Understanding Barrett's columnar lined oesophagus from the patients' perspective: qualitative analysis of semistructured interviews with patients

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Objectives To explore patients' views and perspectives on their experience of living with Barrett's columnar lined oesophagus (CLO) and being part of an endoscopic surveillance programme.

Design Qualitative semistructured interviews.
Setting District General Hospital.

Subjects 22 men with diagnosis of Barrett's CLO between the ages of 50 and 70 years.

Results All subjects had received some information about Barrett's CLO and had a heightened awareness of the cancer risk. However, many had misinterpreted or poorly assimilated the information and overall health literacy levels were low. From their stories a 'Model of Uncertainty' in Barrett's surveillance was developed as a focus for healthcare professionals to ensure that the service users' perspective is considered in future service development.

Conclusion Patients' assimilation of information should not be assumed by healthcare professionals but rather should be verified for individual patients. The model developed highlights the factors found to influence patients' knowledge and understanding of Barrett's CLO.

Introduction

Barrett's columnar lined oesophagus (CLO) is recognised as a pre-malignant condition for the development of oesophageal adenocarcinoma which, when combined with squamous cancer of the oesophagus, makes up the fifth leading cause of cancer-related deaths in the UK.¹ Barrett's CLO is now increasingly diagnosed owing to improvements in the quality, safety and availability of endoscopy as a diagnostic tool. Indeed, diagnosis is often an incidental finding, in an unsuspecting population, not all of whom will have gastro-oesophageal reflux as a presenting symptom.² Challenges remain

in our attempts to describe the natural history of this condition and medical opinion continues to be divided about its management and whether patients should be placed on a surveillance programme. While surveillance may improve prognosis by earlier diagnosis it may also prove unpleasant, valueless or even dangerous. Likewise, endoscopic surveillance has an economic cost.

The absolute risk of developing adenocarcinoma of the oesophagus from Barrett's CLO has been estimated at 0.5% which, although low, represents a 30-fold increased risk compared with that of the general population.³ Those at highest risk appear to be Caucasian men aged 50–70 years.^{4,5} How information about the cancer risk is communicated to patients can influence their decision about whether to participate or not in a surveillance programme. As Woloshin and Schwartz⁶ point out, numerical statements such as, 'there is a 30-fold increase of developing cancer compared with the general population' when given to patients may exaggerate risk perception to them. Conversely, a statement such as, 'for every 1000 patients with Barrett's CLO, 50 will develop oesophageal cancer in 10 years' may minimise and neutralise risk.⁶ The influence of information on decision-making is a constant theme within the literature related to the psychological costs of surveillance in other diseases such as prostate cancer⁷ and breast and cervical cancer.^{9,10}

Information giving and seeking the views and perspectives of patients as service users or expert patients is now an established feature of healthcare systems. The value and requirement that service users are fully involved in their care is recognised internationally¹¹ while

expert patient programmes which originated in the USA¹² have now been taken up with enthusiasm in the UK as shown by policy documents such as 'Choosing Health'¹³ and 'The Expert Patient'.¹⁴ This reflects an emphasis on public inclusiveness in the former government's health agenda,¹⁵ which shows no sign of abating under the present coalition. In Lord Darzi's report, 'High Quality Care for All: NHS Next Stage Review Final Report'¹⁶ it is suggested that the public desires a greater degree of control over their health and health-care. However, so far there is no evidence to suggest that patients with Barrett's CLO are aware of the need to change their lifestyles or that self-management of symptoms necessarily translates into greater control. It may be claimed that the surveillance programme for this condition has been based on individual health-care professionals' beliefs about the risks of malignant transformation and the benefits of surveillance and that because of present uncertainty surrounding the natural history of the disease the content and quality of the information communicated to patients will vary, based as it is on the knowledge and beliefs of the individual practitioner. Information giving extends beyond just ensuring the accuracy of any verbal or written information and needs to consider the patient's readiness to receive this as well as their ability to understand it. In addition, patients' health beliefs and their locus of control needs to be taken into account as well as their overall health literacy¹⁷ which consists of a specific set of cognitive and social skills related to decision-making.

Evidence for the psychological morbidity associated with Barrett's CLO is limited,^{18 19} and perhaps only highlights the methodological limitations in applying quantifiable methods to studying patient experience and quality of life.^{20–22} The dearth of qualitative research into this condition has given little opportunity for the 'voices' of patients with Barrett's CLO to be heard. Therefore, a qualitative research study was deemed necessary to deal with this omission and to enable an exploration of the social phenomenon of living with this condition based on patients' views and perspectives. An approach which gives due emphasis to patients' views and experiences and also the meanings they ascribe to these is needed.²³ These cannot be measured quantitatively but can only emerge from naturally occurring data.²⁴ In this respect, we would argue that a quantitative approach, such as questionnaires, would only gather superficial information and fail to capture the richness and depth of patients' experiences.²¹ We believe that the qualitative approach employed in this study, based on interviews with patients, enabled them to describe their experiences of living with Barrett's CLO and the meanings they ascribe to these experiences and consequently, for their 'voices to be heard'. This approach, as Polkinghorne²⁵ asserts, will open patients' experiences to public view and more pertinently, in the context

of this paper, to the professional view of those who provide the services.

Qualitative interviews with patients with a diagnosis of Barrett's CLO taking part in an endoscopic surveillance programme formed the basis of this study. The study aims were twofold. First, to explore patients' knowledge and understanding of this condition and second to explore how the information forming the basis of that knowledge and understanding influenced their self-management of this condition.

Method

In 2007 with approval from the local research ethics committee, patients were sent an information sheet and a letter of invitation to take part in our study. A purposive sample of Caucasian men aged 50–70 years was chosen as those already identified as being at the highest risk of malignant progression from Barrett's CLO.

Patients were recruited from an initial search of the electronic endoscopic reporting system Unisoft and a manual trawl of the unit's Barrett's register. In all, 107 patients were identified from these databases. All had endoscopic and histological evidence of Barrett's CLO and were enrolled onto an endoscopic surveillance programme, having undergone between one and eight surveillance procedures (mean = 3). Vulnerable groups—that is, those with serious concomitant disease such as cancer, were excluded. Our selection criteria also excluded those who were unable to give valid consent, non-English speaking patients and those unable to read or write.

Invitations were sent out in small numbers to ensure that a positive response was acted upon without delay. Data collection and data analysis were in tandem and began after the first batch of interviews was completed. This pattern of sequential analysis²⁶ enabled theoretical and conceptual categories to be generated from the start and throughout the research process and gave the researchers the opportunity to develop and challenge emerging hypotheses generated by the interview findings as well as the opportunity to explore deviant or negative cases—that is, those which ran counter to the emerging propositions in line with Krippendorff's²⁷ framework (table 1). Based on the previous experience of one researcher (RD) it was initially estimated that 25–35 respondents would achieve data saturation and for this reason 36 invitations were sent out resulting in 23 responses (response rate = 64%). Theoretical sampling was employed and once it realised data saturation—that is, no new analytical insights were forthcoming after 22 interviews, the decision was taken to stop sampling.

Data collection

One of the authors (HG) interviewed patients in a room in the education facility at the local district hospital. A semistructured topic guide ensured consistency between interviews and that all the essential

Table 1 Application of Krippendorff's (2004) framework for content analysis

Conceptual component	Maintaining rigour	Questions
A body of text	Acknowledging self-interest in interpreting text that belongs in 'world of others' Semistructured interviews to guide rather than dictate and ensure that all information is gathered	Am I acknowledging my preconceived beliefs as an expert practitioner? Whose story am I telling?
A research question	The research question allows exploration of the text to uncover currently inaccessible phenomena It acknowledges that there are other ways to observe the occurrence of the phenomena as they refer to 'experience'	Am I answering the research question? Have I answered the research question? Does the question allow me to examine the text inductively?
A context	The context is the patients' experience as gained through their understanding and attitude towards the condition The same interview technique and semistructured questions will be used to link the text to the possible answers to the research question Purposeful sampling of the research population will ensure that the possible variables have been accounted for	What are my inclusion and exclusion criteria within the chosen population group—why? Is the interview technique and questions used appropriate?
An analytical construct	Using Mishel's model (2006) because it has been used with similar patient groups Starting data analysis immediately to prevent data overload and shape ongoing data collection Using qualitative IT data collection programme to manage data Analysis of latent content	Are the tools I am using appropriate and what other tools do I need? What are the negative cases, why? Have I heard all there is to hear, how do I know?
Inferences	Ensuring that data that seem to contradict the emerging concepts are sought and analysed to strengthen the inferences made Linking back through the texts to the answers to the research questions	Are my inferences backed by the analytical construct above, are they representational of the chosen context, how?
Validation of evidence	Using concepts of credibility, dependability and transferability to measure trustworthiness	Have I achieved trustworthiness, if not why and what is required?

topics were covered. Interviews were designed to allow patients to openly discuss their views and perspectives and to describe their experiences of living with Barrett's CLO. Interview questions were focused on meeting the aims of the study and explored their knowledge and understanding of Barrett's CLO, the part played by information on that knowledge and understanding and how that might affect subsequent self-management of their condition. Interviews took on average an hour, were recorded digitally and completed over 5 months. HG transcribed the interviews and research notes on the same day as each interview. It was decided to seek patient or respondent validation and patients consented to being sent transcripts from the interviews to allow them to comment on the content and to ensure that the reality of the experience had been captured.

Content analysis and the development of a conceptual model

Data from transcripts and research notes were entered onto NVIVO7, a software program, to organise and manage the data. The framework for content analysis designed by Krippendorff²⁷ was used to provide a prescriptive, analytical and methodological grounding to the study (table 1). Through a constant comparative approach to analysis, themes were generated directly from the data and deviant cases highlighted within each theme. HG developed an early coding system that RD, using a sample of transcribed interviews, was independently able to verify. Both authors read the

transcripts and research notes and discussed codes and emerging themes. Patient validation provided a positive corroboration of the contents of the transcripts, allowing full integration of their narratives with our interpretation of those narratives. Because Krippendorff's framework (table 1) advised seeking an analytical construct to the study the researchers initially considered using Mishel's²⁸ Model of Uncertainty in illness, which they came across while reviewing the literature on chronic disease. However, both researchers decided against using this model for it would not only lead to further reanalysis of existing codes and themes but run the risk of making the data fit the model rather than, as had already occurred, allowing the themes to emerge inductively from the data. Nevertheless, Mishel's model provided a useful starting point upon which to develop the Model of Uncertainty in Barrett's CLO (figure 1). This enabled the study findings to be shown graphically and simply through the use of a conceptual framework. This, based on the findings which follow, offers an invaluable insight into patients' views and perspectives on their experience of living with this condition.

Results

Attribute data

Some attribute data were gathered on the participants, which showed that their occupations were diverse, representing a range of educational and practical attainment and including a doctor, policeman, bank manager, builder, lorry driver, farmer, dental

Figure 1 Model of uncertainty in Barrett's columnar lined oesophagus.

technician, stonemason, factory worker, bus driver, company director and carpenter. Most (59%, N=13) were retired or semiretired.

Completion of the gastro-oesophageal reflux disease impact scale before the interview allowed a more objective assessment of the patient's view of how the symptoms of gastro-oesophageal reflux had disrupted their lives in the week leading up to the interview. Significantly over a third of the patients (36%, N=8) had symptoms that were uncontrolled with none being proactively monitored or reviewed to ensure adequate or continued response to treatment.

Patient's knowledge and understanding of Barrett's CLO

How information was given to patients about their condition was fundamental to their understanding but as findings showed this often caused confusion or uncertainty. Information given led one individual to believe that he had two gullets and others to think that their ongoing endoscopic surveillance was because of duodenal polyps, effects of a throat abscess or drug use. It is unclear whether this was because they were misinformed or misinterpreted the information, but the use of medical terminology may be pertinent as shown by this participant's response:

I think he sort of summed it up fairly well, obviously if one was dealing in it then probably I have a daughter who is a zoologist and I can ask a simple question and she'll totally blind me with science, I mean one is basically a lay person. (H14)

It may be that the doctor/patient relationship prevented clarification of uncertainty:

Well I don't like to ask them I feel a dick you know. They told me this once before I'm sure they did, obviously they did but I can't remember what they said. (H31)

But evidently some simply blocked out, denied or selectively used the information given, as with this one individual who having complained about the lack of information:

I think that that is the only thing I would say about the treatment that I have had umm is the lack of information If you don't know what it is then you don't know what you are looking for or what to be aware of.

later on in the interview demonstrated perhaps a more selective use of the information he had been given by stating:

To be honest he put the frighteners on me, he gave me the impression that he thought that it was something really serious. (H22)

With his reason for not seeking clarification being:

Well when you feel well you tend not to. (H22)

For some this uncertainty about their condition resulted in a perceived threat to their health and well-being and affected their perception of the cancer risk.

Cancer perception

Denial of being given information but awareness of the cancer potential was a common theme and this uncertainty was perceived as a threat in all but one interview:

I never had any information all I was told was that ... if I didn't look after my oesophagus then the next thing would be cancer of the oesophagus and then it would spread through you and you were a goner. (H1p)

This perceived threat might only be transient as a result of inviting individuals to discuss their experience of living with the disease. However, there are examples where this experience made them take stock of their own symptoms and lifestyle and influenced their decision to undergo surveillance endoscopy turning uncertainty into an opportunity with surveillance as a safety net:

It (food) was getting to there and then it was stopping and umm I was a bit worried because it was at the time when John Thaw had recently died of ... and Carl Wayne. (H17)

My father and some of my family have had a bit of cancer and I'm thinking you know ... I see what it done to them and I didn't like that and its nice to come back ... I think I'll put up with whatever's got to be done. (H31)

He was forty-nine ... he was full of cancer and died the day before his birthday. So you know you don't know what you've got so you're better off going in and then if they find something they can deal with it. (H9)

The threat also appears greater when there is a presumed inherent risk from cancer:

My mother died of cancer you see, stomach cancer so probably that is my biggest fear. (H25)

My mother she had bowel cancer ... is there any link? (H10)

I gets worried like my brother follows me dad and I follow me mum's side, I follow me mum, I just wonder if its going to come, you know, my way. (H9)

So for some there is an acknowledged overt fear of cancer:

I worry about what they are going to find ... the fear of getting a cancer one day and you know how bad it would be if I did get, you know I don't know, whether its curable if you've got cancer there. (H6)

There are so many illnesses today and the way the cancer is spreading at the moment ... that's what my biggest scare is cancer. (H9)

While, for other respondents the fear was more covert:

Well you've always got that thought that if it did get worse, would it turn cancerous or whatever. I never stop to worry about anything like that I think that you ... obviously make yourself ill from worrying. (H24)

I suppose if the symptoms change. For instance I'm getting some sort of back pain ... but I'm sure that's muscle pain rather than anything, anything else.... (H26)

He mentioned the word cancer casually ... when, if it deteriorates or explodes or whatever it does then I have a problem ... it's a very comforting thing when you get that letter. (H35)

There were other health factors in an individual's interpretation of uncertainty as a threat.

Framing health

In addition to cancer it was apparent that some patients perceived a direct association with other health conditions:

Then in 2000 I had a heart attack umm followed by a short period of angina when I had a triple heart bypass. Looking back I think some of that may well have been indigestion, the indigestion I think actually was angina. (H7)

I do suffer with headaches; well I did suffer with headaches very badly ... I shouldn't think it's associated for one minute with the oesophageal problem. (H22)

Again this relates back to how information is given and understood by the patient.

Even so, when weighing up the threat all but one individual perceived endoscopic surveillance as a safety net:

At the moment my chest is of more concern because my lungs are packing up and I've got to do something

about it ... I think if Barrett's change was similar then I would want to pay more attention to it, so long as every thing is going along O.K. (H14)

Feeling vulnerable

When symptoms were manageable there was a perceived opportunity to take control over health and ill health. Vulnerability only occurred in those symptomatic individuals, pressing home the importance of symptom control.

Something happens in the middle of the night you wake up and you think oh my god and immediately you sort of move sideways and watch what you eat and drink even more. (H14)

I've had a few bad ones, you know the feeling in the stomach pain wise ... I have taken, I took another one (tablet) ... I don't know if I should have done or not but I got to the stage where I can feel it in my stomach and everything and I think er no. (H31)

I've had no problems with my stomach its been pretty good, until the last two years, it's started to flare up and its beginning to get ... I'm swallowing Gaviscon tablets now, probably at least every second day. (H25)

Mobilising strategies

The main mobilising strategy used by patients was to take control over symptoms, recognise the lifestyle changes necessary and adapt to create a more positive outlook of living with Barrett's CLO.

I think I've learnt to handle indigestion and you do whatever it is ... I do try to avoid the spicy foods which they say are not good for it so. (H22)

I don't do the rugby anymore. I decided it was just too much of a risk against me. It just wasn't worth it. (H18)

So long as I don't start vomiting, I'll be alright – blood. (H25)

Although, for some it involves creative thinking to achieve!

I'm obese, I know that but I'm bringing everything back so why I'm putting on weight.... Weight has got a lot to do with medical science but all the thin fellas at work who've run in the London Marathon ate healthy salads and all this, they've passed away. All the fat fellas are the ones who have survived. So I think it helps to have a bit of weight. (H1p)

As already alluded to, individuals did employ strategies in order to adapt their lifestyle and turn perceived threats into opportunities, these included using surveillance as a safety net and asserting control over their symptoms.

Surveillance as a safety net

Almost universally individuals perceived endoscopic surveillance of their Barrett's CLO as an opportunity:

If it stopped then I think that you would start worrying a bit more then. (H25)

Well having been told the initial diagnosis and knowing what I do, I would probably be concerned. (H26)

It's reassuring to me to know that it hasn't got any worse. (H30)

It makes me feel safer. (H31)

I think I'd be a bit worried about that because I can't see down there. (H14)

How are people going to know if that stomach lining is continuing to move and are the tablets working, do they need to be adjusted. (H7)

It keeps my mind at rest. (H36)

Despite mixed experiences of endoscopy it was viewed by most as a necessary evil:

It's uncomfortable, it's er got to be done I suppose ... I've lived through an operation and come out the other end so I think I can manage this. (H25)

I tend to panic a bit you know it's, I think I've got used to it now I know what to expect. (H23)

Well no I appreciate that it's got to be done er, but it wasn't very nice. (H30)

Interestingly, very few questioned what would be done if any changes were found at endoscopy.

Control over symptoms

Control over symptoms was also perceived as an opportunity to take control over their health, with medication as the primary means:

I have it by my bedside, it's the first thing I do when I wake up ... Before I took Losec, I mean life was a chore some days, the quality of life. (H12)

Although some used their medication to support their lifestyle:

I mean I eat chillies and things and er I used to try and avoid all peppers and stuff like that ... it's great you can eat anything, you can go out and do some gardening or do anything else, it was always sort of bending over and stuff that was always the worst ... It's great I can eat disgusting sandwiches. (H10)

Then I went onto 20 mg, I was fine then, I could lie down and eat virtually anything. (H6)

Most patients however, tried to strike a balance. The buffering strategy they used was aimed at maintaining a positive outlook:

I like a little espresso coffee and I like a little cognac ... I will still have the occasional cigarette ... I do love cheeses but I don't over eat them and I always think a little bit of what you fancy. (H14)

It's just that you don't want to give up some of these things you like. (H24)

I decided that it's either coffee or whisky and I don't want to give up whisky. (H26)

This balance was important as all patients discussed without prompting, the significance they placed on their ability to live life symptom free, be the person they wanted to be and do the things they wanted to do.

I've had a good life, I've enjoyed my life, I enjoy life. I have a laugh and a joke with people they take me as I am. If they don't like me that's ok, I'm me. (H1p)

However, it should be noted that this buffering strategy included an element of bravado. Although difficult to capture, this was a common and recurring theme spread throughout each interview, often as a comment thrown in apropos nothing. Bravado was particularly evident with one who professed not to be worried:

I'm pretty laid back actually, but I don't worry about it at all....

but then later acknowledged that he'd sold his business—just in case:

I thought to myself what if he turned round and said I've got some bad news for you ... if I popped my clogs how would my wife cope with that and the answer is she wouldn't ... that's why we've disposed of the business. I'm disposing of the business at the end of December. (H32)

Uncertainty and its impact on present and future management of Barrett's CLO

A prevalent theme throughout this study was the uncertainty expressed by patients about their condition and the impact this had on both their current experiences of living with their condition and their perception of how this might affect them in the future. For this reason it was considered helpful to show how the concept of uncertainty links into, or impacts upon, all the other themes derived from the data; hence the development of the Model of Uncertainty in Barrett's surveillance (figure 1). As shown in the model, uncertainty relates to patients' symptom pattern and their experiences of being part of an endoscopic surveillance programme and the understanding they derive from these. Findings suggest that these themes remain neutral concepts until patients perceive them as either a threat or opportunity to their health which results in them taking steps (mobilising strategies or buffering strategies) to try to maintain some control over their condition. Similarly, uncertainty is shown to be directly linked to credible authority (healthcare professionals as key information givers) and, as findings highlight, if information given is misinterpreted or poorly assimilated by patients uncertainty is perceived as a threat, resulting in feelings of vulnerability and an exaggerated perception of the cancer risk. Reliance on endoscopic surveillance is seen as a safety

net regardless of their experience of endoscopy, and medication use was sometimes used to support an unhealthy lifestyle.

Discussion

The study aims were to explore patients' knowledge and understanding of Barrett's CLO and how it influenced their decisions for managing their condition.

The majority of the patients interviewed were shown to have a limited knowledge and understanding of the condition or to have misinterpreted or selectively used the information given to them at the time of diagnosis. Selective use of information is verified in the often exaggerated awareness of the cancer risk. Given the political focus on the 'choice' agenda if patients are to know and understand what they can do, if anything, to alter that risk then they need to understand exactly what that risk is in the first instance.

With patients' heightened anxiety about the risk of cancer progression there was an almost universal reliance on endoscopic surveillance as providing a safety net. Findings highlight the need to take account of the real human and psychosocial cost of Barrett's CLO on patients given that in their interviews they raised the spectre of cancer in discussing their participation in surveillance programmes. This is a point worth making as all the patients in this study were those at the highest risk of cancer progression.

Findings from this study suggest that patients' experiences of living with Barrett's CLO as a perceived threat is centred not only on their perception of cancer but their overall health with regard to their symptoms, the relationship between other health conditions and Barrett's CLO and not least the degree of vulnerability they feel when faced with a loss of control over an illness. When symptoms were perceived as being under control coupled with having endoscopic surveillance as a safety net individuals were able to assimilate the uncertainty around their experience and adapt their lifestyle. Nevertheless, given that 36% (N=8) had uncontrolled symptoms according to the gastro-oesophageal reflux disease impact scale there is clearly a need to look at how healthcare providers manage this group of patients outside of any endoscopic surveillance programme.

Findings from this study seem to identify low levels of health literacy which affected individual patient's ability to obtain, judge, sift, interpret and understand information in relation to their own needs. This is regrettable given that understanding Barrett's CLO might allow them greater autonomy and personal empowerment. Similarly, this might also play a part in their motivation to change their behaviour. A prevalent theme was the uncertainty expressed by patients about their condition and its impact on their lives and the management of their condition as well as their future plans. Overall, findings show that consistent

What is already known on this subject?

- ▶ Little is known of patients' views and perspectives on living with Barrett's columnar lined oesophagus (CLO) and being part of endoscopic surveillance.
- ▶ There is uncertainty among healthcare professionals about the benefits of endoscopic surveillance for patients with Barrett's CLO.

What are the new findings?

- ▶ Uniquely, this study has enabled an exploration of patients' views and perspectives of living with Barrett's CLO and enabled their voices to be heard.
- ▶ Patients in this study misinterpreted or poorly assimilated the information on their condition given to them by healthcare providers, which affected their management of symptoms and lifestyles.
- ▶ All the patients in this study had a heightened awareness of the link of this condition to cancer and regarded the endoscopic surveillance programme as providing a safety net.

How might they impact on clinical practice in the future?

- ▶ Healthcare providers must give consistent, accurate information and check individual patient's understanding of that information.
- ▶ Healthcare providers need to be aware that patients experience uncertainty about living with and managing their condition and this may be compounded by poor health literacy.

and accurate information on the benefits or disadvantages of endoscopic surveillance is needed irrespective of the beliefs of individual health professionals and that this should take into account the patient's ability to understand the information given to them.

Implications for practice and future research

Findings show that patients rely on healthcare providers for information about Barrett's CLO, including the benefits of surveillance and management of their symptoms. However, findings clearly highlight the mismatch between the information given by healthcare providers and patients' understanding.

The model developed (figure 1) highlights how this study group was influenced by a range of factors and how they used these to make sense of living with Barrett's CLO while being part of a surveillance programme. In being aware of these factors health professionals can take steps to ensure a consistent approach to imparting information and, as important, check individual's understanding of that information.

It is acknowledged that the factors making up the uncertainty part of the model may be different in those patients not undergoing endoscopic surveillance and that comparative studies are required to reevaluate the model on this group as well as in other units to take into account variances in management strategies.

Competing interests None.

Ethics approval This study was conducted with the approval of the MREC – South Wales and R&D Hereford Hospitals.

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