	Minor concerns about adequacy	
Timing of surgery					
1[4] N=117	Postoperative questionnaire	38% of people would have preferred an earlier operation. The predictors for wanting an earlier operation were number of pain episodes; OR 1.23 (95% CI 1.060, 1.423), and number of inflammatory attacks; OR 1.27 (95% CI 1.002, 1.598) .	Limitations	Minor concerns about methodological limitations	LOW
			Coherence	No concerns about coherence	
			Relevance	No concerns about	

Study design and sample size		Finding	Quality assessment		
Number of studies contributing to the finding	**Design**		**Criteria**	**Rating**	**Overall assessment of confidence**
				relevance	
			Adequacy	Minor concerns about adequacy	
Post-operative bowel function					
1[5] N=249/325	Postoperative questionnaire	The majority of people; 93.9%, had regular post-operative bowel movements of up to 4 per day. 26.1% had to use anti-diarrhoea medication to achieve this and 31.8% has to modify their diet.	Limitations	Minor concerns about methodological limitations	MODERATE
			Coherence	No concerns about coherence	
			Relevance	No concerns about relevance	
			Adequacy	No concerns about adequacy	
Faecal incontinence					
1[5] N=249/325	Postoperative questionnaire	Moderate to severe faecal incontinence was found in 24.8% of people. Increased likelihood of incontinence was found in females; OR 2.3 (95% CI 1.5, 3.7), and people with preoperative intra-abdominal abscess; OR 1.4 (95% CI 1.1, -2.1).	Limitations	Minor concerns about methodological limitations	MODERATE
			Coherence	No concerns about coherence	
			Relevance	No concerns about relevance	

Study design and sample size		Finding	Quality assessment		
Number of studies contributing to the finding	**Design**		**Criteria**	**Rating**	**Overall assessment of confidence**
			Adequacy	No concerns about adequacy	
Faecal urgency					
1[5] N=249/325	Postoperative questionnaire	Faecal urgency without incontinence was reported by 19.6% of people. Increased likelihood of faecal urgency was found in females; OR 1.3 (1.1, 2.4), and people with diverting ileostomy; OR 2.1 (95% CI 1.3, 4.5).	Limitations	Minor concerns about methodological limitations	MODERATE
			Coherence	No concerns about coherence	
			Relevance	No concerns about relevance	
			Adequacy	No concerns about adequacy	
Incomplete evacuation					
1[5] N=249/325	Postoperative questionnaire	Incomplete emptying was reported by 20.8% of people with incomplete evacuation to be associated with female sex; OR 1.4 (95% CI 1.1, 1.9); and postoperative sepsis; OR 1.9 (95% CI 1.1, 2.9).	Limitations	Minor concerns about methodological limitations	MODERATE
			Coherence	No concerns about coherence	
			Relevance	No concerns about relevance	

Study design and sample size			Quality assessment		
Number of studies contributing to the finding	Design	Finding	Criteria	Rating	Overall assessment of confidence
			Adequacy	No concerns about adequacy	

1.5 Economic evidence

The committee agreed that health economic studies would not be relevant to this review question, and so were not sought.

1.6 Evidence statements

1.6.1 Qualitative evidence statements

- One study with low quality evidence suggested surgery improved symptoms of diverticulitis in the majority of a recurrent diverticulitis people. However, a smaller proportion of the population would have preferred earlier surgery.
- One study with moderate quality evidence found that the majority of people of a complicated diverticulitis population had regular bowel movements post-surgery, however post-surgical faecal incontinence, faecal urgency and incomplete evacuation was also reported by a smaller proportion of the population.

1.7 The committee's discussion of the evidence

1.7.1 Interpreting the evidence

1.7.1.1 The quality of the evidence

The quality of the study findings were assessed using the GRADE-CERQual approach. The quality ranged from moderate to low based on minor methodological limitations and minor concerns about adequacy.

1.7.1.2 Findings identified in the evidence synthesis

It was difficult to know the extent to which the findings reported in this review were a result of surgery due to the lack of baseline data available for both the included studies. The committee were therefore unable to determine whether the post-operative outcomes, such as faecal incontinence, were a result of the surgery or prior existing complications. This lack of confidence in the evidence further contributed to the guideline committee's decision not to make evidence-based recommendations.

The recommendations were developed using the committee's experience and expertise.

1.7.2 Cost effectiveness and resource use

Cost effectiveness evidence was not sought, as this is a qualitative review question. Economic evaluation is not needed as the NICE patient experience guideline (CG138) recommends that patients should receive suitable information.

1.7.3 Other factors the committee took into account

The committee noted that people should be offered information regarding the treatments recommended in this guideline. As diverticulosis is more frequently diagnosed incidentally people often ask if the condition is likely to progress and what symptoms may indicate progression.

References

1. Black P. Making the right choice in stoma appliance. Nursing & Residential Care. 2015; 17(10):552-555

2. Carlin LE, Smith HE, Henwood F. To see or not to see: A qualitative interview study of patients' views on their own diagnostic images. BMJ Open. 2014; 4(7):e004999

3. Goldner F. Answers to questions on diverticular disease. Hospital Medicine. 1986; 22(1):23-33

4. Kaser SA, Glauser PM, Basilicata G, Muller DA, Maurer CA. Timing of rectosigmoid resection for diverticular disease: the patient's view. Colorectal Disease. 2012; 14(3):e111-6

5. Levack MM, Savitt LR, Berger DL, Shellito PC, Hodin RA, Rattner DW et al. Sigmoidectomy syndrome? Patients' perspectives on the functional outcomes following surgery for diverticulitis. Diseases of the Colon and Rectum. 2012; 55(1):10-7

6. National Institute for Health and Care Excellence. Developing NICE guidelines: the manual. London. National Institute for Health and Care Excellence, 2014. Available from: http://www.nice.org.uk/article/PMG20/chapter/1%20Introduction%20and%20overview

7. Thomas C, Turner P, Madden F. Coping and the outcome of stoma surgery. Journal of Psychosomatic Research. 1988; 32(4-5):457-467

Appendices

Appendix A: Review protocols

Table 4: Review protocol: Information for patients

Field	Content
Review question	What information and support do people with diverticulosis, diverticular disease, and diverticulitis, and their families and carers, need?
Type of review question	Qualitative review A review of health economic evidence related to the same review question was conducted in parallel with this review. For details see the health economic review protocol for this NICE guideline.
Objective of the review	To determine what information and support people with diverticular disease and their families need.
Eligibility criteria – population / disease / condition / issue / domain	Adults 18 years and over with: • diverticulosis and their families and carers • diverticular disease and their families and carers • diverticulitis and their families and carers
Eligibility criteria – intervention(s) / exposure(s) / prognostic factor(s)	• Any information, education and/or support
Eligibility criteria – comparator(s) / control or reference (gold) standard	• Not applicable
Outcomes and prioritisation	Themes will be derived from the evidence identified for this review and not pre-specified. However for information to guide the technical team, relevant themes may include: • Decision making • Preferred format of information provision • Content of information • Impact of treatment on lifestyle • Information sources other than healthcare professionals (e.g. support groups, online resources) • Psychological support • Delivery of support (e.g. nurse, dietician, peer groups)
Eligibility criteria – study design	Qualitative interview and focus group studies (including studies using grounded theory, phenomenology or other appropriate qualitative approaches); quantitative data from questionnaires will only be considered if sufficient qualitative evidence is identified.
Other inclusion exclusion criteria	Exclusions: • Children and young people aged 17 years and younger • Prevention of diverticulosis
Proposed sensitivity / subgroup analysis, or	Strata:

meta-regression	Subgroups:
Selection process – duplicate screening / selection / analysis	Studies are sifted by title and abstract. Potentially significant publications obtained in full text are then assessed against the inclusion criteria specified in this protocol.
Data management (software)	• CERQual used to synthesise data from qualitative studies. • Bibliographies, citations and study sifting managed using EndNote.
Information sources – databases and dates	Medline, Embase, CINAHL, PsycINFO
Identify if an update	Not applicable
Author contacts	https://www.nice.org.uk/guidance/conditions-and-diseases/digestive-tract-conditions/diverticular-disease
Highlight if amendment to previous protocol	For details please see section 4.5 of Developing NICE guidelines: the manual.
Search strategy – for one database	For details please see appendix B
Data collection process – forms / duplicate	A standardised evidence table format will be used, and published as appendix D of the evidence report.
Data items – define all variables to be collected	For details please see evidence tables in Appendix D (clinical evidence tables) or E (health economic evidence tables).
Methods for assessing bias at outcome / study level	The methodological quality of each study was assessed using CASP checklists. Evidence was analysed using thematic analysis; findings will be presented narratively and diagrammatically where appropriate. Findings were reported according to GRADE-CERQual standards.
Criteria for quantitative synthesis	For details please see section 6.4 of Developing NICE guidelines: the manual.
Methods for quantitative analysis – combining studies and exploring (in)consistency	For details please see the separate Methods report (Chapter R) for this guideline.
Meta-bias assessment – publication bias, selective reporting bias	For details please see section 6.2 of Developing NICE guidelines: the manual.
Confidence in cumulative evidence	For details please see sections 6.4 and 9.1 of Developing NICE guidelines: the manual.
Rationale / context – what is known	For details please see the introduction to the evidence review.
Describe contributions of authors and guarantor	A multidisciplinary committee developed the evidence review. The committee was convened by the National Guideline Centre (NGC) and chaired by James Dalrymple in line with section 3 of Developing NICE guidelines: the manual. Staff from NGC undertook systematic literature searches, appraised the evidence, conducted meta-analysis and cost-effectiveness analysis where appropriate, and drafted the evidence review in collaboration with the committee. For details please see Developing NICE guidelines: the manual.
Sources of funding / support	NGC is funded by NICE and hosted by the Royal College of Physicians.

Name of sponsor	NGC is funded by NICE and hosted by the Royal College of Physicians.
Roles of sponsor	NICE funds NGC to develop guidelines for those working in the NHS, public health and social care in England.
PROSPERO registration number	Not registered

Appendix B: Literature search strategies

The literature searches for this review are detailed below and complied with the methodology outlined in Developing NICE guidelines: the manual 2014, updated 2017

For more detailed information, please see the Methodology Review.

B.1 Clinical search literature search strategy

Searches for patient views were run in Medline (OVID), Embase (OVID), CINAHL, Current Nursing and Allied Health Literature (EBSCO) and PsycINFO (ProQuest). Search filters were applied to the search where appropriate.

Table 5: Database date parameters and filters used

Database	Dates searched	Search filter used
Medline (OVID)	1946 – 13 November 2018	Exclusions Qualitative studies
Embase (OVID)	1974 – 13 November 2018	Exclusions Qualitative studies
CINAHL, Current Nursing and Allied Health Literature (EBSCO)	Inception – 13 November 2018	Exclusions
PsycINFO (ProQuest)	Inception – 13 November 2018	Exclusions

Table 6: Medline (Ovid) search terms

1.	diverticul*.mp.
2.	limit 1 to English language
3.	letter/
4.	editorial/
5.	news/
6.	exp historical article/
7.	Anecdotes as Topic/
8.	comment/
9.	case report/
10.	(letter or comment*).ti.
11.	or/3-10
12.	randomized controlled trial/ or random*.ti,ab.
13.	11 not 12
14.	animals/ not humans/
15.	exp Animals, Laboratory/
16.	exp Animal Experimentation/
17.	exp Models, Animal/
18.	exp Rodentia/

19.	(rat or rats or mouse or mice).ti.
20.	or/13-19
21.	2 not 20
22.	Qualitative research/ or Narration/ or exp Interviews as Topic/ or exp "Surveys and Questionnaires"/ or Health care surveys/
23.	(qualitative or interview* or focus group* or theme* or questionnaire* or survey*).ti,ab.
24.	(metasynthes* or meta-synthes* or metasummar* or meta-summar* or metastud* or meta-stud* or metathem* or meta-them* or ethno* or emic or etic or phenomenolog* or grounded theory or constant compar* or (thematic* adj3 analys*) or theoretical sampl* or purposive sampl* or hermeneutic* or heidegger* or husserl* or colaizzi* or van kaam* or van manen* or giorgi* or glaser* or strauss* or ricoeur* or spiegelberg* or merleau*).ti,ab.
25.	or/22-24
26.	"patient acceptance of health care"/ or exp patient satisfaction/
27.	Patient Education as Topic/
28.	((information* or advice or advising or advised or support*) adj3 (patient* or need* or requirement* or assess* or seek* or access* or disseminat*)).ti,ab.
29.	(information* adj2 support*).ti,ab.
30.	((client* or patient* or user* or carer* or consumer* or customer*) adj2 (attitud* or priorit* or perception* or preferen* or expectation* or choice* or perspective* or view* or satisfact* or inform* or experience or experiences or opinion*)).ti,ab.
31.	or/26-30
32.	21 and 25 and 31

Table 7: Embase (Ovid) search terms

1.	diverticul*.mp.
2.	limit 1 to English language
3.	letter.pt. or letter/
4.	note.pt.
5.	editorial.pt.
6.	case report/ or case study/
7.	(letter or comment*).ti.
8.	or/3-7
9.	randomized controlled trial/ or random*.ti,ab.
10.	8 not 9
11.	animal/ not human/
12.	nonhuman/
13.	exp Animal Experiment/
14.	exp Experimental Animal/
15.	animal model/
16.	exp Rodent/
17.	(rat or rats or mouse or mice).ti.
18.	or/10-17
19.	2 not 18
20.	health survey/ or exp questionnaire/ or exp interview/ or qualitative research/ or narrative/
21.	(qualitative or interview* or focus group* or theme* or questionnaire* or survey*).ti,ab.
22.	(metasynthes* or meta-synthes* or metasummar* or meta-summar* or metastud* or meta-stud* or metathem* or meta-them* or ethno* or emic or etic or phenomenolog* or

	grounded theory or constant compar* or (thematic* adj3 analys*) or theoretical sampl* or purposive sampl* or hermeneutic* or heidegger* or husserl* or colaizzi* or van kaam* or van manen* or giorgi* or glaser* or strauss* or ricoeur* or spiegelberg* or merleau*).ti,ab.
23.	or/20-22
24.	patient attitude/ or patient preference/ or patient satisfaction/ or consumer attitude/
25.	patient information/ or consumer health information/
26.	patient education/
27.	((information* or advice or advising or advised or support*) adj3 (patient* or need* or requirement* or assess* or seek* or access* or disseminat*)).ti,ab.
28.	(information* adj2 support*).ti,ab.
29.	((client* or patient* or user* or carer* or consumer* or customer*) adj2 (attitud* or priorit* or perception* or preferen* or expectation* or choice* or perspective* or view* or satisfact* or inform* or experience or experiences or opinion*)).ti,ab.
30.	or/24-29
31.	19 and 23 and 30

Table 8: CINAHL (EBSCO) search terms

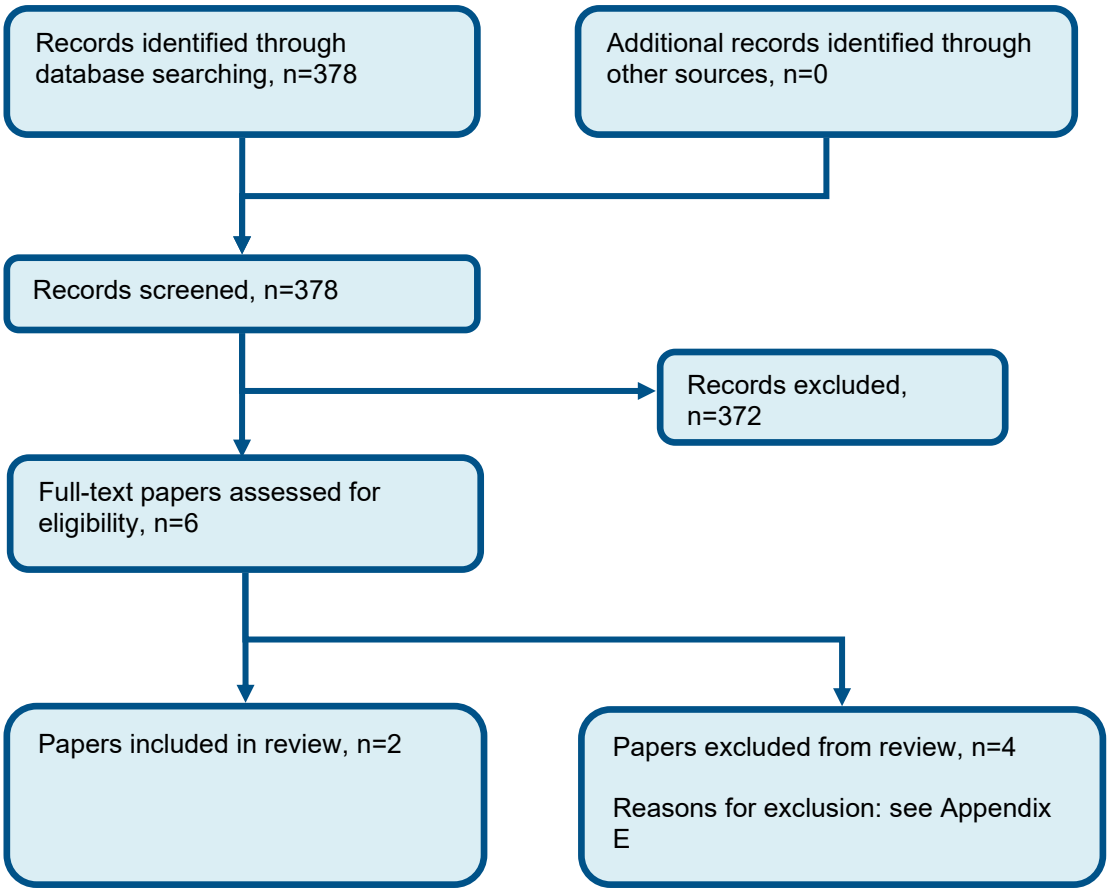
S1.	diverticul*
S2.	PT anecdote or PT audiovisual or PT bibliography or PT biography or PT book or PT book review or PT brief item or PT cartoon or PT commentary or PT computer program or PT editorial or PT games or PT glossary or PT historical material or PT interview or PT letter or PT listservs or PT masters thesis or PT obituary or PT pamphlet or PT pamphlet chapter or PT pictorial or PT poetry or PT proceedings or PT “questions and answers” or PT response or PT software or PT teaching materials or PT website
S3.	S1 not S2 – exclude Medline records and limit to English language

Table 9: PsycINFO (ProQuest) search terms

1.	diverticul*
2.	(su.exact.explode("rodents") or su.exact.explode("mice") or (su.exact("animals") not (su.exact("human males") or su.exact("human females"))) or ti(rat or rats or mouse or mice))
3.	S1 not S2 – limit to English language

Appendix C: Qualitative evidence selection

Figure 1: Flow chart of qualitative study selection for the review of information for patients



Appendix D: Qualitative evidence tables

Table 10: Qualitative evidence tables

Study	Kaser 2012[4]
Aim	To determine the patients view on the timing of elective resection for sigmoid diverticulitis.
Population	People with recurrent diverticulitis who have had a rectosigmoid resection. N=117
Setting	Hospital of Leistal
Study design	Retrospective cohort study
Methods and analysis	A detailed questionnaire with thematic qualitative analysis. Thematic analysis to identify important thematic groupings and the relationships between them. This involved reading each transcript and comparing results amongst all included studies The themes identified were allowed to be revised and refined in an iterative process. This constant comparison method was used to ensure reliability. Transcripts were revisited a number of times to ensure consistency of meaning of individual responses. Fisher exact probability test was used for categorical data and logistical regression was used to compare factors influencing the choice of an earlier elective surgery.
Findings	Finding 1: improvement of diverticular symptoms The questionnaire revealed that having surgery had a marked improvement in symptoms for 34% of the population and 54% were completely resolved of their symptoms. However 2% had no improvement and 10% had some improvement.
	Finding 2: timing of surgery 45/117 (38%) people would have preferred an earlier operation. Of these 45 people, 13 had 2 attacks, 5 had 3 attacks, 7 had 4 attacks, 4 had 5 attacks and 16 had 6 or more attacks of diverticulitis. Multivariate analysis showed the number of pain episodes; OR 1.23 (95% CI 1.060, 1.423), and number of inflammatory attack; OR 1.27 (95% CI 1.002, 1.598) to be predictors for wanting an earlier surgery.
Limitations and applicability of evidence	The lack of control group in the study and the retrospective design meant that there is a likely a selection bias in the study sample. The response rate to the questionnaire was 69% resulting in a high rate of missing data.

Study	Levack 2012[5]
Aim	Document the frequency, severity and predictors of sub-optimal bowel function.
Population	People with complicated diverticulitis who underwent emergency or elective sigmoidectomy with restoration of continuity. N=326 30 patients with free perforation had emergency surgery. 84 patients underwent surgery for smoldering disease, 249 underwent surgery to prevent future attacks and 13 had surgery for fistulas.
Setting	Massachusetts General hospital
Study design	Retrospective cohort study
Methods and analysis	Series of detailed questionnaires with thematic qualitative analysis Thematic analysis to identify important thematic groupings and the relationships between them. This involved reading each transcript and comparing results amongst all included studies The themes identified were allowed to be revised and refined in an iterative process. This constant comparison method was used to ensure reliability. Transcripts were revisited a number of times to ensure consistency of meaning of individual responses. Fisher exact probability test or t-test was used to compare age, sex, medical comorbidities, pharmacological risk factors and preoperative complications in people with positive and negative outcomes. Logistic regression was used to determine the predictors of bowel function.
Findings	Of the 325 people included in the study, 249 (76%) fully responded to the surveys and were included in the analysis. Finding 1: Post-operative bowel function The majority of people; 93.9%, had regular post-operative bowel movements of up to 4 per day. 26.1% had to use anti-diarrhoea medication to achieve this and 31.8% has to modify their diet.
	Finding 2: Faecal incontinence Moderate to severe faecal incontinence was found in 24.8% of people. Multivariate analysis showed females were more likely to report faecal incontinence, OR 2.3 (95% CI 1.5, 3.7) than males and having a preoperative intra-abdominal abscess also increased the likelihood of incontinence; OR 1.4 (95% CI 1.1, -2.1).
	Finding 3: Faecal urgency Faecal urgency without incontinence was reported by 19.6% of people. Multivariate analysis showed that female sex; OR 1.3 (1.1, 2.4), and diverting ileostomy; OR 2.1 (95% CI 1.3, 4.5) were associated with increased risk of faecal urgency.
	Finding 4: Incomplete evacuation Incomplete emptying was reported by 20.8% of people. Multivariate analysis showed incomplete evacuation to be associated with female sex; OR 1.4 (95% CI 1.1, 1.9); and postoperative sepsis; OR 1.9 (95% CI 1.1, 2.9).
Limitations and applicability of	Only 246 people fully responded to the questionnaires and were analysed there was missing data from 24% of the included study population.

Study	Levack 2012[5]
evidence	There was no data collected preoperatively therefore it is unclear how many people had a pre-existing pelvic floor disorder which could account for the negative bowel function symptoms. There was no control arm for postoperative people without diverticulitis.

Appendix E: Excluded studies

E.1 Excluded qualitative studies

Table 11: Studies excluded from the qualitative review

Reference	Reason for exclusion
Black, 2015[1]	Incorrect population
Carlin, 2014[2]	Incorrect population
Goldner, 1986[3]	No relevant outcomes
Thomas, 1988[7]	Incorrect population

Appendix F:Research recommendations

F.1 Information and support.

Research question: What information and support do people with diverticulosis, diverticular disease or acute diverticulitis need?

Why this is important:

The committee found that evidence regarding the natural history and most effective treatments for diverticulosis, diverticular disease and acute diverticulitis are very limited. The committee also noted that information shared with patients currently depends on the perspective and experience of their clinicians and is probably very variable. The patient representatives on the committee noted that information which they would have considered useful to guide decision making was not always shared with them before making decisions on treatment. This research will help guide clinicians as to what information patients with diverticulosis, diverticular disease and acute diverticulitis require. This qualitative research would also be likely to highlight areas in which uncertainty exists and may also help prioritise further research questions regarding the treatment and natural history of diverticulosis, diverticular disease and acute diverticulitis, from the patient perspective.

Table 12: Criteria for selecting high-priority research recommendations

PICO question	Population: Patients with asymptomatic diverticulosis (e.g. a diagnosis resulting from an incidental finding), patients with diverticular disease and patients who have received surgical and/or conservative treatment for acute diverticulitis
Importance to patients or the population	Study findings will guide what information and support should be shared with patients with diverticulosis, diverticular disease and acute diverticulitis. Where uncertainty remains about aspects of these conditions which are considered of high importance to study participants, this may help prioritise further research on the natural history and management of diverticulosis, diverticular disease and acute diverticulitis from the patient perspective.
Relevance to NICE guidance	The guideline committee found no relevant qualitative evidence in order to inform guidance on what information people with diverticulosis, diverticular disease and acute diverticulitis require. The guideline committee therefore relied upon expert opinion for its recommendation on what information patients require.
Relevance to the NHS	This research may help improve the information and support which is offered to patients and could reduce inconsistency in how this is delivered by NHS clinicians.
Current evidence base	No qualitative research has been identified which addresses this question. The research review identified only patient questionnaire data which had very limited relevance to this research question.
Study design	Qualitative study using appropriate methodology such as semi-structured interviews or focus groups. Participants will be asked to consider what information and support they consider important, including what they feel they require(d) to make decisions regarding how to manage their condition. The participants may also be asked to reflect on their experiences in having discussed management of their condition with clinicians and to share what information and support they considered useful and what (if any) information and support they would have considered useful, which they had not received.
Feasibility	This research would require the recruitment of a several patients, who would require appropriate remuneration and an appropriately experienced study team. It is believed that identification of participants with diverticular

	disease would not present a significant challenge, however it may prove challenging to recruit participants to include those with asymptomatic diverticulosis.
Other comments	The committee consider this an important area for further research and are not aware of current research ongoing in the area
Importance	Medium: the research is relevant to the recommendations in the guideline in respect of what information do patients and their carers need to know about diverticular disease and its treatment.