NATIONAL INSTITUTE FOR HEALTH AND CARE EXCELLENCE

Draft guidance consultation

Capsule sponge tests for detecting Barrett's oesophagus and oesophageal cancer and surveillance of Barrett's oesophagus

The Department of Health and Social Care has asked the National Institute for Health and Care Excellence (NICE) to produce guidance on using capsule sponge tests in the NHS in England. The evaluation committee has considered the evidence from multiple sources and the views of non-company stakeholders, clinical experts and patient experts.

This document has been prepared for consultation with the stakeholders. It summarises the evidence and views that have been considered, and sets out the recommendations made by the committee. NICE invites comments from the stakeholders for this evaluation and the public. This document should be read along with the evidence (see the committee papers).

The evaluation committee is interested in receiving comments on the following:

- Has all of the relevant evidence been taken into account?
- Are the summaries of clinical and cost effectiveness reasonable interpretations of the evidence?
- Are the recommendations sound and a suitable basis for guidance to the NHS?
- Are there any aspects of the recommendations that need particular consideration to ensure we avoid unlawful discrimination against any group of people on the grounds of age, disability, gender reassignment, pregnancy and maternity, race, religion or belief, sex or sexual orientation?
- How might surveillance of Barrett's oesophagus change in the future in terms of surveillance intervals and risk groups?

Note that this document is not NICE's final guidance on capsule sponge tests. The recommendations in section 1 may change after consultation.

After consultation:

- The evaluation committee will meet again to consider the evidence, this evaluation consultation document and comments from the stakeholders.
- At that meeting, the committee will also consider comments made by people who are not stakeholders.
- After considering these comments, the committee will prepare the final draft guidance.

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- Subject to any appeal by stakeholders, the final draft guidance may be used as the basis for NICE's guidance on using capsule sponge tests in the NHS in England.

For further details, see NICE's technology appraisal and highly specialised technologies guidance manual.

The key dates for this evaluation are:

- Closing date for comments: 07 December 2026
- Second evaluation committee meeting: 16 December 2026
- Details of the evaluation committee are given in section 5.

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1 Recommendations

NICE is updating its guideline on Barrett's oesophagus and stage 1 oesophageal adenocarcinoma. As a result, the recommended surveillance pathway for Barrett's oesophagus may change.

This guidance will be reviewed if changes to the surveillance pathway affect these recommendations.

Detecting Barrett's oesophagus and oesophageal cancer

1.1 Cytosponge and EndoSign capsule sponge tests can be used as options for detecting Barrett's oesophagus and oesophageal cancer in people with persistent gastro-oesophageal reflux disease and multiple risk factors who do not need an urgent suspected cancer pathway referral.

Surveillance of Barrett's oesophagus

1.2 Cytosponge and EndoSign can be used as options for surveillance of Barrett's oesophagus within the surveillance pathway in NICE's guideline on Barrett's oesophagus and stage 1 oesophageal adenocarcinoma.

What this means in practice

Cytosponge and EndoSign must be funded in the NHS in England for the condition and population in the recommendations, if a capsule sponge test is considered the most suitable option. The technologies must be funded in England within 90 days of final publication of this guidance.

There is enough evidence to show that the technologies provide benefits and value for money, so they can be used routinely across the NHS.

Why the committee made these recommendations

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People with gastro-oesophageal reflux disease and other risk factors usually have upper gastrointestinal endoscopy to look for Barrett's oesophagus or oesophageal cancer. Surveillance of Barrett's oesophagus also usually includes upper gastrointestinal endoscopies. Gastrointestinal endoscopies are usually done in secondary care. Capsule sponge tests are quick and easy to administer, so would be used in community diagnostic centres and primary care.

Clinical evidence shows that capsule sponge tests have acceptable diagnostic accuracy. It also shows that many people strongly prefer capsule sponge tests to upper gastrointestinal endoscopies. This is because they cause fewer and less severe adverse events.

For detecting Barrett's oesophagus and oesophageal cancer, the cost-effectiveness estimates are within the range that NICE considers an acceptable use of NHS resources.

For surveillance of Barrett's oesophagus, the cost-effectiveness of capsule sponge tests depends on the person's risk and the testing strategy used. The technology is cost effective when used with:

- most strategies for low-risk populations
- strategies with more frequent testing for higher risk populations.

So, the Cytosponge and EndoSign capsule sponge tests can be used.

2 Information about capsule sponge tests

2.1 A capsule sponge test is an oesophageal cell collection device used with biomarker tests to check for abnormal cells in the oesophagus. The capsule, which is attached to a thread and contains a small, rough-textured sponge, is swallowed by the person having the test. Once swallowed, the capsule dissolves, allowing the sponge to expand in the person's stomach. This takes about 7 minutes. It is then withdrawn by pulling on the attached thread, collecting cells from the lining of the oesophagus. The procedure does not require sedation, so it can be done

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in the community, and it requires only 1 healthcare professional. Also, capsule sponge tests generate fewer aerosols, so they can be done in an office environment.

2.2 The sponge containing the exfoliated cells from the oesophagus is placed in a fixative and this sample is shipped for laboratory assessment. At the time of publication, there is a single central private laboratory in the UK that carries out all such laboratory assessments.

2.3 All samples are analysed using histological staining and 2 biomarker tests. These analyses can indicate both Barrett's oesophagus and oesophageal cancer. So, the test can be used to detect these conditions in people who are at risk of developing them. It can also be used to periodically check for oesophageal cancer in people who have already been diagnosed with Barrett's oesophagus. A person whose capsule sponge test is positive is referred for a confirmatory endoscopy.

2.4 Two capsule sponge tests are available in the NHS.

Cytosponge

2.5 Cytosponge (Medtronic) is a CE-marked medical device. Cytosponge's capsule is made from vegetarian gelatine and the sponge is made from polyethylene.

EndoSign

2.6 EndoSign (Cyted Health) consists of the EndoSign cell collection device and the EndoSign preservation kit. Both are CE and UKCA-marked. EndoSign's capsule is made from hydroxypropyl methylcellulose and the sponge is made from polyurethane. EndoSign also has a proprietary applicator to position the capsule on the back of the person's tongue.

Price

2.7 The list prices for the capsule sponge tests are:

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- £120 for Cytosponge (supplied by the company)
- £100 for EndoSign (supplied by the company).

The cost of the laboratory assessment is commercial in confidence. Costs may vary in different settings because of negotiated procurement discounts.

Sustainability

2.8 Information on the Carbon Reduction Plans for UK carbon emissions for Medtronic and Cyted Health will be included here when guidance is published.

3 Committee discussion

The evaluation committee considered evidence from several sources. This included evidence submitted by the 2 companies, a review of clinical and cost evidence by the external assessment group (EAG), and responses from stakeholders. See the committee papers for full details of the evidence.

The condition

Definition of the condition

3.1 In Barrett's oesophagus, normal cells of the lower part of the oesophagus (distal squamous epithelium) are replaced by cells like those lining the stomach and bowel (metaplastic columnar epithelium). It can be categorised into short-segment Barrett's oesophagus if the segment length is shorter than 3 cm and long-segment Barrett's oesophagus if it is 3 cm or longer. Clinical experts explained that the current definition was adopted in 2014 and that it is aligned with the definition of Barrett's oesophagus used in other countries. But, historically, a broader definition of Barrett's oesophagus was used in the UK. The committee acknowledged that this may limit the usefulness of older studies. The precancerous stage of Barrett's oesophagus is referred to as dysplasia.

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Effects on quality of life

3.2 People with Barrett's oesophagus may have no symptoms, or they may have symptoms of gastro-oesophageal reflux disease (GORD). This can include heartburn and indigestion, chest pain, and discomfort in the upper part of the abdomen. Chronic reflux is a risk factor for developing Barrett's oesophagus. Other risk factors include:

- older age
- male sex
- being overweight
- smoking
- having a hiatal hernia
- White ethnicity and
- a family history of Barrett's oesophagus or oesophageal cancer.

People with Barrett's oesophagus have a higher risk of developing oesophageal adenocarcinoma – an aggressive cancer with a poor prognosis when detected at a late stage. Patient experts explained that a diagnosis of Barrett's oesophagus is associated with anxiety and that oesophageal cancer is often found late when curative therapy is not an option. They said that they would welcome better methods of detecting and monitoring Barrett's oesophagus and oesophageal cancer. The committee acknowledged the impact on quality of life that Barrett's oesophagus and oesophageal cancer can have for people living with these conditions and their families and carers.

Current practice

Diagnosis of Barrett's oesophagus

3.3 NICE's guideline on gastro-oesophageal reflux disease and dyspepsia in adults and the British Society of Gastroenterology (BSG) guidelines on the diagnosis and management of Barrett's oesophagus recommend that a diagnostic upper gastrointestinal endoscopy should be considered in

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people with GORD, based on the person's preferences and individual risk factors. Clinical experts explained that in many parts of the NHS endoscopy and pathology services are working under capacity constraints and that this may discourage referrals for a diagnostic endoscopy. The committee noted that the relevant population that may benefit from a capsule sponge test in the detection use case is people with GORD, who have multiple risk factors (without any red-flag symptoms). It also noted that the relevant population excludes people whose symptoms can be caused by either oesophageal or stomach cancer. For these people, an urgent upper gastrointestinal endoscopy is recommended (see NICE's guideline on suspected cancer).

Surveillance of Barrett's oesophagus

3.4 NICE's guideline on GORD and dyspepsia in adults, NICE's guideline on Barrett's oesophagus and stage 1 oesophageal adenocarcinoma and the BSG guidelines on the diagnosis and management of Barrett's oesophagus recommend endoscopic surveillance in people diagnosed with Barrett's oesophagus. They also recommend that the presence of dysplasia, the person's risk factors and their personal preferences should be considered. The recommended surveillance interval is dependent on the Barrett's segment length and stage. This is because people with longer segments have a higher risk of progression to high-grade dysplasia and oesophageal cancer. For Barrett's oesophagus with intestinal metaplasia and no dysplasia the interval is every:

- 3 to 5 years if the segment is shorter than 3 cm.
- 2 to 3 years if the segment is 3 cm or longer.

The committee recalled that there are capacity constraints for endoscopy and pathology services in parts of the NHS (see section 3.3). Clinical experts said that because of this, in some NHS trusts the actual periods between surveillance endoscopies can be longer than recommended. The committee recalled that people with Barrett's oesophagus value

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surveillance due to the anxiety associated with living with the condition (see section 3.2). It concluded that capsule sponge tests could provide an additional surveillance option for people with Barrett's oesophagus.

Treatment

3.5 Barrett's oesophagus is usually treated with endoscopic radiofrequency ablation, with or without endoscopic resection, based on its stage. Other ablative therapies may be used depending on the patient's preference and availability. Early-stage oesophageal cancer that has not extended into the deep submucosa can also be treated with endoscopic resection. Otherwise, the treatment options include surgical resection, radiotherapy and chemotherapy. Clinical experts explained that it is easier to treat Barrett's oesophagus before it progresses to oesophageal cancer. It is also easier to treat the oesophageal cancer in its early stage before it becomes advanced or metastatic. The committee recalled that oesophageal cancer is associated with poor survival and that people with this condition experience poor quality of life (see section 3.2). It acknowledged that timely detection of Barrett's oesophagus and oesophageal cancer can lead to improved outcomes for people with the conditions.

The technologies

Acceptability of the technologies

3.6 The committee considered written and verbal statements from people with Barrett's oesophagus and oesophageal cancer and from a patient organisation. It noted that many people prefer capsule sponge tests over endoscopy because they:

- are less invasive
- take less time to administer
- can be done in the community.

Clinical experts also confirmed this. Patient experts explained that a

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person may experience some discomfort when the sponge is withdrawn, but that this is only transient and is acceptable to most people. The committee concluded that capsule sponge tests are highly acceptable to people and may be preferred over endoscopy.

Available evidence and comparability of the technologies

3.7 Within the available evidence, 16 studies used Cytosponge. EndoSign was used in 3 studies and 4 studies used both technologies. The committee noted that there was very limited evidence directly comparing Cytosponge and EndoSign. But, it concluded that it was reasonable to assume that Cytosponge and EndoSign are clinically comparable and that the evidence is generalisable between the technologies.

Clinical effectiveness

Diagnostic accuracy for detecting Barrett's oesophagus and oesophageal cancer

3.8 Evidence for the sensitivity and specificity of capsule sponge tests for diagnosis of Barrett's oesophagus, dysplasia or oesophageal cancer was available from 1 cohort study and 2 case-control studies. In these studies, the reference standard (endoscopy and biopsy) was applied to all or most participants. The sensitivity of the technology for detecting Barrett's oesophagus was between 73% and 80% and the specificity was between 92% and 94%. The technology's positive and negative predictive value and diagnostic yield were reported in several studies, in which endoscopy was only done in a subset of people. Studies showed generally high negative predictive values for Barrett's oesophagus, high-grade dysplasia and oesophageal cancer. The EAG explained that some of the diagnostic accuracy evidence came from case-control studies, which can over-estimate diagnostic accuracy. It also noted that it did quality appraisal of the diagnostic accuracy studies, but that most of them were judged to be at low or moderate risk of bias. The committee recalled that the definition of Barrett's oesophagus used in the UK had changed and that this limits

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the usefulness of older studies (see section 3.1). Clinical experts also highlighted that endoscopy is an imperfect reference standard, because it does not have perfect diagnostic accuracy. The committee acknowledged the uncertainty around the diagnostic accuracy estimates. It concluded that the studies were appropriate for decision making and that capsule sponge tests had an acceptable diagnostic accuracy for detecting Barrett's oesophagus and oesophageal cancer.

Diagnostic accuracy for surveillance of Barrett's oesophagus

3.9 Evidence for the sensitivity and specificity of capsule sponge tests for surveillance of Barrett's oesophagus was available from 2 cohort studies and 1 retrospective study. An additional study reported on the technology's positive and negative predictive value and diagnostic yield. It showed a high negative predictive value for high-grade dysplasia or oesophageal cancer. The committee acknowledged that the approach to risk categorisation had a large impact on the diagnostic accuracy estimates. It noted that most studies used 3 outcome categories – people at high, moderate and low risk. This was based on a categorisation approach developed by Pilonis et al. (2022). The EAG explained that for the purpose of estimating diagnostic accuracy, people at moderate risk need to be considered as either test-positive or test-negative. Using this approach, the sensitivity of capsule sponge tests for high-grade dysplasia or oesophageal cancer was 94% and specificity was 56% to 61% when people at moderate risk were considered 'positive' alongside people at high risk. But, if only people at high risk were considered 'positive', the sensitivity for high-grade dysplasia or oesophageal cancer was between 75% and 88%, while specificity was between 85% and 87%. Clinical experts explained that the moderate-risk group contains people whose capsule sponge test was negative, but who have multiple risk factors. The committee concluded that the studies were appropriate for decision making and that capsule sponge tests had an acceptable diagnostic accuracy for detecting dysplasia or oesophageal cancer.

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Safety

3.10 The committee acknowledged that neither capsule sponge tests nor endoscopy are perfectly accurate, so a small proportion of people with Barrett's oesophagus or oesophageal cancer would be missed with both technologies. It concluded that people with a negative result should be given safety netting advice about monitoring changes in their symptoms. The committee also noted that trusts should have local arrangements to ensure access to urgent endoscopy if the capsule sponge cannot be retrieved normally, for example because of thread breakage.

Procedural outcomes

3.11 The committee considered evidence on procedural outcomes. It showed that:

- about 95 out of every 100 people can successfully swallow a capsule sponge test after 1 or more attempts
- about 91 out of every 100 samples are adequate.

The committee also noted that serious adverse events are rare. Clinical experts explained that some people experience sore throat and mild throat irritation, but that this can usually be treated with over-the-counter pain killers.

Cost effectiveness

EAG's modelling approach

3.12 The EAG developed 3 economic models for this assessment:

- A diagnostic model to assess the cost effectiveness of capsule sponge tests compared with routine diagnostic endoscopy in people with GORD suspected of having Barrett's oesophagus.
- A surveillance model to assess the cost effectiveness of capsule sponge tests compared with endoscopic surveillance in people

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diagnosed with Barrett's oesophagus who are on a surveillance programme.

- A natural history model to simulate the natural history of Barrett's oesophagus and oesophageal cancer for people in whom the conditions have not been detected and who have not had any treatment.

The models included 7 health states:

- no Barrett's oesophagus
- non-dysplastic Barrett's oesophagus
- low-grade dysplasia
- high-grade dysplasia
- intramucosal carcinoma
- submucosal adenocarcinoma
- death.

The models' cycle length was half a month, and the time horizon was 50 years or reaching 100 years old (whichever occurs first). The EAG noted that a half-cycle correction was not required because of the short cycle length. The committee concluded that the overall structure of the models was suitable for decision making.

The diagnostic model

3.13 The EAG's base case included 2 strategies in the diagnostic model:

- A 'replacement' strategy in which capsule sponge tests were used as a replacement for endoscopy. In this model only about 1 in 10 people with GORD who were offered and accepted an initial capsule sponge test (based on the number of capsule sponge tests undertaken in the BEST3 trial) received an intervention in either arm.
- A 'higher-uptake' strategy. In this strategy, the population in the intervention arm was people with GORD who were offered and

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accepted an initial capsule sponge test (based on the number of capsule sponge tests undertaken in the BEST3 trial). In the comparator arm, the population was smaller; only about 1 in 10 people who would accept a capsule sponge test were assumed to accept an endoscopy.

The committee noted that the proportion of people who have a capsule sponge test (that is, the uptake of the test) had a large impact on the results. Clinical experts said that there is no data showing how many people with GORD are offered an endoscopy and how many of them accept and have the procedure. They also explained that the uptake of capsule sponge tests is likely to be higher than the uptake of endoscopy, but it is likely to be lower than 100%. The committee noted that in the 'replacement' strategy, capsule sponge tests provided less health benefit at a lower cost. But it acknowledged that the health losses were relatively small, whereas the cost savings were much larger. It noted that the opposite was observed in the 'higher-uptake' strategy, where capsule sponge tests provided more health benefits, but they were also more costly. The committee acknowledged that these 2 strategies represent the extreme scenarios, and that in reality, uptake of capsule sponge testing is likely to fall somewhere within this range.

In the base case, the EAG assumed that people whose previous test was negative could receive another test every 3 years (that is, the EAG assumed repeat testing). This assumption was applied to both arms in the model. In the base case, the proportion of people who get retested was the same as the proportion of people who receive an intervention in the first cycle. The committee considered several scenario analyses that showed that changing the proportion of people who have repeat testing in the intervention arm had an impact on the cost-effectiveness results. Clinical experts explained that it is reasonable to assume that some people whose test was negative would have another test. This

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may be especially likely if their symptoms have progressed or if they remain concerned and re-present to their GP (see section 3.10). The clinical experts noted that the exact proportions are uncertain, but it is reasonable to assume that more people would be retested if capsule sponge was an option. But, they also noted that it is unlikely that everyone with a negative test would be retested every 3 years. They estimated that a more reasonable proportion would be between 5% and 40% for people having a capsule sponge test. They also suggested that a longer interval of 5 years is more appropriate. The committee concluded that repeat testing should be included in the diagnostic model. But it added that this should only be for some people (33% for people having a capsule sponge test) and a longer interval of 5 years should be used.

In the diagnostic model, people diagnosed with Barrett's oesophagus proceeded into the surveillance model. The EAG provided 2 sets of results, assuming surveillance with endoscopy only and assuming surveillance with capsule sponge tests. The committee concluded that surveillance with capsule sponge tests, using the most cost-effective capsule sponge testing strategy, is more appropriate (see section **Error! Reference source not found.**).

The surveillance model

3.14 In the surveillance model, the EAG assessed 3 surveillance strategies:

- replacing endoscopic surveillance with capsule sponge surveillance (strategy 1)
- alternating between endoscopic and capsule sponge surveillance (strategy 2)
- using a capsule sponge test midway between endoscopic surveillance (strategy 3).

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Because of the different surveillance intervals, each of the 3 strategies was modelled separately for:

- people with short-segment Barrett's oesophagus, for whom current care is modelled as endoscopic surveillance every 5 years and
- people with long-segment Barrett's oesophagus, for whom current care is modelled as endoscopic surveillance every 2.5 years.

The committee acknowledged that it is appropriate to model the surveillance strategies separately for people with short-segment and long-segment Barrett's oesophagus.

The committee noted a recent UK-based randomised controlled trial in people with Barrett's oesophagus, the BOSS study. The study found no statistically significant improvement in overall or cancer-specific survival with endoscopic surveillance every 2 years compared with endoscopy performed only when clinically indicated by worsening symptoms. Clinical experts explained that the study could result in changes to the clinical pathway for people with Barrett's oesophagus. The committee acknowledged the potential impact of the study on this evaluation. But, it concluded that the impact of the BOSS study on clinical practice is currently unknown.

In the base case, the EAG assumed a distribution across health states upon model entry in the surveillance model based on recent data highlighted by one of the companies. The committee considered a scenario analysis in which fewer people entered the model with non-dysplastic Barrett's oesophagus and more people entered the model with low-grade dysplasia. It noted that using this alternative distribution had an impact on the results for people with short-segment Barrett's oesophagus. But, it judged that the distribution used in the EAG's base case was more clinically plausible and appropriate for decision making.

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Health benefits

3.15 The utility values associated with the 7 health states were informed by published utility values. The committee noted that some of the utility values were influential parameters in the one-way sensitivity analysis, but that neither extreme impacted the direction of results. It also noted that in a scenario analysis, setting the utility value for non-dysplastic Barrett's oesophagus to that of no Barrett's oesophagus had a minimal impact on the results. The committee concluded that the utility values used in the models were appropriate.

Diagnostic accuracy parameters

3.16 The EAG explained that in the base case:

- the sensitivity and specificity of capsule sponge tests for detecting Barrett's oesophagus were sourced from the cohort study (see section 3.8), and
- the sensitivity of capsule sponge tests for detecting Barrett's oesophagus was adjusted for segment length.

The committee noted that a scenario analysis using diagnostic accuracy parameters from a case-control study had a minimal impact on the results in the diagnosis model. The EAG also explained that the sensitivity and specificity of capsule sponge tests for detecting dysplasia or oesophageal cancer were sourced from a cohort study. It also explained that it had used the values obtained if only people at high risk were considered 'positive' (see section **Error! Reference source not found.**). The committee concluded that the diagnostic accuracy parameters used in the models are appropriate for decision making.

Acceptable incremental cost-effectiveness ratio

3.17 NICE's technology appraisal and highly specialised technologies guidance manual notes that, above a most plausible incremental cost-effectiveness

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ratio (ICER) of £25,000 per quality-adjusted life year (QALY) gained, judgements about the acceptability of a technology as an effective use of NHS resources will take into account the degree of certainty around the ICER. Similarly, judgements about the acceptability of a technology as an effective use of NHS resources are needed for technologies that provide less health benefit at a lower cost. The committee will be more cautious about recommending a technology if it is less certain about the ICERs presented. But it will also take into account other aspects including uncaptured health benefits and health inequalities. The committee noted that no evidence was presented to show that the technology will materially reduce health inequalities and that there are no uncaptured health benefits (see section 3.21). It concluded that acceptable ICERs would be below £25,000 per QALY gained. Where a technology generated cost savings at the expense of health, the committee required savings of more than £35,000 per QALY lost to consider the health loss acceptable. This indicates that greater cost savings were required to justify a QALY loss than the additional cost considered acceptable for a QALY gain.

Committee preferences

3.18 The committee's preferred assumptions were that:

- repeat testing in the diagnosis model should be done in 33% of people having a capsule sponge test, with an interval of 5 years (see section 3.13)
- surveillance following diagnosis in the diagnosis model should be with capsule sponge tests rather than endoscopy, using the most cost-effective capsule sponge testing strategy (see section 3.13)
- the distribution across health states upon model entry in the surveillance model should be the one used in the EAG's base case (see section 3.14)
- the sensitivity and specificity of capsule sponge tests used in the models should be the ones used in the EAG's base case (see section 3.16).

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Cost-effectiveness estimates

3.19 The cost-effectiveness estimates for capsule sponge tests depend on the testing strategies used. For detecting Barrett's oesophagus and oesophageal cancer in people with GORD, 2 strategies were proposed (see section 3.13). The ICER associated with the 'replacement' strategy was £44,740 saved per QALY lost. The ICER associated with the 'higher-uptake' strategy was £18,389 per QALY gained. The committee noted that both estimates were within the range that NICE considers an effective use of NHS resources (see section 3.17).

For surveillance of Barrett's oesophagus, 3 strategies were proposed (see section 3.14). For short-segment Barrett's oesophagus, strategy 1 provided less health benefit at a lower cost. The ICER associated with this strategy was £27,957 saved per QALY lost, which was not within the range considered an acceptable use of NHS resources (see section 3.17). Strategy 2 also provided less health benefit at a lower cost. But the committee noted that the health losses were very small, whereas the cost savings were much larger. The ICER associated with strategy 2 was £43,906 saved per QALY lost. Strategy 3 resulted in additional health benefits, but at a higher cost. The ICER associated with strategy 3 was £23,516 per QALY gained. The committee noted that both of these estimates were within the range that NICE considers an effective use of NHS resources (see section 3.17).

For long-segment Barrett's oesophagus, strategy 1 and strategy 2 provided less health benefit at a lower cost. The ICERs associated with these strategies were £6,350 saved per QALY lost and £8,320 saved per QALY lost, respectively. These results were not within the range considered an acceptable use of NHS resources (see section 3.17). Strategy 3 provided health benefit and increased the total cost. The ICER associated with strategy 3 in this population was £13,257 per QALY gained, which was within the range considered an acceptable use of NHS

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resources (see section 3.17).

The committee acknowledged that the choice of surveillance strategy had an impact on the cost effectiveness of the technology and that only 3 surveillance strategies were investigated (whereas many other options are theoretically possible). It also acknowledged that the current estimates showed that capsule sponge tests are cost-effective in 2 of the 3 strategies for short-segment Barrett's oesophagus, but only 1 of the 3 strategies modelled for long-segment Barrett's oesophagus. It also recalled that there could be changes in the clinical pathway for people with Barrett's oesophagus as a result of the BOSS study.

Other factors

Equality and health inequality

3.20 The committee considered that some people with Barrett's oesophagus or oesophageal cancer may be older. The conditions are also more common in men and in White people. Age, sex and ethnicity are protected characteristics under the Equality Act 2010. But because its recommendations do not restrict access to testing for some people over others, the committee agreed these were not potential equalities issues. The committee recalled that capsule sponge tests are highly acceptable and may be preferred over endoscopy, and that the tests can be used in community diagnostic centres and primary care. It acknowledged that because of this, the recommendations can increase access to testing.

Uncaptured benefits

3.21 The committee considered whether there were any uncaptured benefits of capsule sponge tests. It did not identify additional benefits not captured in the economic modelling. So, the committee concluded that all of the relevant benefits of the technology had already been taken into account.

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Conclusion

Recommendations in the detection use case

3.22 Using the committee's preferred assumptions, the cost-effectiveness estimates for the detection use case were within the range that NICE considers an acceptable use of NHS resources. So, capsule sponge tests can be used for detecting Barrett's oesophagus and oesophageal cancer.

Recommendations in the surveillance use case

3.23 The committee concluded that capsule sponge tests are likely to be cost-effective in most strategies for people with short-segment Barrett's oesophagus and in strategies with more frequent intervals for people with long-segment Barrett's oesophagus. So, capsule sponge tests can be used for surveillance of Barrett's oesophagus.

4 Implementation

4.1 Section 7 of the National Institute for Health and Care Excellence (Constitution and Functions) and the Health and Social Care Information Centre (Functions) Regulations 2013 requires integrated care boards, NHS England and, with respect to their public health functions, local authorities to comply with the recommendations in this evaluation within 90 days of its date of publication.

4.2 The Welsh ministers have issued directions to the NHS in Wales on implementing NICE technology appraisal guidance. When a NICE technology appraisal guidance recommends the use of a drug or treatment, or other technology, the NHS in Wales must usually provide funding and resources for it within 60 days of the first publication of the final draft guidance.

4.3 When NICE recommends a test 'as an option', the NHS must make sure it is available within the period set out in the paragraphs above. This means that, if a patient has persistent gastro-oesophageal reflux disease and multiple risk factors or has Barrett's oesophagus, and the healthcare

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professional responsible for their care thinks that a capsule sponge test is the most suitable detection or surveillance option, it should be available for use, in line with NICE's recommendations.

5 Evaluation committee members and NICE project team

Evaluation committee members

This topic was considered by NICE's diagnostics advisory committee, which is a standing advisory committee of NICE.

Committee members are asked to declare any interests in the technologies being evaluated. If it is considered there is a conflict of interest, the member is excluded from participating further in that evaluation.

The minutes of each committee meeting, which include the names of the members who attended and their declarations of interests, are posted on the NICE website.

Chair

Tom Clutton-Brock

Chair, diagnostics advisory committee

NICE project team

Each evaluation is assigned to a team consisting of 1 or more health technology analysts (who act as technical leads for the evaluation), a technical adviser, a project manager, and an associate director or principal technical adviser.

Ivan Maslyankov

Technical lead

Frances Nixon

Technical adviser

Donna Barnes

Project manager

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Rebecca Albrow

Associate director

ISBN: [to be added at publication]

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