The purpose of structured reporting of cancer is to improve health outcomes by ensuring optimal clinical understanding of the patient’s disease from the pathological report, in order that the most appropriate cancer treatment plan can be developed.

1. Background

Roundtable

Studies show that the traditional narrative style of reporting, leads to the omission of essential information necessary for patient management, and that structured reporting significantly enhance the completeness and quality of data in pathology reports. Consequently minimum or comprehensive datasets for the reporting of cancer have been developed around the world. Both the United Kingdom, and United States have produced standardised cancer reporting protocols or “datasets” for national use for many years.

In response to the growing body of evidence, the Cancer Institute NSW convened a National Round Table meeting in 2007, drawing together the major players in pathology across Australasia. The Round Table meeting documented a number of initiatives in structured reporting in progress around Australia, however, it was apparent that each was being developed in relative isolation creating a concern that each project may end up reporting to a different standard.

The value of a national approach to structured pathology reporting of cancer (SPRC) was clearly recognised at the meeting and it was agreed that “Structured or synoptic reporting of cancer cases in anatomical pathology and haematology contributes to better cancer control at the levels of:

- clinical management and treatment planning
- cancer notification and registration
- aggregated analyses, and
- clinical research

...and cancer care in Australia would benefit from the development, publication and adoption of a series of national structured reporting standards for each cancer type”.

NSPRC Project

In response to the Roundtable recommendation, the Cancer Institute NSW secured funding in February 2008, from the Department of Health and Ageing (Quality Use of Pathology...
Programs) to work with the RCPA and Cancer Australia to develop an initial 6 reporting datasets (lung, prostate, breast, and colorectal cancers, lymphoma and melanoma) and a framework to guide development of the datasets, in partnership with national clinician and pathologist organisations. After the initial success of this pilot, second and subsequent rounds of funding from the Department of Health and Ageing (Quality Use of Pathology Programs) were obtained to build on this foundation.

The National Structured Pathology Reporting of Cancer (NSPRC) Project has now been actively developing and publishing cancer datasets for the last 5 years with 26 cancer datasets available on the RCPA website. \(^1\)

In addition to the datasets, hyperlinked guides, proformas, request information sheets, typist templates and macroscopic dictation templates are published to facilitate implementation.

All published datasets have followed a standard development methodology or “framework”, using an Australasian expert committee, with a National Pathology Accreditation Advisory Council (NPAAC) template, organised by a RCPA Project Manager under the oversight of the Cancer Services Advisory Committee (CanSAC).

ICCR

In 2011, the International Collaboration on Cancer Reporting (ICCR), was convened with a view to reducing the global burden of cancer dataset development and reduplication of effort by the different international organisations engaged in the development of standardised cancer reporting datasets. Since its inception, the ICCR has rapidly gained momentum in the development of cancer datasets that are freely available for use by organisations globally. In time, this will enable the alignment and normalisation of pathology cancer data around the world as producers of datasets adopt and incorporate the ICCR datasets. In this way the NSPRC Project, in conjunction with the ICCR, will provide a full and current suite of cancer datasets for use in Australian pathology laboratories.

2. Structured reporting

Benefits of SPRC

From the outset the main aims of the NSPRC Project were to:

- **Improve outcomes for cancer patients.** Pathology reports are needed to guide treatment of the individual patient. Improved completeness of cancer reporting has long term cost implications for public health by ensuring the most effective and timely treatment based on accurate and complete information.
- **Improve the evidence base in pathology cancer reporting.** Each dataset is thoroughly researched by the expert team using the most recent peer-reviewed literature. This ensures that the elements included in the dataset are based on the latest evidence which in turn raises the standard of cancer reporting.
- **Move text/narrative to a strategic communication tool.** The traditional text based model of pathology reporting uses text to report both the basic parameters of the report e.g. size, weight, distances, invasion as well as the uncertainties and clarifications necessary to a complete understanding of the case. A structured report encourages the use of text for this latter purpose but uses the structured approach to record the basic elements thereby placing emphasis on the text used.

In addition, it was recognised that structured pathology reports would be needed to:

• Support any national cancer data strategy. Extracting information from a largely text based paper report is extremely difficult and involves an intense manual effort. The combination of standardised content, as well as a structured format of discrete fields, support a fully electronic approach to transfer of information to the cancer registries.

• Facilitate access to essential data. Pathology reports contain a wealth of information related to cancer and human disease. Moving from a text based model of reporting to a structured approach opens up this wealth of knowledge for a wide range of purposes: epidemiology; linking to archival tissue specimens for research; trial and outcomes analysis; monitoring quality of patient care and providing much needed data to policy makers.

• Support the e-health implementation. The current text based reports contain data that is often the most critical for patient care and prognosis. This data is also valuable for research, epidemiology, and education purposes. However, this style of report lacks adequate structure to support these needs accurately and efficiently. For data to be moved between electronic systems accurately and for that data to be usable for decision support, data mining and analysis it needs to be moved in a discrete data format.

**Implementation path**

In order for Australasia to start reaping the benefits of structured reporting of cancer, widespread compliance with the published protocols in accordance with the Roundtable recommendation is essential.

In describing the implementation of structured pathology reporting in Ontario, Canada, Srigley et al described a spectrum of reporting from traditional narrative reports with no prescribed content or format (Level 1), to fully conformant, structured and encoded information at Level 6. This approach has been further developed for the Australian context by the National Structured Pathology Reporting of Cancer (NSPRC) Project (Figure 1).

**Figure 1: Structured pathology reporting compliance matrix**

<table>
<thead>
<tr>
<th>ENTRY LEVEL</th>
<th>GOAL STATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1</td>
<td>Narrative only</td>
</tr>
<tr>
<td>Level 2</td>
<td>Use of a structured format</td>
</tr>
<tr>
<td>Level 3</td>
<td>Structured data entry using data entry tools eg drop down lists, multi/single select, conditional logic enabled</td>
</tr>
<tr>
<td>Level 4</td>
<td>Level 4 plus full compliance with mandatory LIS Functional Requirements</td>
</tr>
<tr>
<td>Level 5</td>
<td>RCPA protocol compliant</td>
</tr>
<tr>
<td>Level 6</td>
<td>RCPA protocol content compliant</td>
</tr>
</tbody>
</table>

**DATA ENTRY**

- Non-RCPA protocol compliant

**CONTENT**

- Data stored as a single text field or as a text field per reporting segment eg macroscopic

**DATA STORAGE**

- Individual data elements stored in discrete data fields

**CODING**

- No coding

**MESSAGING**

- Discrete data elements are not sent via HL7 messaging


6 Health Level 7 is a not-for-profit organisation defining interoperability and standards in healthcare information technology
However, a survey by NEHTA in 2011 reported that 82% of the large laboratories (>5000 requests per day) in Australia, handling 80% of the pathology work, have no capability of structured reporting or could only implement it as word documents. In New Zealand, the widespread inability of local LIS to accommodate structured reporting prompted the development of a web-based structured reporting tool for the most common cancers. While the situation in Australia has improved since 2011 and many sites have already implemented structured reporting to Level 3, it must be acknowledged that many Laboratory Information Systems cannot go beyond Level 3 (refer Figure 1) without specific investment.

Compliance

Compliance at Level 3 will improve the completeness, conciseness, conformity and clarity of cancer reports and requires only that cancer report content complies with the available NSPRC published datasets and that a structured or synoptic format is used (though not necessarily using advanced data entry tools). Level 3 is ‘entry level’ compliance for Australasia which can be achieved using a simple word processor or text editor, and is the simplest form of implementation that does not require investment in new technology.

Therefore, compliance at Level 3 is considered achievable by all laboratories in Australasia and the college considers this to be the minimum level of compliance for reporting of cancers for which published protocols exist.

The implementation of structured reporting at Level 3 provides an excellent foundation for further progress to Level 6. In the course of implementing to Level 3, it is expected that some software-capable organisations will find it easier and more effective to implement at higher levels with the added benefits gained.

A simple implementation guide has been developed to provide guidance to laboratories implementing SPRC to Level 3.

References


Level 3 Structured Pathology Reporting of Cancer Implementation Guide. (follows)
Level 3 Structured Pathology Reporting of Cancer Implementation Guide

Scope
Structured pathology reporting refers to the reporting of cancer specimens for which there are published RCPA protocols:


Level 3
Figure 1 describes the spectrum of reporting from traditional narrative reports with no prescribed content or format - Level 1, to fully conformant, structured and encoded information at Level 6.

Level 3 requires that cancer reports:
1. comply with the available RCPA published protocols and
2. that a structured format is used (though not necessarily using advanced data entry tools).

This level of compliance does not require investment in new technology, a simple template in MS word or other word processing application is adequate. However, many laboratories will find it advantageous to implement with appropriate electronic data entry tools (achieving level 4 or above compliance).

Format
Compliance with Level 3 requires the reporting elements (subject to the below considerations) to be reported in a columnar or Q&A format.

For example: columnar

<table>
<thead>
<tr>
<th>Histological tumour type:</th>
<th>Ductal adenocarcinoma</th>
</tr>
</thead>
<tbody>
<tr>
<td>Histological grade:</td>
<td>Grade 1: Well differentiated (greater than 95% of tumour composed of glands)</td>
</tr>
<tr>
<td>Microscopic tumour site:</td>
<td>Pancreas</td>
</tr>
<tr>
<td>Maximum extent of tumour invasion:</td>
<td>Peripancreatic soft tissues</td>
</tr>
<tr>
<td>Maximum tumour diameter:</td>
<td>30mm</td>
</tr>
<tr>
<td>Lymphovascular invasion:</td>
<td>Present</td>
</tr>
</tbody>
</table>

For example: Q&A format

Histological tumour type: Ductal adenocarcinoma
Histological grade: Grade 1: Well differentiated (greater than 95% of tumour composed of glands)
Microscopic tumour site: Pancreas
Maximum extent of tumour invasion: Peripancreatic soft tissues
Maximum tumour diameter: 30mm
Lymphovascular invasion: Present

Formatting in regard to font, spacing, tabulation and sequencing are at the discretion of the laboratory/pathologist.
General considerations

General content

Each protocol includes a reporting checklist in Chapter 6. This checklist includes the elements to be reported and the value lists to be used to record the responses. The checklists include both standards and guidelines.

Standards are the mandatory or required minimum for reporting of the specific cancer. All standards MUST be included in the report. Guidelines are optional and those which are deemed not applicable may be removed from the checklist or report.

The element names eg tumour site, perineural invasion, and value list responses eg positive, not identified etc should be used in the report as per the relevant protocol checklist.

The numbering of Standards and Guidelines which appears in the protocol eg S2.03 is not required in the report.

Additional items for local use may be added to the report.

Additional text/narrative may be added to the report for clarification purposes.

Macroscopic information

As most macroscopic data is still dictated, dictation templates for the reporting of macroscopic data have been published to facilitate compliance to the protocol content:

http://www.rcpa.edu.au//Library/Practising-Pathology/Structured-Pathology-Reporting-of-Cancer/Macroscopic-reporting

In recognition of the shortcomings of both the dictation process and Laboratory System functionality, laboratories may be deemed compliant in regard to macroscopic data if the content of the published protocol is included in the report. That is, a columnar or Q&A formatting is desirable but not required for the macroscopic report.

Clinical Information

The desired detailed clinical information to be included on the request form is included in the protocols as advisory information. In the older protocols the detailed clinical information was included in chapter 1; in the newer protocols the detailed clinical information is included in Appendix 1 to emphasise the advisory nature of the information. In all cases, the required inclusions in the report are:

1. the patient demographics/identifiers,
2. all clinical information as documented on the request form (ie detailed clinical information),
3. the laboratory accession number,
4. any clinical information received in other communications from the requestor or other clinician
5. and in some protocols the identity of the primary clinician caring for the patient.
Figure 1: Structured pathology reporting of cancer compliance matrix

<table>
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</tr>
<tr>
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</tr>
<tr>
<td>CONTENT</td>
<td>Non-RCPA protocol compliant</td>
</tr>
<tr>
<td>DATA STORAGE</td>
<td>Data stored as a single text field or as a text field per reporting segment eg macroscopic</td>
</tr>
<tr>
<td>CODING</td>
<td>No coding</td>
</tr>
<tr>
<td>MESSAGING</td>
<td>Discrete data elements are not sent via HL7 messaging</td>
</tr>
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