

**EAR AND TEMPORAL BONE  
TUMOURS**

**STRUCTURED REPORTING  
PROTOCOL**

**(1<sup>st</sup> Edition 2019)**

Incorporating the:

**International Collaboration on Cancer Reporting (ICCR)**

Ear and Temporal Bone Tumours Dataset

[www.ICCR-Cancer.org](http://www.ICCR-Cancer.org)

**Core Document versions:**

- ICCR dataset: Ear and Temporal Bone Tumours Dataset 1<sup>st</sup> edition
- AJCC Cancer Staging Manual 8<sup>th</sup> edition
- World Health Organization (WHO). Classification of Head and Neck Tumours. 4<sup>th</sup> edition.

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# Scope

This protocol contains standards and guidelines for the structured reporting of Ear and Temporal Bone Tumours. The protocol has been developed for the reporting of resection and biopsy specimens of the ear and temporal bone. It includes ONLY primary tumours of the external auditory canal, middle and inner ear, including both benign and malignant entities (specifically due to anatomic confines and management alternatives which may require significant, destructive or disfiguring surgery).

All malignancies of the external ear (pinna, concha, scaphoid, lobe, etc., such as squamous cell carcinoma, basal cell carcinoma, atypical fibroxanthoma, Merkel cell carcinoma and melanoma) are not included.

Neck dissections and nodal excisions are dealt with in a separate [protocol](#), and this protocol should be used in conjunction, where applicable.

For bilateral tumours, a separate cancer checklist should be completed for each tumour.

Structured reporting aims to improve the completeness and usability of pathology reports for clinicians, and improve decision support for cancer treatment. This protocol can be used to define and report the minimum data set but the structure is scalable and can equally accommodate a maximum data set or fully comprehensive report.

# Abbreviations

AJCC	American Joint Committee on Cancer
CG	Commentary for a guideline
CS	Commentary for a standard
FISH	Fluorescent in-situ hybridisation
ICCR	International Collaboration on Cancer Reporting
LIS	Laboratory information system
LVI	Lymphovascular invasion
PBS	Pharmaceutical Benefits Scheme
PNI	Perineural invasion
RCPA	Royal College of Pathologists of Australasia
TNM	Tumour-node-metastasis
UICC	International Union Against Cancer
WHO	World Health Organization

# Definitions

The table below provides definitions for general or technical terms used in this protocol. Readers should take particular note of the definitions for 'standard', 'guideline' and 'commentary', because these form the basis of the protocol.

Ancillary study	An ancillary study is any pathology investigation that may form part of a cancer pathology report but is not part of routine histological assessment.
Clinical information	Patient information required to inform pathological assessment, usually provided with the specimen request form, also referred to as "pre-test information".
Commentary	<p>Commentary is text, diagrams or photographs that clarify the standards (see below) and guidelines (see below), provide examples and help with interpretation, where necessary (not every standard or guideline has commentary).</p> <p>Commentary is used to:</p> <ul style="list-style-type: none"><li>• define the way an item should be reported, to foster reproducibility</li><li>• explain why an item is included (e.g., how does the item assist with clinical management or prognosis of the specific cancer).</li><li>• cite published evidence in support of the standard or guideline</li><li>• state any exceptions to a standard or guideline.</li></ul> <p>In this document, commentary is prefixed with 'CS' (for commentary on a standard) or 'CG' (for commentary on a guideline), numbered to be consistent with the relevant standard or guideline, and with sequential alphabetic lettering within each set of commentaries (e.g., CS1.01a, CG2.05b).</p>
General commentary	<p>General commentary is text that is not associated with a specific standard or guideline. It is used:</p> <ul style="list-style-type: none"><li>• to provide a brief introduction to a chapter, if necessary</li><li>• for items that are not standards or guidelines but are included in the protocol as items of potential importance, for which there is currently insufficient evidence to recommend their inclusion. (Note: in future reviews of protocols, such items may be reclassified as either standards or guidelines, in line with diagnostic and prognostic advances, following evidentiary review).</li></ul>



Guideline	<p>Guidelines are recommendations; they are not mandatory, as indicated by the use of the word 'should'. Guidelines cover items that are unanimously agreed should be included in the dataset but are not supported by National Health and Medical Research Council (NHMRC) level III-2 evidence.<sup>1</sup> These elements may be clinically important and recommended as good practice but are not yet validated or regularly used in patient management.</p> <p>Guidelines include key information other than that which is essential for clinical management, staging or prognosis of the cancer such as macroscopic observations and interpretation, which are fundamental to the histological diagnosis and conclusion e.g., macroscopic tumour details, block identification key, may be included as either required or recommended elements by consensus of the expert committee. Such findings are essential from a clinical governance perspective, because they provide a clear, evidentiary decision-making trail.</p> <p>Guidelines are not used for research items.</p> <p>In this document, guidelines are prefixed with 'G' and numbered consecutively within each chapter (e.g., G1.10).</p>
Macroscopic findings	Measurements, or assessment of a biopsy specimen, made by the unaided eye.
Microscopic findings	In this document, the term 'microscopic findings' refers to histomorphological assessment.
Predictive factor	A predictive factor is a measurement that is associated with response or lack of response to a particular therapy.
Prognostic factor	A prognostic factor is a measurement that is associated with clinical outcome in the absence of therapy or with the application of a standard therapy. It can be thought of as a measure of the natural history of the disease.
Standard	<p>Standards are mandatory, as indicated by the use of the term 'must'. Standards are essential for the clinical management, staging or prognosis of the cancer. These elements will either have evidentiary support at Level III-2 or above (based on prognostic factors in the NHMRC levels of evidence<sup>1</sup> document). In rare circumstances, where level III-2 evidence is not available an element may be made a Standard where there is unanimous agreement in the expert committee. An appropriate staging system e.g., Pathological TNM staging would normally be included as a required element. These elements must be recorded and at the discretion of the pathologist included in the pathology report according to the needs of the recipient of the report.</p> <p>The summation of all standards represents the minimum dataset for the cancer.</p> <p>In this document, standards are prefixed with 'S' and numbered consecutively within each chapter (e.g., S1.02).</p>

Structured report	A report format which utilises standard headings, definitions and nomenclature with required information.
Synoptic report	A structured report in condensed form (as a synopsis or precis).
Synthesis	<p>Synthesis is the process in which two or more pre-existing elements are combined, resulting in the formation of something new.</p> <p>The Oxford dictionary defines synthesis as “the combination of components or elements to form a connected whole”.</p> <p>In the context of structured pathology reporting, synthesis represents the integration and interpretation of information from two or more modalities to derive new information.</p>

# Introduction

## Ear and Temporal Bone Tumours

The ear and the temporal bone, including the external auditory canal, middle and inner ear, with the closely associated facial nerve, internal carotid artery and internal jugular vein, is one of the most complex anatomic structures in the head and neck. A wide range of benign and malignant neoplasms arise in this region. The management of these neoplasms involves complex surgery due to the anatomic confines. Both benign and malignant tumours are included in this protocol, as the oncologically equivalent management requires a multidisciplinary approach and standardized nomenclature and terminology. Surgical resection of the ear and the temporal bone is a significant undertaking, requiring comprehensive pre-operative planning, with the resection of functionally critical structures associated with high treatment related morbidity and mortality. The surgical resection generates complicated three-dimensional specimens that can be challenging to handle at the macroscopic examination. This is further compounded by the rarity of these specimens as well as the use of terminology that pathologists encounter infrequently. The histologic diagnosis of the more common entities such as squamous cell carcinoma, basal cell carcinoma and adenoid cystic carcinoma is straightforward, however other entities such as aggressive papillary tumour or endolymphatic sac tumour may cause diagnostic challenges. Also, the precise identification of the epicentre of the tumour and its extent can be extremely challenging in an unoriented or otherwise compromised specimen. This information is of prognostic significance<sup>2,3</sup> and thus clear communication between the surgical and diagnostic teams is essential to obtain optimum orientation and anatomical landmarks. Until recently, guidelines for macroscopic and microscopic examination of these specimens were lacking.<sup>4</sup>

## Benefits of structured reporting

The pathology report lays the foundation for a patient's cancer journey and conveys information which:

- Provides the definitive diagnosis
- Includes critical information for Tumour-Node-Metastasis (TNM) staging
- Evaluates the adequacy of the surgical excision
- Provides morphological and biological prognostic markers which determine personalised cancer therapy

However, the rapid growth in ancillary testing such as immunohistochemistry, flow cytometry, cytogenetics, and molecular studies, have made the task of keeping abreast of advances on specific cancer investigations extremely difficult for pathologists. The use of structured reporting checklists by pathologists ensures that all key elements are included in the report specifically those which have clinical management, staging or prognostic implications. Consequently minimum or comprehensive datasets for the reporting of cancer have been developed<sup>5,6</sup> around the world. Both the United Kingdom,<sup>7</sup> and United States<sup>8</sup> have produced standardised cancer reporting protocols or "datasets" for national use for many years.

The use of cancer reporting checklists improves completeness and quality of cancer reporting and thereby ensures an improved outcome for cancer patients. This has long

term cost implications for public health by ensuring the most effective and timely treatment based on accurate and complete information.

The use of a structured reporting format also facilitates easy extraction of the necessary information by secondary users of the information i.e., cancer registries.

## **Importance of histopathological reporting**

The information contained within a pathology report includes prognostic information for the patient and treating clinical team. The content will assist in subsequent management, whether this may be surveillance, further surgery, radiotherapy or chemotherapy, or a combination of these modalities.

## **International Collaboration on Cancer Reporting**

The International Collaboration on Cancer Reporting (ICCR), founded in 2011 by the Australasian (RCPA), United States College of American Pathologists (US CAP) and Royal College of Pathologists United Kingdom (RCPath UK) Colleges of Pathology and the Canadian Association of Pathology - Association Canadienne des Pathologistes (CAP-ACP) in association with the Canadian Partnership Against Cancer (CPAC), was established to explore the possibilities of a collaborative approach to the development of common, internationally standardised and evidence-based cancer reporting protocols for surgical pathology specimens.

The ICCR, recognising that standardised cancer datasets have been shown to provide significant benefits for patients and efficiencies for organisations through the ease and completeness of data capture<sup>9-12</sup> undertook to use the best international approaches and the knowledge and experience of expert pathologists, and produce cancer datasets which would ensure that cancer reports across the world will be of the same high quality – ensuring completeness, consistency, clarity, conciseness and above all, clinical utility.

Representatives from the four countries participating in the initial collaboration undertook a pilot project in 2011 to develop four cancer datasets - Lung, Melanoma, Prostate (Radical Prostatectomy), and Endometrium. Following on from the success of this pilot project, the ICCR was joined by the European Society of Pathology (ESP) in 2013 and in 2014 incorporated a not-for-profit organisation focussed on the development of internationally agreed evidence-based datasets developed by world leading experts. The ICCR Datasets are made freely available from its website [www.ICCR-Cancer.org](http://www.ICCR-Cancer.org)

## **Design of this protocol**

This structured reporting protocol has been developed using the ICCR dataset on Ear and Temporal Bone Tumours as the foundation.

This protocol includes all of the ICCR cancer dataset elements as well as additional information, elements and commentary as agreed by the RCPA expert committee. It provides a comprehensive framework for the assessment and documentation of pathological features of Ear and Temporal Bone Tumours.


ICCR dataset elements for Ear and Temporal Bone Tumours are included verbatim. ICCR Core elements are mandatory and therefore represented as standards in this document.

ICCR Non-core elements, that is, those which are not mandatory but are recommended, may be included as guidelines or upgraded to a standard based on the consensus opinion of the local expert committee.

The ICCR elements are identified in each chapter with the ICCR logo placed before the Standard or Guideline number or bullet and the ICCR element description and commentary is boarded by a grey box as shown below:

 <b>S3.01</b>	<b>The histological tumour type must be recorded.</b>
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Additional commentary by the RCPA expert committee may be added to an ICCR element but is not included in the grey bordered area nor indicated with an ICCR logo e.g.,

 G2.03	If present, the laterality of the lymph nodes submitted may be recorded as left, right or bilateral.
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CS2.03a If present, record site and number. All lymph node tissue should be submitted for histological examination.

Further information on the ICCR is available at [www.iccr-cancer.org](http://www.iccr-cancer.org)

## Checklist

Consistency and speed of reporting is improved by the use of discrete data elements recorded from the checklist. Items suited to tick boxes are distinguished from more complex elements requiring free text or narrative. A structured or discrete approach to responses is favoured, however the pathologist is encouraged to include free text or narrative where necessary to document any other relevant issues, to give reasons for coming to a particular opinion and to explain any points of uncertainty.

## Report format

The structure provided by the following chapters, headings and subheadings describes the elements of information and their groupings, but does not necessarily represent the format of either a pathology report (Chapter 7) or checklist (Chapter 6). These, and the structured pathology request form (Appendix 1) are templates that represent information from this protocol, organised and formatted differently to suit different purposes.

## Key documentation

- *Guidelines for Authors of Structured Cancer Pathology Reporting Protocols, Royal College of Pathologists of Australasia, 2009*<sup>13</sup>
- *World Health Organization (WHO). Classification of Head and Neck Tumours., 4th Edition. El-Naggar AK, Chan JKC, Grandis JR, Takata T, Sloatweg PJ (editors). Lyon, France: IARC Press;2017*<sup>14</sup>

- *AJCC Cancer Staging Manual, 8th edition, American Joint Committee on Cancer, 2016<sup>15</sup>*

## **Changes since last edition**

Not applicable.

# Authority and development

This section provides information about the process undertaken to develop this protocol.

This 1st edition of the protocol is an amalgam of two separate processes:

1. This protocol is based on the ICCR dataset – Ear and Temporal Bone Tumours 1st edition. All ICCR elements from this dataset, both core (mandatory) and non-core (optional), are included in this protocol, verbatim. (It should be noted that RCPA feedback from all Anatomical Pathology fellows and specifically the local expert committee was sought during the development process of the ICCR dataset.) Details of the ICCR development process and the international expert authoring committee responsible for the ICCR dataset are available on the ICCR website: [iccr-cancer.org](http://iccr-cancer.org).
2. Additional elements, values and commentary have been included as deemed necessary by the local expert committee. In addition, the standard inclusions of RCPA protocols e.g., example reports, request information etc, have also been added.

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## Acknowledgements

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## **Stakeholders**

ACT Cancer Registry

ACT Health

Australian and New Zealand Head and Neck Cancer Society

Australian Cancer Network

Australian Commission on Safety and Quality in Health Care

Australian Digital Health Agency

Australian Institute of Health and Welfare

Cancer Australia

Cancer Council ACT

Cancer Council Queensland

Cancer Council Victoria

Cancer Council Western Australia

Cancer Institute NSW

Cancer Services Advisory Committee (CanSAC)

Cancer Voices NSW

Clinical Oncology Society of Australia (COSA)

Department of Health, Australia

Health Informatics Society of Australia (HISA)

Independent Review Group of Pathologists

Medical Oncology Group of Australia

Medical Software Industry Association (MSIA)

Ministry of Health, New Zealand

National Pathology Accreditation Advisory Council (NPAAC)

New Zealand Cancer Registry

Northern Territory Cancer Registry

Pathology Australia

Public Pathology Australia

Queensland Cooperative Oncology Group (QCOG)

RCPA Anatomical Pathology Advisory Committee (APAC)

Representatives from laboratories specialising in anatomical pathology across Australia

Royal Australasian College of Physicians (RACP)

Royal Australasian College of Surgeons (RACS)

Royal Australian and New Zealand College of Radiologists (RANZCR)

Royal Australian College of General Practitioners (RACGP)

Royal College of Pathologists of Australasia (RCPA)

South Australia Cancer Registry



Standards Australia  
Tasmanian Cancer Registry  
Victorian Cancer Registry  
Western Australia Clinical Oncology Group (WACOG)  
Western Australian Cancer Registry

## **Development process**

This protocol has been developed following the ten-step process set out in *Guidelines for Authors of Structured Cancer Pathology Reporting Protocols*.<sup>13</sup>

Where no reference is provided, the authority is the consensus of the local expert group for local inclusions and the ICCR Dataset Authoring Committee for ICCR components denoted with the ICCR logo.

# 1 Pre-analytical

This chapter relates to information that should be recorded on receipt of the specimen in the laboratory.

The pathologist is reliant on the quality of information received from the clinicians or requestor. Some of this information may be received in generic pathology request forms, however, the additional information required by the pathologist specifically for the reporting of ear and temporal bone tumours, is outlined in Appendix 1. Appendix 1 also includes a standardised request information sheet that may be useful in obtaining all relevant information from the requestor.

Surgical handling procedures affect the quality of the specimen and recommendations for appropriate surgical handling are included in Appendix 1.

## **S1.01 All demographic information provided on the request form and with the specimen must be recorded.**

CS1.01a The Royal College of Pathologists of Australasia (RCPA) *The Pathology Request-Test-Report Cycle — Guidelines for Requesters and Pathology Providers* must be adhered to.<sup>16</sup> This document specifies the minimum information to be provided by the requesting clinician for any pathology test.

CS1.01b Document whether or not the patient identifies as Aboriginal and/ or Torres Strait Islander in Australia, or Māori in New Zealand. This is in support of government initiatives to monitor the health of those who identify as indigenous, particularly in relation to cancer.

CS1.01c The patient's health identifiers may include the patient's Medical Record Number as well as a national health number such as a patient's Individual Healthcare Identifier (IHI) (Australia) or the National Healthcare Identifier (New Zealand).

## **S1.02 All clinical information as documented on the request form must be recorded verbatim.**

CS1.02a The request information may be recorded as a single text (narrative) field or it may be recorded in a structured format.

CS1.02b In most cases all clinical information should be transcribed: however, in a small number of cases the pathologist may exercise discretion regarding the inclusion of provided clinical information, for instance, possibly erroneous information or information that may impact on patient privacy. In such case reference should be made as to the location of the complete clinical information e.g., "Further clinical information is available from the scanned request form."

G1.01 The copy doctors requested on the request form should be recorded.

## **S1.03 The pathology accession number of the specimen must be**

**recorded.**

**S1.04 The principal clinician involved in the patient's care and responsible for investigating the patient must be recorded.**

CS1.04a The principal clinician should provide key information regarding the clinical presentation of the patient. Follow up may be required with the principal clinician for a number of reasons:

- The clinical assessment and staging may be incomplete at the time of biopsy.
- The pathology request is often authored by the clinician performing the surgical excision/biopsy rather than the clinician who is investigating and managing the patient.
- The identity of this clinician is often not indicated on the pathology request form

In practice therefore, it is important in such cases that the reporting pathologist should be able to communicate with the managing clinician for clarification.

CS1.04b The Australian Healthcare identifiers i.e., Healthcare Provider Identifier - Individual (HPI-I) and Healthcare Provider Identifier - Organisation (HPI-O) should be included, where possible, to identify the principal clinician involved in the patient's care.

G1.02 Any clinical information received in other communications from the requestor or other clinician should be recorded together with the source of that information.

## 2 Specimen handling and macroscopic findings

This chapter relates to the procedures required after the information has been handed over from the requesting clinician, and the specimen has been received in the laboratory.

### Tissue banking

- Pathologists may be asked to provide tissue samples from fresh specimens for tissue banking or research purposes. The decision to provide tissue should only be made if the pathologist is sure that the diagnostic process will not be compromised. As a safeguard, research use of the tissue samples may be put on hold until the diagnostic process is complete.

### Specimen handling






- Detailed fixation and specimen handling instructions are available from the RCPA online Cut-up Manual:

<https://www.rcpa.edu.au/Manuals/Macroscopic-Cut-Up-Manual>

- **The specimen must be handled in a systematic and thorough fashion to ensure completeness and accuracy of pathological data.**




### Macroscopic findings

#### S2.01 The labelling of the specimen(s) must be clearly recorded.

 <b>S2.02</b>	<b>The operative procedure must be recorded.</b>	
	CS2.02a	The anatomy and surgical interventions of the ear and temporal bone are complex, with unfamiliar terminology frequently used (see Figure 1). <sup>17</sup> Thus, it is absolutely critical to maintain open communication with the treating surgeon, oncologist, dermatologist and radiologist with respect to exact anatomic site of involvement, tumour laterality, and specific operative procedures or landmarks identified to yield the most accurate information. <sup>17-21</sup>
	CS2.02b	If a neck dissection is submitted, then a separate protocol is available to record the information.
 <b>S2.03</b>	<b>The specimen(s) submitted must be recorded.</b>	
	CS2.03a	In light of the complex anatomy and often unfamiliar





		<p>surgical interventions of the ear and temporal bone, it is imperative to obtain information about the exact anatomic site of involvement, tumour laterality, and specific operative procedures or landmarks identified to yield the most accurate information.<sup>22</sup> Correlation with imaging should assist.</p> <p>'Not specified' should be used rarely, and only after good faith effort has been employed to obtain the requisite information.</p>
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**S2.04 Specimen dimensions must be recorded.**

	<b>S2.05</b>	<b>The maximum dimension of largest tumour must be recorded.</b>
	CS2.05a	The single greatest tumour dimension, using macroscopic and/or microscopic measurements, should be used to determine the most accurate extent of tumour. In biopsy samples, it may be underestimated. Thus, to be as thorough as possible, the documentation of the tumour dimension may require additional clinical or imaging information to yield this value.
	G2.01	Additional dimensions of the largest tumour may be recorded.

G2.02 The depth of invasion should be measured.

CG2.02a The depth of invasion whenever possible, particularly for the various carcinomas, should be measured as this has been shown to be an adverse prognostic feature.

	<b>S2.06</b>	<b>The macroscopic tumour site must be recorded.</b>
	CS2.06a	It is important to document the exact site of the tumour, as tumour location is correlated with the type of surgery and patient outcome. As an example, patients with middle ear squamous cell carcinomas have a worse outcome than patients with squamous cell carcinoma of the external auditory canal. <sup>2,18,20,23</sup>
	G2.03	Tumour focality should be recorded.
	CG2.03a	The identification of bilateral tumours, especially in the setting of endolymphatic sac tumours, <sup>24,25</sup> paraganglioma, <sup>26,27</sup> acoustic/vestibular schwannoma <sup>28</sup> and meningioma <sup>28</sup> increases the potential discovery of inherited or syndrome associated disease.

G2.04 A description of the tumour should be recorded.

G2.05 Macroscopic extent of invasion should be recorded.

CG2.05a The various structures macroscopically involved by the tumour such as skin, aural cartilage, bone, temporomandibular joint, the parotid gland and accompanying structures, such as facial nerve,

stylomastoid complex, internal jugular vein, dura and brain should be documented and sampled for histologic examination.

Detecting and documenting the involvement of the various structures, especially temporomandibular joint, stylomastoid complex, parotid gland, etc on macroscopic examination is of prognostic significance. In many cases, the bony and soft tissue structures are histologically indistinguishable.

**S2.07 A differential ink application and block identification key listing the nature and origin of all tissue blocks must be recorded.**

CS2.07a The colours of the ink used to designate the various surfaces (particularly superficial and deep) should be clearly stated in the macroscopic description to guide margin assessment.

CS2.07b The origin/designation of all tissue blocks should be recorded. This information should be documented in the final pathology report and is particularly important should the need for internal or external review arise. Where appropriate specimen photographs and block diagrams should be utilised. The reviewer needs to be clear about the origin of each block in order to provide an informed specialist opinion. If this information is not included in the final pathology report, it should be available on the laboratory computer system and relayed to the reviewing pathologist.

Recording the origin/designation of tissue blocks also facilitates retrieval of blocks for further immunohistochemical or molecular analysis, research studies or clinical trials.

G2.06 A descriptive or narrative field should be provided to record any macroscopic information that is not recorded in the above standards and guidelines, and that would normally form part of the macroscopic description.

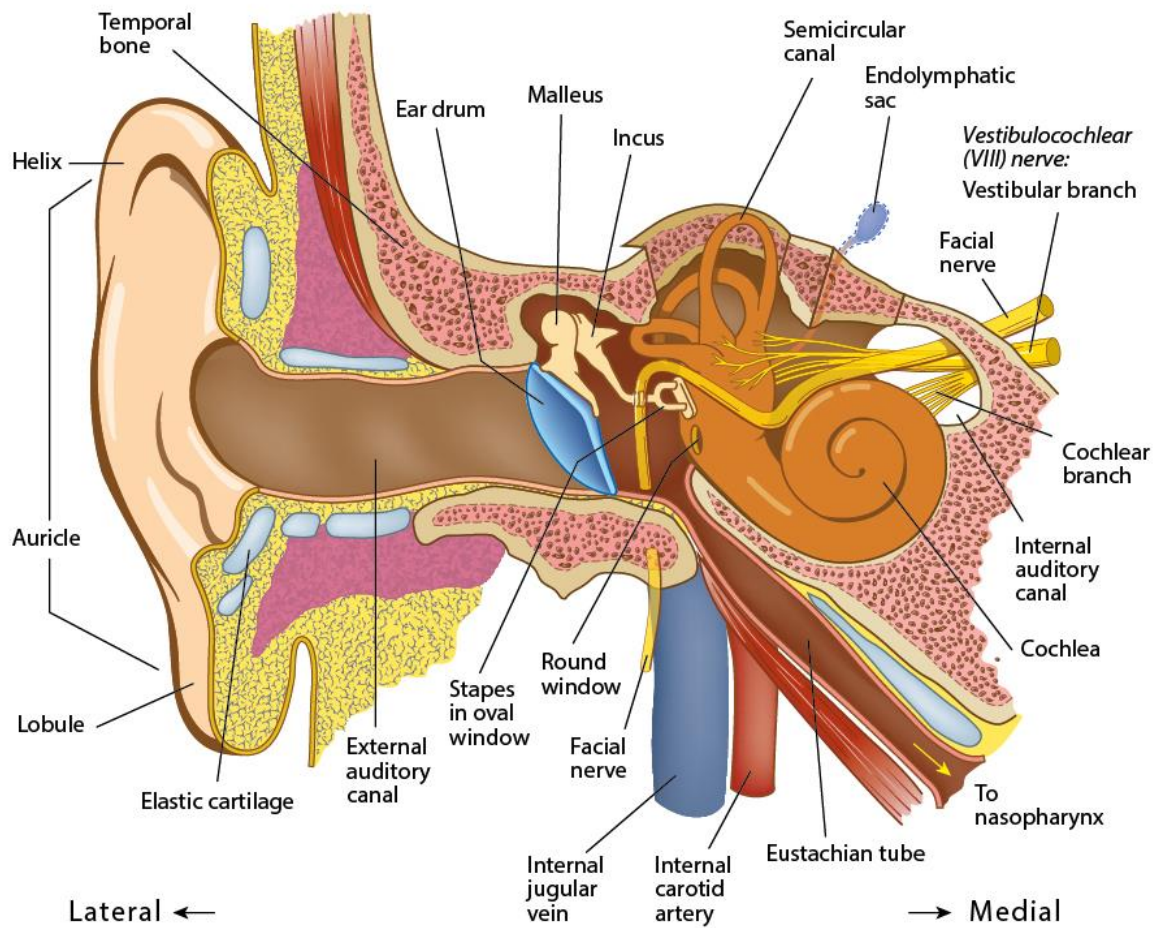
CG2.06a The traditional macroscopic narrative recorded at the time of specimen dissection is often reported separately from the cancer protocol. Although this remains an option, it is recommended that macroscopic information be recorded within the overall structure of this protocol.

CG2.06b Much of the information recorded in a traditional macroscopic narrative is covered in the standards and guidelines above and in many cases, no further description is required.

CG2.06c A traditional macroscopic description may be required when the Laboratory Information System (LIS) does not allow a structured approach.







CG2.06d Where the LIS offers an electronic interface for structured data entry the need for narrative can be significantly reduced to describe only information not otherwise captured.

**Figure 1. Diagram of ear and temporal bone anatomic landmarks.**  
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### 3 Microscopic findings

This section relates to purely histological or morphological assessment. Information derived from multiple investigational modalities, or from two or more chapters, is described in Chapter 5.

 <b>S3.01</b>	<b>The histological tumour type must be recorded.</b>	
	CS3.01a	Refer to Appendix 4.
	CS3.01b	<p>The types of ear and temporal bone primary tumours are limited. Few cases have been reported for several specific tumour categories, and thus prognostication about each specific tumour type is limited, at best. Overall, the most common tumour type is squamous cell carcinoma, and it is known to have the worst patient outcome.<sup>29-32</sup> For adenocarcinoma type, minor salivary gland tumours (adenoid cystic carcinoma, mucoepidermoid carcinoma) and ceruminous adenocarcinoma are noted. In addition, parotid gland evaluation is recommended to exclude origin from the parotid gland with secondary invasion into the external canal.<sup>33,34</sup></p>
 <b>S3.02</b>	<b>The histological tumour grade must be recorded.</b>	
	CS3.02a	<p>Generally, grades are applied to squamous cell carcinoma or some salivary gland primaries only, while other tumour types for the most part do not have tiered grading systems (such as ceruminous adenocarcinoma). Poorly differentiated tumours portend a poor patient survival.<sup>35</sup> The same grading of central nervous system meningiomas is applied to ear and temporal bone, realising that &gt;95% are WHO grade 1 tumours.</p>
 <b>S3.03</b>	<b>The extent of invasion must be recorded.</b>	









CS3.03a A corollary of the macroscopic examination serves to confirm or identify the presence of the tumour in the structures/areas noted during the macroscopic examination. While structures such as the brain parenchyma and the parotid can be readily recognized histologically, most of the soft tissue, bony and neural structures in this area do not have distinctive histologic features and are indistinguishable from each other. The tissue response to invasion and destruction such as ulceration, granulation tissue, desmoplasia and sclerosis may further confound the recognition of these structures histologically. However, documentation of the structures involved provides critical prognostic information and guides adjuvant radiotherapy and/or




chemotherapy.<sup>29,30,34,36,37</sup>



For example, patients with primary ear and temporal bone carcinoma with parotid gland involvement have a worse prognosis than patients without parotid gland involvement.<sup>33</sup> Also patients who exhibit dura involvement, will have a worse patient outcome.<sup>38,39</sup>

Not included in the protocol, but suggested, is the pattern of invasion, as patients with squamous cell carcinoma with a discohesive, tentacular pattern of infiltration have a higher risk of recurrence as compared to those with pushing borders.<sup>40,41</sup>

	CS3.03b	Refer to the ICCR dataset for further information. <sup>4</sup>
 <b>S3.04</b>	<b>The presence or absence of bone/cartilage invasion must be recorded.</b>	
	CS3.04a	Bone and/or cartilage invasion may be a macroscopic feature, sometimes not seen on histology sections due to the nature of the clinical sampling performed. However, it is recommended that a histologic section through the involved bone should be performed to obtain histologic evidence of the extent of bone and/or cartilage involvement. In general, stage correlates with bone and/or cartilage invasion, with patients having advanced stage cancers more frequently showing bone invasion. Further, patients with bone and/or cartilage invasion will usually have a worse prognosis and require more extensive treatment than patients without bone invasion. <sup>37,42</sup>
 <b>S3.05</b>	<b>The presence or absence of perineural invasion must be recorded for malignant tumours.</b>	
	CS3.05a	If the biopsy is very small with only tumour included, it may be prudent to use "cannot be assessed" in order to alert the clinician that perineural invasion cannot be reliably excluded in the sampled material. Patients who manifest perineural invasion, especially if it is identified in large or named nerves (such as lesser petrosal nerve, tympanic nerve), have a worse clinical outcome, irrespective of the tumour type or tumour grade. <sup>43,44</sup>
 <b>S3.06</b>	<b>The presence or absence of lymphovascular invasion must be recorded for malignant tumours.</b>	
	CS3.06a	By inference, lymphovascular invasion is thought to be associated with a worse clinical outcome. However, in ear and temporal bone tumours, this finding has not been independently evaluated in prospective or prognostic studies.
 <b>S3.07</b>	<b>The surgical margin status must be reported.</b>	

	CS3.07a	<p>The best overall outcomes for tumours of ear and temporal bone are achieved when margins are negative. In general, mucosal/epithelial margins are reported, but bone and soft tissue margins carry similar prognostic value, and thus should also be reported, especially as the deep margins (bone and soft tissue) are often more clinically significant than superficial margins (skin). Tumours which are meticulously debulked have the best long term outcome.<sup>21,23,31,32,38,39,45-47</sup></p>
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CS3.07b Distance to the margins should be measured in millimeters both macroscopically as well as histologically. Thus, ideally, the margins should be sampled in a radial manner to facilitate measurement. While the protocol requires only the distance to the closest margin and the tissue type at the margin (skin, soft tissue, bone or parotid), indicating the location (superior/inferior, medial/lateral, anterior/posterior) of the close margins should be considered a best practice in a well-oriented specimen. Proactive discussion with the surgical team is often essential when involved or close deep soft tissue or bone margins may not have been histologically examined due to intraoperative drilling/burring techniques.<sup>48,49</sup> Additional, critical margins around the styloid process and mastoid may also be resected and sent separately for pathologic evaluation.

	G3.01	<p>The presence or absence of coexistent pathology should be recorded.</p>
	CG3.01a	<p>Management may be complicated by coexistent pathology. Patient with otitis media generally show a poor survival,<sup>21</sup> but if there is acute or chronic osteomyelitis, options for radiation and chemotherapy may be limited.<sup>50,51</sup></p>



G3.02 Radiation induced tissue damage can be recorded.

G3.02a An observation regarding radiation induced tissue damage can be provided if the request form includes history regarding neoadjuvant radiotherapy or recurrence in a previous radiotherapy field. Currently, there are no internationally standardised guidelines for evaluation of radiotherapy induced damage or whether this should influence any decisions regarding further radiotherapy. However, description of the radiotherapy induced tissue damage will allow collection of this data to develop evidence base for the future. Features such as stromal atypia, hyalinization, interstitial fibrosis, small vessel endothelial proliferation, and other features may be mentioned.

G3.03 Any additional relevant microscopic comments should be recorded.

## 4 Ancillary studies findings

Ancillary studies may be used to determine lineage, clonality or disease classification or subclassification; as prognostic biomarkers; or to indicate the likelihood of patient response to specific biologic therapies.

 G4.01	Whether or not ancillary tests are performed should be recorded, and the results incorporated into the pathology report.	
	CG4.01a	<p>For most patients, further studies are not required for the diagnosis. However, additional molecular testing may be of benefit, especially in syndrome associated (such as <i>SDHX</i> mutations in paraganglioma), bilateral, or uncommon tumour presentations. It is true that in most patients, "further studies" are not required. However, not infrequently adjunct immunohistochemistry (IHC) is required to differentiate among tumour types especially in limited sampling, frequently affected by distortional changes that alter the "typical" histology, rendering the case problematic to diagnose without IHC. Ancillary tests rarely may be required to identify the primary site of metastatic disease.</p>



## 5 Synthesis and overview

Information that is synthesised from multiple modalities and therefore cannot reside solely in any one of the preceding chapters is described here.

For example, *tumour stage* is synthesised from multiple classes of information – clinical, macroscopic and microscopic.

By definition, synthetic elements are inferential rather than observational, often representing high-level information that is likely to form part of the 'Summary' or 'Diagnosis' section in the final formatted report.

Overarching case comment is synthesis in narrative format. Although it may not necessarily be required in any given report, the provision of the facility for overarching commentary in a cancer report is essential.

 <b>S5.01</b>	<b>The primary tumour stage (pT) must be recorded.</b>	
	CS5.01a	<p>There is no standardised staging system for this anatomic site, although it has been suggested by several groups. However, staging is still of value in standardizing therapy for these various unusual tumours. The T staging is most significant for squamous cell carcinoma and for salivary gland-type tumours, particularly of the external auditory canal and middle ear.<sup>2,23,31,32,39,52-54</sup> Pathological staging has not been well developed for inner ear tumours, such as endolymphatic sac tumour, where clinical staging may be more appropriate.<sup>55</sup> In inner ear cases, it is probably more important to make certain that a clinical (c-stage) is accurately determined, than necessarily being definitive about a pathological (p-stage). The studies used as a guide are retrospective where the patient outcomes were not available, primarily used as a guide for therapy rather than prognosis.</p> <p>Overall, there is a poor prognosis when lymph node metastases are identified, correlating to advanced stage, whether in the cervical lymph nodes, or those of the parotid gland parenchyma.<sup>2,21,42,54,56,57</sup></p> <p>It is important with parotid gland lesions to interpret direction extension as part of the pT stage, being careful to interpret direct extension "into" a lymph node separately from metastasis "to" a lymph node that shows extracapsular extension. Tumour associated lymphoid proliferation is an important distinction to make, as this is a reaction to the neoplasm rather than representing a true lymph node (subcapsular sinus, lymph node capsule, sinus histiocytosis, and medullary zone). Metastases to an intraparotid lymph node that shows extranodal extension is associated with a worse outcome when</p>

		compared to patient with extranodal extension in cervical lymph nodes only of cutaneous squamous cell carcinoma. <sup>58,59</sup>
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G5.01 The 'Diagnostic summary' section of the final formatted report should include:

- a. Specimen(s) submitted
- b. Tumour type
- c. Tumour grade
- d. Lymphovascular involvement
- e. Perineural involvement
- f. Margins of resection
- g. Tumour stage

**S5.02 The reporting system must provide a field for free text or narrative in which the reporting pathologist can give overarching case comment if required.**

CS5.02a This field may be used, for example, to:

- explain the decision-making pathway, or any elements of clinicopathological ambiguity, or factors affecting diagnostic certainty, thereby allowing communication of diagnostic subtlety or nuance that is beyond synoptic capture
- give recommendations for further action or investigation
- document further consultation or results still pending

CS5.02b Use of this field is at the discretion of the reporting pathologist.

G5.02 The edition/version number of the RCPA protocol on which the report is based should be included on the final report.

CG5.02a For example, the pathology report may include the following wording at the end of the report: "the data fields within this formatted report are aligned with the criteria as set out in the RCPA document "XXXXXXXXXX" XXXX Edition dated XXXXXXXX".

## 6 Structured checklist

The following checklist includes the standards and guidelines for this protocol which must be considered when reporting, in the simplest possible form. The summation of all 'standards' is equivalent to the 'minimum data set' for this cancer. For emphasis, standards (mandatory elements) are formatted in bold font.

**S6.01 The structured checklist provided may be modified as required but with the following restrictions:**

- a. All standards and their respective naming conventions, definitions and value lists must be adhered to.**
- b. Guidelines are not mandatory but are recommendations and where used, must follow the naming conventions, definitions and value lists given in the protocol.**

G6.01 The order of information and design of the checklist may be varied according to the laboratory information system (LIS) capabilities and as described in *Functional Requirements for Structured Pathology Reporting of Cancer Protocols*.<sup>60</sup>

CG6.01a Where the LIS allows dissociation between data entry and report format, the structured checklist is usually best formatted to follow pathologist workflow. In this situation, the elements of synthesis or conclusions are necessarily at the end. The report format is then optimised independently by the LIS.

CG6.01b Where the LIS does not allow dissociation between data entry and report format, (for example where only a single text field is provided for the report), pathologists may elect to create a checklist in the format of the final report. In this situation, communication with the clinician takes precedence and the checklist design is according to principles given in Chapter 7.


G6.02 Where the checklist is used as a report template (see G6.01), the principles in Chapter 7 and Appendix 2 apply.

CG6.02a All extraneous information, tick boxes and unused values should be deleted.

G6.03 Additional comment may be added to an individual response where necessary to describe any uncertainty or nuance in the selection of a prescribed response in the checklist. Additional comment is not required where the prescribed response is adequate.

Item descriptions in italics are conditional on previous responses.


Values in all caps are headings with sub values.


S/G	Item description	Response type	Conditional
<b>Pre-analytical</b>			
<b>S1.01</b>	<b>Demographic information provided</b>		
<b>S1.02</b>	<b>Clinical information provided on request form</b>	<b>Not provided</b> OR <b>Text</b> OR <b>Structured entry as below:</b>	
	Operative procedure	<b>TEXT</b> OR <b>Multi selection value list (select all that apply):</b> <ul style="list-style-type: none"> <li>• Biopsy (incisional, excisional, diagnostic sampling)</li> <li>• Resection, <i>specify</i> <ul style="list-style-type: none"> <li>○ Temporal bone resection</li> <li>○ Sleeve resection (cartilaginous portion of canal, including tympanic</li> </ul> </li> </ul>	




		<p>membrane)</p> <ul style="list-style-type: none"> <li>○ Lateral temporal bone resection (sleeve and middle ear)</li> <li>○ Radical external auditory canal resection</li> <li>○ Subtotal temporal bone resection</li> <li>○ Radical temporal bone resection (mastoidectomy, petrousectomy)</li> <li>● Parotidectomy</li> <li>● Neck (lymph node) dissection*, <i>specify</i></li> <li>● Other, <i>specify</i></li> </ul> <p>Note: * <i>If a neck dissection is submitted, then a separate dataset is used to record the information.</i></p>	
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	Neoadjuvant therapy	<b>Single selection value list:</b> <ul style="list-style-type: none"> <li>• Information not provided</li> <li>• Not administered</li> <li>• Administered, <i>specify type (select all that are applicable)</i> <ul style="list-style-type: none"> <li>○ Chemotherapy</li> <li>○ Radiotherapy</li> <li>○ Targeted therapy, <i>specify if available</i></li> <li>○ Immunotherapy, <i>specify if available</i></li> <li>○ Time interval since therapy, <i>specify</i></li> </ul> </li> </ul>	
	<b>New primary lesion or recurrence</b>	<b>Single selection value list:</b> <ul style="list-style-type: none"> <li>• New primary</li> <li>• Recurrence – regional, <i>describe</i></li> <li>• Recurrence – distant, <i>describe</i></li> </ul> <p>Note: Record if previous local therapy.</p>	
G1.01	Copy To doctors recorded	<b>Text</b>	
<b>S1.03</b>	<b>Pathology accession number</b>	<b>Alpha-numeric</b>	
<b>S1.04</b>	<b>Principal clinician</b>	<b>Text</b>	
G1.02	Comments	<b>Text</b>	
<b>Macroscopic findings</b>			


S2.01	Specimen labelled as	Text	
	S2.02 Operative procedure	<p><b>Not specified</b></p> <p><b>OR</b></p> <p><b>Multi selection value list (select all that apply):</b></p> <ul style="list-style-type: none"> <li>• Biopsy (incisional, excisional, diagnostic sampling)</li> <li>• Resection, <i>specify</i> <ul style="list-style-type: none"> <li>○ Temporal bone resection</li> <li>○ Sleeve resection (cartilaginous portion of canal, including tympanic membrane)</li> <li>○ Lateral temporal bone resection (sleeve and middle ear)</li> <li>○ Radical external auditory canal resection</li> <li>○ Subtotal temporal bone resection</li> <li>○ Radical temporal bone resection (mastoidectomy, petrousectomy)</li> </ul> </li> <li>• Parotidectomy</li> <li>• Neck (lymph node) dissection*, <i>specify</i></li> <li>• Other, <i>specify</i></li> </ul>	


		<p>Note:  * <i>If a neck dissection is submitted, then a separate protocol is used to record the information.</i></p>	
	<b>S2.03 Specimen submitted</b>	<ul style="list-style-type: none"> <li>• Not specified</li> <li>• Biopsy only</li> </ul> <p><b>OR</b></p> <p><b>Multi selection value list (select all that apply):</b></p> <ul style="list-style-type: none"> <li>• Sleeve resection of temporal bone</li> <li>• Lateral temporal bone</li> <li>• Subtotal temporal bone resection</li> <li>• Partial mastoidectomy with middle ear contents</li> <li>• Radical mastoidectomy</li> <li>• Parotidectomy (whether superficial and/or deep lobes)</li> <li>• Neck dissection, <i>specify extent</i></li> <li>• Other, <i>specify</i></li> </ul>	
	<b>S2.04 Specimen dimensions</b>	<p><b>Numeric: __x__x__mm</b></p> <p><u>Notes:</u>  Record measurements for each specimen submitted</p>	

	<b>S2.05</b> <b>Maximum dimension of largest tumour</b>	<b>Cannot be assessed, specify</b> <b>OR</b> <b>Numeric: __mm</b>	
	G2.01 Additional dimensions of largest tumour	<b>Numeric: __x__mm</b>	
	G2.02 Depth of invasion	Numeric: __mm	
	<b>S2.06</b> <b>Tumour site</b>	<b>Cannot be assessed</b> <b>OR</b> <b>Multi selection value list (select all that apply):</b> <ul style="list-style-type: none"> <li>• External auditory canal (EAC) <ul style="list-style-type: none"> <li>○ Left</li> <li>○ Right</li> <li>○ Laterality not specified</li> </ul> </li> <li>• Middle ear <ul style="list-style-type: none"> <li>○ Left</li> <li>○ Right</li> <li>○ Laterality not specified</li> </ul> </li> <li>• Temporal bone (including mastoid, petrous) <ul style="list-style-type: none"> <li>○ Left</li> <li>○ Right</li> </ul> </li> </ul>	




		<ul style="list-style-type: none"> <li>○ Laterality not specified</li> <li>• Inner ear <ul style="list-style-type: none"> <li>○ Left</li> <li>○ Right</li> <li>○ Laterality not specified</li> </ul> </li> <li>• Other, <i>specify including laterality</i></li> </ul>	
	G2.03 Tumour focality	<p><b>Single selection value list:</b></p> <ul style="list-style-type: none"> <li>• Cannot be assessed, <i>specify</i></li> <li>• Unifocal</li> <li>• Bilateral</li> <li>• Multifocal, <i>specify number of tumours in specimen</i></li> </ul>	
	G2.04 Tumour description	<p><b>TEXT</b></p> <p><b>OR</b></p> <p><b>Multi selection value list (select all that apply):</b></p> <ul style="list-style-type: none"> <li>• Exophytic</li> <li>• Endophytic</li> <li>• Ulcerated</li> <li>• Polypoid</li> <li>• Nodular</li> </ul>	






G2.05	Macroscopic extent of invasion	<b>TEXT</b> <b>OR</b> <b>Multi selection value list (select all that apply):</b> <ul style="list-style-type: none"> <li>• Skin</li> <li>• Aural cartilage</li> <li>• Bone</li> <li>• Temporomandibular joint</li> <li>• Parotid gland</li> <li>• Facial nerve</li> <li>• Stylomastoid complex</li> <li>• Internal jugular vein</li> <li>• Dura</li> <li>• Brain</li> <li>• Other, <i>describe</i></li> </ul>	
S2.07	<b>Ink application and block identification key</b>	<b>Text</b>	
G2.06	Additional macroscopic comments	<b>Text</b>	
<b>Microscopic findings</b>			
	S3.01 <b>Histological tumour type</b>	<b>Multi selection value list (select all that apply):</b> <ul style="list-style-type: none"> <li>• Squamous cell carcinoma</li> <li>• Ceruminous adenocarcinoma</li> </ul>	





		<ul style="list-style-type: none"> <li>○ Ceruminous adenocarcinoma, not otherwise specified (NOS)</li> <li>○ Ceruminous mucoepidermoid carcinoma</li> <li>○ Ceruminous adenoid cystic carcinoma</li> <li>• Ceruminous adenoma <ul style="list-style-type: none"> <li>○ Ceruminous adenoma (NOS)</li> <li>○ Ceruminous pleomorphic adenoma</li> <li>○ Ceruminous syringocystadenoma papilliferum</li> </ul> </li> <li>• Aggressive papillary tumour</li> <li>• Endolymphatic sac tumour</li> <li>• Middle ear adenoma (carcinoid)</li> <li>• Middle ear adenocarcinoma</li> <li>• Meningioma (ectopic or direct extension)</li> <li>• Vestibular schwannoma</li> <li>• Paraganglioma (jugulotympanic glomus tumour)</li> <li>• Other, <i>specify</i></li> <li>• Cannot be assessed, <i>specify</i></li> </ul>	
	<b>S3.02 Histological grade</b>	<b>Single selection value list:</b>	

		<ul style="list-style-type: none"> <li>• Not applicable</li> <li>• Low grade (well differentiated)</li> <li>• Intermediate grade (moderately differentiated)</li> <li>• High grade (poorly differentiated)</li> <li>• Cannot be assessed, <i>specify</i></li> </ul>	
	<b>S3.03</b>	<b>Extent of invasion**</b>	<p><b>Not identified</b></p> <p><b>OR</b></p> <p><b>Multi selection value list (select all that apply):</b></p> <ul style="list-style-type: none"> <li>• Bone and/or cartilage invasion (EAC)</li> <li>• Jugular bulb</li> <li>• Carotid artery invasion</li> <li>• Dura</li> <li>• Brain parenchyma invasion</li> <li>• Parotid gland</li> <li>• Temporomandibular joint (TMJ)</li> <li>• Soft tissue involvement</li> <li>• Skin involvement</li> <li>• Nerve invasion, <i>specify nerve if possible</i> (e.g., facial nerve, tympanic nerve, glossopharyngeal nerve, lesser petrosal nerve,</li> </ul>



		<p>greater petrosal nerve)</p> <ul style="list-style-type: none"> <li>• Other, <i>specify</i></li> <li>• Cannot be assessed, <i>specify</i></li> </ul> <p><u>Notes:</u></p> <p>** <i>Invasion into any of these anatomical structures may be a clinical/surgical and/or imaging observation and/or histology finding(s).</i></p>	
	<b>S3.04</b>	<b>Bone/Cartilage invasion</b>	<p><b>Single selection value list:</b></p> <ul style="list-style-type: none"> <li>• Cannot be assessed, <i>specify</i></li> <li>• Not identified</li> <li>• Present <ul style="list-style-type: none"> <li>○ Clinical observation and/or imaging</li> <li>○ Histologic</li> </ul> </li> </ul>
	<b>S3.05</b>	<b>Perineural invasion</b>	<p><b>Single selection value list:</b></p> <ul style="list-style-type: none"> <li>• Cannot be assessed, <i>specify</i></li> <li>• Not identified</li> <li>• Present</li> </ul>
	<b>S3.06</b>	<b>Lymphovascular invasion</b>	<p><b>Single selection value list:</b></p> <ul style="list-style-type: none"> <li>• Cannot be assessed, <i>specify</i></li> <li>• Not identified</li> <li>• Present</li> </ul>

 S3.07	<b>Margin status</b>	<b>Single selection value list:</b> <ul style="list-style-type: none"> <li>• Cannot be assessed, <i>specify</i></li> <li>• Not involved by invasive carcinoma</li> <li>• Involved by invasive carcinoma</li> </ul>	<b><i>If not involved by invasive carcinoma record the distance of tumour from closest margin and specify closest margin, if possible</i></b>  <b><i>If involved specify margin(s) if possible</i></b>
	<b><i>Distance of tumour from closest margin</i></b>	<b>Numeric: __mm</b> OR <b><i>Distance not assessable</i></b>	
	<b><i>Closest margin</i></b>	<b>Multi selection value list (select all that apply):</b> <ul style="list-style-type: none"> <li>• Skin</li> <li>• Soft tissue</li> <li>• Bone</li> <li>• Parotid gland</li> </ul>	
	<b><i>Margin(s) involved</i></b>	<b>Text</b>	
 G3.01	Coexistent pathology	None identified <b>OR</b> <b>Multi selection value list (select all that apply):</b> <ul style="list-style-type: none"> <li>• Chronic otitis media</li> <li>• Cholesteatoma</li> <li>• Osteomyelitis (acute, chronic)</li> <li>• Other, <i>specify</i></li> </ul>	

	G3.02	Radiation induced tissue damage	<b>Single selection value list:</b> <ul style="list-style-type: none"> <li>• Not identified</li> <li>• Identified, <i>specify</i></li> <li>• Cannot be assessed, <i>specify</i></li> </ul>	<b><i>If identified specify a description of induced damage, if possible.</i></b>  <b><i>If cannot be assessed, specify a reason, if possible.</i></b>
	G3.03	Additional microscopic comment	<b>Text</b>	
<b>Ancillary findings</b>				
	G4.01	Ancillary studies	<b>Single selection value list:</b> <ul style="list-style-type: none"> <li>• Not performed</li> <li>• Performed, <i>specify</i></li> </ul>	
<b>Synthesis and overview</b>				
	S5.01	<b>PATHOLOGICAL STAGING (AJCC 8TH EDITION)</b>		
		<b>TNM descriptors</b>	<b>Multi select value list :</b> <ul style="list-style-type: none"> <li>• m - multiple primary tumours</li> <li>• y - post therapy</li> <li>• r - recurrent</li> </ul>	
		<b>Primary tumour (T)</b>	<b>Single select value list :</b> <ul style="list-style-type: none"> <li>• Not applicable</li> <li>• T1 Tumour limited to the EAC without bony erosion or evidence of soft tissue involvement</li> <li>• T2 Tumour with limited EAC bone erosion (not full thickness) or</li> </ul>	

		<p>limited (&lt;0.5 cm) soft tissue involvement</p> <ul style="list-style-type: none"> <li>• T3 Tumour eroding the osseous EAC (full thickness) with limited (&lt;0.5 cm) soft tissue involvement, or tumour involving the middle ear and/or mastoid</li> <li>• T4 Tumour eroding the cochlea, petrous apex, medial wall of the middle ear, carotid canal, jugular foramen, or dura, or with extensive soft tissue involvement (&gt;0.5 cm), such as involvement of TMJ or styloid process, or evidence of facial paresis</li> </ul>	
G5.01	<p>Diagnostic summary</p> <p>Include:</p> <ol style="list-style-type: none"> <li>Specimen(s) submitted</li> <li>Tumour type</li> <li>Tumour grade</li> <li>Lymphovascular involvement</li> <li>Perineural involvement</li> <li>Margins of resection</li> <li>Tumour stage</li> </ol>	<b>Text</b>	

<b>S5.02</b>	<b>Overarching comment</b>	<b>Text</b>	
G5.02	Edition/version number of the RCPA protocol on which the report is based	<b>Text</b>	

## 7 Formatting of pathology reports

Good formatting of the pathology report is essential for optimising communication with the clinician, and will be an important contributor to the success of cancer reporting protocols. The report should be formatted to provide information clearly and unambiguously to the treating doctors, and should be organised with their use of the report in mind. In this sense, the report differs from the structured checklist, which is organised with the pathologists' workflow as a priority.

Uniformity in the format as well as in the data items of cancer reports between laboratories, makes it easier for treating doctors to understand the reports; it is therefore seen as an important element of the systematic reporting of cancer. For guidance on formatting pathology reports, please refer to Appendix 2. An example of a pathology report is shown in Appendix 3.

# Appendix 1 Pathology request form

This appendix describes the information that should be collected before the pathology test. Some of this information can be provided on generic pathology request forms; any additional information required specifically for the reporting of ear and temporal bone tumours may be provided by the clinician on a separate request information sheet. An example request information sheet is included below. Elements which are in bold text are those which pathologists consider to be required information. Those in non-bold text are recommended.

Also included in this appendix are the procedures that are recommended before handover of specimens to the laboratory.

## Patient information

- **Adequate demographic and request information must be provided with the specimen.**
  - Items relevant to cancer reporting protocols include:
    - patient name
    - date of birth
    - sex
    - identification and contact details of requesting doctor
    - date of request
  - Document whether or not the patient identifies as Aboriginal and/or Torres Strait Islander in Australia, or Māori in New Zealand. This is in support of government initiatives to monitor the health of those who identify as indigenous, particularly in relation to cancer.
- The patient's health identifiers should be provided.
  - The patient's health identifiers may include the patient's Medical Record Number as well as a national health number such as a patient's Individual Healthcare Identifier (IHI) (Australia) or the National Healthcare Identifier (New Zealand).
- The Australian Healthcare identifiers i.e., Healthcare Provider Identifier - Individual (HPI-I) and Healthcare Provider Identifier - Organisation (HPI-O) should be used, where possible, to identify the requesting doctor.

## Clinical Information

 ➤	<b>The operative procedure should be recorded.</b>
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- 
- Diagnosis on biopsy, if any should be recorded.
  - Comments should be included, if appropriate.
    - Space for free text should be included to encourage reporting of ambiguity, or for the addition of other comments.





# Appendix 2 Guidelines for formatting of a pathology report

## Layout

Headings and spaces should be used to indicate subsections of the report, and heading hierarchies should be used where the LIS allows it. Heading hierarchies may be defined by a combination of case, font size, style and, if necessary, indentation.

Grouping similar data elements under headings and using 'white space' assists in rapid transfer of information.<sup>61</sup>

Descriptive titles and headings should be consistent across the protocol, checklist and report.

When reporting on different tumour types, similar layout of headings and blocks of data should be used, and this layout should be maintained over time.

Consistent positioning speeds data transfer and, over time, may reduce the need for field descriptions or headings, thus reducing unnecessary information or 'clutter'.

Within any given subsection, information density should be optimised to assist in data assimilation and recall. The following strategies should be used:

Configure reports in such a way that data elements are 'chunked' into a single unit to help improve recall for the clinician.<sup>61</sup>

Reduce 'clutter' to a minimum.<sup>61</sup> Thus, information that is not part of the protocol (e.g., billing information or SNOMED codes) should not appear on the reports or should be minimised.

Reduce the use of formatting elements (e.g., bold, underlining or use of footnotes) because these increase clutter and may distract the reader from the key information.

Where a structured report checklist is used as a template for the actual report, any values provided in the checklist but not applying to the case in question must be deleted from the formatted report.

Reports should be formatted with an understanding of the potential for the information to 'mutate' or be degraded as the report is transferred from the LIS to other health information systems.

As a report is transferred between systems:

- text characteristics such as font type, size, bold, italics and colour are often lost
- tables are likely to be corrupted as vertical alignment of text is lost when fixed font widths of the LIS are rendered as proportional fonts on screen or in print
- spaces, tabs and blank lines may be stripped from the report, disrupting the formatting
- supplementary reports may merge into the initial report.

# Appendix 3 Example of a pathology report

Page 1 of 2

<b>Citizen, Gerald W.</b> C/O Paradise Close Wreck Bay Resort Nar Nar Goon East, 3181	Lab Ref: <b>18/P28460</b> Referred: 30/8/2019
Male	Copy to: <b>Dr N.G.Chappie</b> Rainforest Cancer Centre. 46 Smith Road, Woop Woop, 3478
DOB 1/7/1987 MRN M1196785	Referred by: <b>Dr V. Brown</b> Suite 3, AJC Medical Centre, Bunyip Crescent Nar Nar Goon West, 3182

## EAR AND TEMPORAL BONE TUMOURS STRUCTURED REPORT

### Diagnostic Summary

Resection left lateral temporal bone resection:

- SQUAMOUS CELL CARCINOMA INVOLVING THE EXTERNAL AUDITORY CANAL.
- TUMOUR INFILTRATES THE BONY CORTEX OF THE EXTERNAL AUDITORY CANAL.
- PERINEURAL INVASION IS PRESENT.
- LOCAL RESECTION APPEARS COMPLETE

Comment: Currently, there is no accepted AJCC staging system for tumours of the ear canal.

### Supporting Information

#### CLINICAL INFORMATION RECEIVED

<b>Operative procedure:</b>	Left lateral temporal bone resection
<b>Diagnosis on biopsy (if any):</b>	Squamous cell carcinoma

#### MACROSCOPIC

<b>Specimen labelled as:</b>	"LEFT LATERAL TEMPORAL BONE RESECTION. SINGLE SUTURE MARKS ANTERIOR, LOOP SUTURE MARKS EAR LOBULE AND DOUBLE SUTURE MARKS SUPERIOR".
<b>Specimen submitted:</b>	Left lateral temporal bone resection including portion of the left ear concha and left external auditory canal.
<b>Specimen dimensions:</b>	30mm from superior to inferior x 20mm from anterior to posterior. The external auditory canal measures 30mm in length and 18mm in diameter.
<b>Maximum dimension of largest tumour:</b>	20mm
<b>Additional dimensions of largest tumour:</b>	10mm x 5mm
<b>Depth of invasion:</b>	3mm
<b>Tumour site:</b>	Circumferential involvement of the external auditory canal
<b>Tumour focality:</b>	Unifocal

<b>Tumour description:</b>	The external auditory meatus shows an exophytic pale white firm lesion. On serial sectioning, the tumour involves the external two thirds of the auditory canal. The tumour is present along the superior, medial and inferior wall of the bony ear canal. The tumour infiltrates the bony wall to a depth of 3mm.
<b>Macroscopic extent of invasion:</b>	The tumour involves the bony wall of the external auditory canal.

**Ink application & block identification key:**

Specimen is inked as follows:

Superior skin, soft tissue and bony aspect of the ear canal are inked blue, the inferior aspect of the skin, the soft tissue and the bony canal are inked black. The lateral aspect is inked red and the medial aspect is inked yellow.

The cutaneous radial margin of the concha and the tragus are submitted. The external auditory canal is transversely sectioned from the external auditory meatus to the internal meatus.

Block Key:

A: Three radial sections of the superior margin



B: Four radial sections of the lateral margin

C: Two radial sections of the inferior margin.

D: Four radial sections of the medial margin

E: section of the internal auditory meatus margin (shave)

F-K: Transverse sections of the bony external auditory canal from the external auditory meatus to the internal auditory meatus.

Sections F-K are undergoing light decalcification.

Macroscopic photographs and block annotation: [M/cutup18/P28460](https://www.pathology.com.au/cutup18/P28460)

**MICROSCOPIC**

<b>Histologic tumour type:</b>	Squamous cell carcinoma
<b>Histologic Grade:</b>	Moderately differentiated
<b>Extent of invasion:</b>	The tumour infiltrates the bony cortex of the external auditory canal to a depth of 2mm.
<b>Bone involvement:</b>	Present (histologically observed)
<b>Perineural involvement:</b>	Present
<b>Lymphovascular invasion:</b>	Not identified
<b>Margin status:</b>	
<b>Superior conchal cutaneous margin:</b>	4mm away
<b>Lateral conchal cutaneous margin:</b>	4mm away
<b>Medial conchal cutaneous margin:</b>	3mm away
<b>Inferior conchal cutaneous margin:</b>	2mm away
<b>Superior bony ear canal margin:</b>	0.5mm away
<b>Medial bony ear canal margin:</b>	1mm away
<b>Inferior bony ear canal margin:</b>	1mm away.
<b>Internal auditory meatus:</b>	4mm away
<b>Closest margin:</b>	Superior bony ear canal
<b>Coexistent pathology:</b>	None identified
<b>ANCILLARY TESTS:</b>	None performed

## Appendix 4 WHO classification of tumours

### World Health Organization (WHO) classification of tumours of the ear<sup>a62</sup>

Descriptor	ICD-O codes
Squamous cell carcinoma	8070/3
Ceruminous adenocarcinoma	8420/3
Ceruminous adenoid cystic carcinoma	8200/3
Ceruminous mucoepidermoid carcinoma	8430/3
Ceruminous adenoma	8420/0
Aggressive papillary tumour	8260/1
Endolymphatic sac tumour	8140/3
Vestibular schwannoma	9560/0
Meningioma	9530/0
Middle ear adenoma	8140/0

<sup>a</sup> The morphology codes are from the International Classification of Diseases for Oncology (ICD-O). Behaviour is coded /0 for benign tumours; /1 for unspecified, borderline, or uncertain behaviour; /2 for carcinoma in situ and grade III intraepithelial neoplasia; and /3 for malignant tumours.

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