



HEALTH TECHNOLOGY WALES (HTW) GUIDANCE 040 April 2022

Pharyngolaryngeal biopsy under local anaesthesia for people with suspected head and neck cancer in the outpatient setting

HTW Guidance:

The evidence supports the adoption of pharyngolaryngeal biopsy under local anaesthesia to confirm, but not to rule out, a diagnosis of head and neck cancer.

This procedure can be done in an outpatient setting and avoids the need for inpatient care and general anaesthesia. A positive result has the potential to accelerate the initiation of treatment, but a negative result should be followed by a second biopsy in an operating theatre under general anaesthesia.

Economic modelling estimates that there is the potential for cost saving through the use of pharyngolaryngeal biopsy under local anaesthesia rather than in a theatre environment under general anaesthesia and that this is a cost-effective procedure.

Why did Health Technology Wales (HTW) appraise this topic?

Head and neck cancers are malignancies occurring within the larynx, oral cavity, salivary glands, regions of the pharynx and the paranasal sinuses. If left untreated, the tumour can spread to local and distant area, most commonly the lymph nodes. In Wales there are around 500 new cases of head and neck cancers reported each year.

The current method for diagnosing patients with suspected head and neck cancer is a biopsy performed in an operating theatre under general anaesthesia. Performing an outpatient biopsy under local anaesthesia could avoid the need for an inpatient biopsy under general anaesthesia as well as reduce the time to diagnosis and time to treatment.

This topic was submitted to Health Technology Wales by Alex Zervakis, General Manager, Health Economics and Market Access, Olympus Medical.

The status of HTW guidance is that NHS Wales should adopt this guidance or justify why it has not been followed. HTW will evaluate the impact of its guidance.

Evidence Summary

Refer to Evidence Appraisal Report 040 (EAR040) for a full report of the evidence supporting this Guidance.

HTW identified and summarised evidence for the following question: What is the diagnostic accuracy, clinical effectiveness, and cost-effectiveness of pharyngolaryngeal biopsy under local anaesthesia (OLB) in the outpatient setting for people with suspicious laryngeal or pharyngeal lesions, compared to undergoing biopsy in an operating theatre (OTB) under general anaesthetic?

The Scottish Health Technologies Group (SHTG) in 2018 identified seven relevant studies, and Health Technology Wales researchers identified a further four studies. For all studies identified, the diagnostic sensitivity values ranged from 60% to 81.1% and the specificity values ranged from 87% to 100%. The positive predictive values ranged from 78% to 100% and the negative predictive values ranged from 17% to 87.3%. From consultation to biopsy procedure, the mean number of days was 1.3 for OLB compared to 17.4 days for OTB. From consultation to diagnosis, the mean number of days was 7.5 for OLB compared to 23 days for OTB. The mean time from consultation to start of treatment was 27 days for OLB compared to 41.5 days for OTB.

The only relevant economic study identified was a budget impact model conducted by SHTG. The analysis showed that the additional costs associated with purchasing new equipment for OLB could be offset by savings due to a reduction in the number of biopsies under general anaesthesia. Overall, the introduction of OLB was found to deliver average cost savings of £421,204 per year.

HTW developed a cost-utility analysis comparing OLB to OTB in people with suspected head and neck cancer. Inputs were sourced from the SHTG budget impact analysis but updated with values more relevant to a Welsh setting where possible. OLB was associated with substantial cost savings with a modest reduction in quality-adjusted life years (QALYs) when compared with OTB, corresponding to an incremental cost-effectiveness ratio (ICER) of £21,011. This ICER value is above the threshold of £20,000 per QALY and indicates a cost-effective result since it is a scenario where the intervention is less effective and less costly than the comparator. In such scenarios, values above the £20,000 per QALY threshold are considered cost effective because higher values indicate greater savings for each QALY lost. Scenario analyses demonstrated that the proportion of patients who go on to have treatment following a false positive diagnosis can mean that OLB is no longer cost-effective. This occurs when more than 42% of patients are undetected as having a false positive diagnosis during conventional staging.

The appropriate mechanism for patient engagement was determined and the patient perspective was considered where possible.

Appraisal Panel considerations

- The Appraisal Panel considered the evidence relating to diagnostic accuracy of OLB for head and neck cancers. They noted that while the reported rates of specificity and positive predictive accuracy are high, the levels of sensitivity and negative predictive accuracy are rather lower. The implication of this is that OLB has the potential to confirm a diagnosis of suspected head and neck cancer but cannot be relied upon to accurately exclude the diagnosis. The Appraisal Panel considered that this was important in considering the care pathway for the use of OLB and OTB in the diagnosis of head and neck cancer.
- The Appraisal Panel asked the experts about the risk of false positive results and the possibility that some patients may proceed with cancer treatment following an erroneous biopsy result. The experts reassured the panel that, in practice, false positive results have not been seen with OLB and this added reassurance to the very high levels of specificity that have been reported in more recent studies in which the positive predictive values in two studies was reported as 100%.
- In light of these conclusions, the Appraisal Panel discussed the clinical pathway for OLB with the experts. It was confirmed by the experts that patients receiving a positive result following OLB will proceed along the care pathway to treatment, whilst patients who receive a negative result with OLB normally undergo a confirmatory operating theatre biopsy under general anaesthesia. The Appraisal Panel concluded from the evidence that this is an appropriate use of OLB in clinical practice. Furthermore, they noted that this approach has the potential to shorten the time to diagnosis and treatment in patients testing positive while minimising the risk of false negative diagnoses with OLB.
- In considering the patients most suitable for OLB, the experts described the anatomical circumstances where this procedure is most effective. They indicated that OLB can be used for most sites of suspected head and neck cancer, including the anterior nasal and oral cavity, and that there are even some circumstances when samples can be taken from areas that may be challenging with rigid endoscopy under general anaesthesia. On the other hand, the experts explained that obtaining biopsies with OLB from the hypopharynx, can be challenging and that these cases may be better suited for investigation using OTB.
- Experts also explained that there are cases whereby it may not be possible to obtain an adequate biopsy using OLB, for example if a patient is reluctant to have a local anaesthetic procedure or has a prominent gag reflex. In such cases, an OTB should be conducted instead.
- Experts advised that careful consideration is given to the presence or absence of relative contraindications as well as the safety of the procedure before offering the option of OLB to patients. The experts also described the importance of having the correct infrastructure and office environment in place to support the procedure including acquiring the appropriate equipment and having well trained staff to monitor patients during and following the procedure.
- The Appraisal Panel considered the quality and quantity of published clinical evidence available and noted that most studies are observational, and many were published as long as 10 years ago. It was further noted that most participants in the study were male and that only one study was conducted in a UK setting. The relevance and applicability of the studies was discussed with the experts who nonetheless confirmed that these studies are likely to reflect current practice in Wales. Head and neck cancer is more prevalent in males which explains the preponderance of male subjects in the studies and the experts confirmed that the majority of their patients in Wales are male. While many of the studies are indeed old, the general approach to investigation of suspected head and neck cancer has remained similar, although it was noted that single-use endoscopes

have been used increasingly during the COVID-19 pandemic to reduce the risk of viral transmission.

- The Appraisal Panel considered the health economic evidence that was presented in the HTW cost-utility analysis. Discussion with the experts highlighted that all patients receiving a negative result from OLB would undergo additional an OTB procedure. This is contrary to base case assumptions in the model, whereby it was assumed that only 33% would progress to a further biopsy. However, the scenario where all negative results from OLB undergo an additional OTB procedure was investigated in a sensitivity analysis and this showed OLB to be cost-effective, with a small reduction in QALYs due to false positive cases, and a small reduction in cost.
- The Panel discussed whether the procedure would need to be conducted only in regional centres and concluded that current evidence suggests that existing clinics in secondary as well as tertiary centres would be adequate for the procedure. It was noted, however, that there is the potential for working with the Cancer Site Groups to ensure safe and effective implementation across Wales.
- Overall, the panel concluded that OLB should be recommended for routine adoption as a first step in the diagnostic pathway for head and neck cancer in appropriate and consenting patients, since it has the potential to reduce the time to diagnosis and treatment for some patients with cancer. In the presence of a negative biopsy with OLB, it was concluded that patients should receive an additional biopsy procedure in an operating theatre environment under general anaesthesia to minimize the risk of a false negative biopsy.
- The Panel discussed the importance of good communication and patient education to inform expectations about the procedure itself as well as ensuring an understanding of the clinical implications of both a positive or negative result. The Appraisal Panel concluded that the process of obtaining informed patient consent is particularly important for OLB and that the choice of offering an OLB or OTB procedure to patients should be judged on a case-by-case basis, being dependent on patient tolerability and preference, as well as clinical need.

Responsibilities for consideration of this Guidance

Health Technology Wales (HTW) was established by Ministerial recommendation^{1,2} to support a strategic, national approach to the identification, appraisal and adoption of non-medicine health technologies into health and care settings. The HTW Appraisal Panel comprises senior representation from all Welsh boards with delegated authority to produce guidance 'from NHS Wales, for NHS Wales'. The status of HTW guidance is 'adopt or justify'. There is an expectation from Welsh Government that HTW guidance is implemented with adoption regularly audited by HTW.³

The guidance in this document is intended to assist Welsh care system decision makers to make evidence-informed decisions when determining the place of health technologies and thereby improve the quality-of-care services.

The content of this HTW guidance was based upon the evidence and factors available at the time of publication. An international evidence base was reviewed and external topic experts and HTW committee members consulted to contextualise available evidence to Wales. Readers are asked to consider the generalisability of the evidence reviewed to NHS Wales and that new trials and technologies may have emerged since first publication and the evidence presented may no longer be current. It is acknowledged that evidence constitutes only one of the sources needed for decision making and planning.

This guidance does not override the individual responsibility of health professionals to make decisions in the exercise of their clinical judgment in the circumstances of the individual patient, in consultation with the patient and/or guardian or carer.

No part of this guidance may be used without the whole of the guidance being quoted in full. This guidance represents the view of HTW at the date noted. HTW guidance is not routinely updated. It may, however, be considered for review if requested by stakeholders, based upon the availability of new published evidence which is likely to materially change the guidance given.

Standard operating procedures outlining HTW's evidence review methods and framework for producing its guidance are available from the HTW website.

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Declarations of interest were sought from all reviewers. All contributions from reviewers were considered by HTW's Assessment Group. However, reviewers had no role in authorship or editorial control and the views expressed are those of Health Technology Wales.

Chair, Health Technology Wales Appraisal Panel

1. National Assembly for Wales, Health and Social Care Committee. Access to medical technologies in Wales. December 2014.
2. Response to Recommendations from the Health & Social Care Committee: Inquiry into Access to Medical Technologies in Wales. February 2015.
3. Gething, V. Letter to all Health Board Chairs re Funding for Sacral Nerve Stimulation in Wales. VG_01655_17. September 2017.



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