Cancer services performance indicators

2018 audit

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Contents

Introduction

The Victorian cancer services performance indicator (CSPI) program was set up in 2007 to measure and monitor progress with Victorian Government policy. In 2019 the government undertook a statewide audit across Victorian hospitals that deliver cancer care to check the status of specific elements of cancer care provided in 2018. The performance indicators described in this report for the 2018 audit focus on multidisciplinary care and supportive care. Each Integrated Cancer Service (ICS) collects the audit data to monitor processes of care and identify where care can be improved.

The *Victorian cancer plan 2020–2024* was developed under the *Improving Cancer Outcomes Act 2014*. It reflects the Victorian Government's commitment to health system reform by providing a long-term approach to improving cancer outcomes. The cancer plan sets long-term goals to 2040, including policy, planning and research priorities. It provides key directions for specific action areas to reduce the burden of cancer. These goals helped in determining the performance indicators chosen for audit. The Department of Health ('the department') sets targets for each indicator. The targets are longstanding and/or reflect the mandated cancer notification regulations.

Long-term goals of the cancer plan to 2040 include to:

- **halve** the proportion of Victorians diagnosed with preventable cancers
- achieve **equitable** outcomes for all Victorians
- ensure Victorians have **the best possible** experience of the cancer treatment and care system
- **increase one- and five-year survival of Victorians with cancer**.

Over time, indicators have been added, removed and re-introduced into the audit. This was to monitor the sustainability of results achieved in prior years. The indicators included in the 2018 audit are:

- documented evidence of multidisciplinary team meeting (MDM) recommendations
- documented evidence of cancer staging in the MDM recommendations
- documented evidence of patient Eastern Cooperative Oncology Group (ECOG) performance status in the MDM recommendations
- documented evidence of supportive care screening.

The previous CSPI audit report of cancer care for people diagnosed in 2017 reported on a fifth performance indicator, 'Documented evidence of communication of initial treatment plan to general practitioner (GP)'. With the advent of more automated systems included within MDM software, ICS program managers and the department agreed to remove this indicator from the 2018 audit.

This report's findings and recommendations aim to ensure continuing improvement at the health service level. ICS, supported by their governance committees, play a substantial supportive role in enabling local cancer service improvement activities to address gaps in the audit results.

It is a requirement of all ICS to collect and report accurate data and ensure appropriate data storage as per the *Financial Management Act 1994*. The *Cancer Services Performance Indicators: Data collection method for newly diagnosed cancer cases in 2018* document provides guidance for rationale, definitions and targets. This document is available on request by emailing the department's Cancer Support, Treatment and Research Unit <cancerplanning@health.vic.gov.au>.

Overview of results

The total number of patients audited and included in the 2018 report is 3,300 (metropolitan ICS: *n* = 1,984; regional ICS: *n* = 1,226; paediatric ICS: *n* = 90). Based on Hume Regional Integrated Cancer Service feedback, 38 patients from Albury Wodonga Health were excluded from reporting.

Table 1 provides a high-level summary of the statewide results up to 2018 against the 2018 performance target. A new sampling mechanism (outlined in the ‘

Methods' section) was used in 2018 to provide a more balanced sample across tumour streams and health service campuses. This aims to provide greater accuracy in estimating results for smaller tumour streams and campuses compared with using simple random sampling, the sampling method used for audits prior to 2017. Results for 2018 in Table 1 have been rescaled to the eligible audit population to help in comparing with prior audits where simple random sampling was conducted.

Table 1: Statewide summary of results

Indicator	2012 result	2013 result	2014 result	2015 result	2017 result[1]	2018 result[2]	Target
1. Documented evidence of MDM recommendations	62%	64%	70%	72%	69%	**74%**	**85%[3]**
2. Documented evidence of disease staging in the MDM recommendations[4]	75%	79%	79%	81%	72%	**78%**	**85%[5]**
3. Documented evidence of patient ECOG performance status in the MDM recommendations[6]	N/A	N/A	N/A	N/A	32%	**37%**	**100%**
4. Documented evidence of communication of initial treatment plan to GP	N/A	N/A	71%	77%	78%	**N/A**	**100%**
5. Documented evidence of supportive care screening[7]	31%	36%	37%	39%	39%	**38%**	**80%[8]**
Number of medical records audited	**3,333**	**3,401**	**3,591**	**3,447**	**3,542**	**3,300**	

Notes: Hume data limitation: Victorian patients may receive care in another state, which is not captured in Victorian datasets. This particularly affects the data for patients in the Hume Regional Integrated Cancer Service area, who regularly undergo their treatment in Albury, New South Wales.
Cells containing N/A indicate that data was not collected for that indicator in the relevant audit.
No audit was conducted on 2016 diagnoses.

Performance against policy

The performance indicators help implement relevant cancer policy and allow progress to be monitored and evaluated. The ICS are well placed to facilitate activities aimed at improving their community's experience of cancer within these four areas of focus.

[1] Weighted sampling was used for the 2017 audit, and results were not rescaled to the target population.

[2] Weighted sampling was used for the 2018 audit, and results were rescaled to reflect the target population distribution for comparability.

[3] Target set at 80 per cent prior to 2018.

[4] Results prior to 2015 excluded haematology and CNS data.

[5] Target set at 100 per cent prior to 2018.

[6] Does not include paediatric ICS because ECOG is a measure of functional status in adult cancer patients and is not used in children's cancer care.

[7] Results prior to 2014 excluded paediatric ICS.

[8] Target set at 50 per cent prior to 2017.

In terms of findings, significant variation continues to persist between ICS across all measures.

Although there has been some improvement over time at the statewide level, across the board performance lags behind the targets.

The department supports a strategy whereby sites that are exemplars share their learnings on effective implementation strategies to improve achievements across all ICS.

Data quality assurance

Data and information provided under the CSPI were reviewed locally and approved by the ICS program manager or clinical director before submission, and on the provided template. This helped to get rid of persistent data quality issues in the data collation process. Any queries about submissions were resolved through the relevant ICS program manager.

Distribution of findings

The department expects the cancer service performance results to be presented at ICS governance and clinical advisory committee meetings. The department also encourages more regular scrutiny. Findings should be routinely presented to tumour groups and/or MDMs and to other stakeholders involved in local quality improvement activities. This includes health service quality units. Again, using MDM software can help in local tracking processes.

ICS program offices should provide local analyses and results directly to individual health services and MDMs. They should also help services to improve their performance over time.

Methods

Target population

The target population for the CSPI program is Victorian[9] cancer patients newly diagnosed in 2018. They must have started treatment within Victoria in 2018 in any of the health services with which data-sharing agreements have been signed and the data is accessible centrally. This includes all public campuses (irrespective of the operator) and some private campuses where data-sharing agreements are in place between the health service and the ICS. Patients were allocated to an ICS for auditing based on the campus of first treatment.

Data source

The patients were identified from the Victorian Admitted Episodes Dataset (VAED) only and were not based on the linked VAED–Victorian Cancer Registry (VCR) data. Using data from the VAED allows the audit to be conducted on the most recent calendar year, which is not possible using the VAED–VCR data. This effectively excludes cancer patients who only received care outside of hospital such as oral chemotherapy or non-admitted radiotherapy, or those who were under active surveillance only.

Data limitation

Albury Wodonga Health (AWH) has two campuses, located in both Albury and Wodonga, operating under the jurisdiction of the Victorian Department of Health. However, only data from the Wodonga campus is captured in the VAED. Only patients treated at the Wodonga campus are therefore identified in the sampling process. This is a limitation because we cannot identify patients treated across the entire health service. Patients from the Wodonga campus of AWH have been excluded from this report because, due to the sampling process, the group sampled and audited do not reflect the casemix of the broader health service.

Inclusion criteria

Patients with admissions in 2018 with any malignant cancer ICD-10-AM code (excluding uncertain tumours) and any of the tumour stream–specific procedure codes were included in the target population. The cancer-specific ICD-10-AM diagnosis codes (summarised in Appendix 1) and the tumour stream–specific procedure codes were provided to ICS before beginning the audit. These are available on request. Patients were categorised into established tumour stream groupings if both a tumour stream–specific diagnosis code and procedure code were present in the same admission. The sampling methodology and tumour stream–specific procedure codes will be reviewed for future audits.

[9] Victorian cancer patients are those receiving cancer treatments at a Victorian health service where their usual residence is a Victorian address.

Exclusion criteria

Patients with the following characteristics were excluded from the target population:

- non-Victorian patient
- previously admitted within the same tumour stream within the past five years (to ensure only new diagnoses are captured)
- diagnosed within more than one tumour stream (to avoid including patients being treated and managed for multiple tumours).

For the eight ICS focused on adult cancer care, patients were also excluded if they were younger than 18 years of age.

For the statewide paediatric ICS, patients were also excluded if:

- they were 18 years or older
- their first treatment was not at the Royal Children's Hospital or Monash Children's Hospital.

During the audit process, patients were also excluded if:

- they were diagnosed outside of 2018
- they had no active treatment
- they had prior treatment at another campus
- their diagnosis was a recurrence
- their medical record was not available.

Sampling strategy

Patients were sampled from the target population using a centralised sample selection process. Sampling was conducted at the ICS level to ensure enough cases were sampled for each ICS. Refer to Appendix 2: Sampling mechanism for details.

Size of patient sample

The CSPI program requires an adequate sample size to ensure the results are meaningful and can identify change in performance over time. The department sourced clinical epidemiological advice to estimate the required sample size. The sample size required to estimate percentage to within +/– 5 per cent with 95 per cent confidence was considered. The final sample for the regional ICS is lower than the epidemiological advice recommends, but this is in part to account for the need for regional patients to travel for treatment for some tumour streams. Similarly, the metropolitan ICS sample is somewhat inflated to account for the referral of patients from outside of the ICS for rare tumour stream care. Each regional ICS had to audit 250 patients, and each metropolitan ICS had to audit 650 patients. All remaining cases were also provided to each ICS to ensure the required number for audit would be reached.

Sampling mechanism

Audits undertaken between 2007 and 2016 used a simple random sample method from the target population to identify the audit population. The resulting audit populations included many patients diagnosed within common tumour streams (for example, breast) and had few patients from rarer tumour streams. These population samples are representative of the target population. However, they minimise the ability to make accurate interpretations about less common tumour streams due

to the low numbers sampled. The 2017 CSPI audit used weighted sampling to allow oversampling of rare tumour streams and to undersample common tumour streams. The resulting sample from each tumour stream is therefore large enough to make accurate conclusions while maintaining the original ICS-specific sample sizes. The sampling mechanism was updated again for the 2018 CSPI audit, aiming to select an equal number of patients across hospital campuses within tumour streams. To be eligible for audit from a campus, we needed a minimum of 10 patients from a tumour stream. Refer to Appendix 2: Sampling mechanism for details on how we calculated the sampling weights.

Results

For statewide summaries presented by tumour stream, all patients audited from paediatric ICS were grouped together in the same tumour stream ('PICS TS').

ECOG is not used in children's cancer because it is a measure for adult medicine. Therefore patients from PICS were excluded from the results for Indicator 3 (documented evidence of ECOG). For all the remaining indicators, the overall statewide measures include data from the PICS and the ICS.

This section of the report presents the results of heath service audit data as submitted by their respective ICS (collective and by tumour stream). Tables 2 to 5 break down the results by indicator, tumour stream and ICS. Refer to Appendix 4: Abbreviations for abbreviations used in the tables.

Performance indicator 1: Documented evidence of multidisciplinary team meeting recommendations

Rationale	Multidisciplinary care is a key part of providing best practice care for cancer patients. Documenting MDM recommendations in the medical record ensures such information is accessible to all team members. The department's 2007 publication *Achieving best practice cancer care: a guide for implementing multidisciplinary care* states 'recommendations are recorded in the patient's medical record and signed by the presenting or treating clinician'. *The Victorian cancer multidisciplinary team meeting quality framework* (2018) describes quality standards, indicators and measures that align with this performance indicator. Effective communication between all team members involved in a patient's care is critical for maximising patient care coordination. This performance measure gives an indication of the level of documentation of MDM recommendations in the central medical record.
Definition	Of those patients who were audited, the proportion who had documented evidence of MDM recommendations.
Target	**85 per cent**
Performance	Adjusted: 74 per cent statewide (raw estimate: 70 per cent)
Numerator	Total number of new cancer patients with documented evidence of MDM recommendations
Denominator	Total number of new cancer patients audited

The target for the indicator 'Documented evidence of MDM recommendations' increased from 80 per cent to 85 per cent. Because the aim for this indicator was to achieve 80 per cent by 2012 (as stated in *Victoria's cancer action plan 2008–2011*), it was appropriate to raise expectations. As such, the target increased.

Table 2: Percentage of patients with documented evidence of MDM recommendations compared with a target of 85 per cent, by tumour stream and ICS, 2018

Tumour stream / ICS	NEMICS	SMICS	WCMICS	BSWRICS	GRICS	HRICS	LMICS	GICS	PICS	2018 overall	2018 overall – weighted
Breast	99% (93%, 100%)	89% (80%, 95%)	97% (91%, 99%)	70% (53%, 83%)	70% (59%, 79%)	96% (87%, 99%)	63% (51%, 74%)	72% (55%, 84%)		84% (80%, 87%)	**89% (86%, 92%)**
CNS	83% (64%, 93%)	94% (84%, 98%)	69% (55%, 80%)							82% (74%, 88%)	**82% (75%, 88%)**
Colorectal	87% (78%, 93%)	91% (82%, 96%)	91% (82%, 96%)	46% (32%, 61%)	52% (39%, 64%)	85% (73%, 92%)	57% (42%, 71%)	51% (36%, 67%)		74% (69%, 78%)	**77% (72%, 81%)**
Endocrine/thyroid	58% (42%, 72%)	92% (79%, 97%)	72% (58%, 83%)							74% (66%, 81%)	**70% (60%, 78%)**
Genitourinary	88% (78%, 93%)	88% (78%, 94%)	70% (58%, 80%)	13% (5%, 30%)	3% (1%, 16%)	19% (10%, 33%)	33% (20%, 47%)	22% (12%, 38%)		53% (48%, 58%)	**54% (49%, 60%)**
Gynaecological	95% (85%, 98%)	98% (91%, 100%)	82% (70%, 90%)	0% (0%, 18%)	25% (5%, 70%)		0% (0%, 35%)	52% (32%, 72%)		77% (71%, 82%)	**85% (80%, 89%)**
Haematological	50% (38%, 62%)	56% (44%, 68%)	59% (46%, 70%)	22% (11%, 39%)	67% (48%, 81%)	30% (16%, 51%)	83% (63%, 93%)	11% (4%, 27%)		49% (44%, 54%)	**49% (43%, 55%)**
Head & neck	93% (81%, 98%)	97% (89%, 99%)	95% (86%, 98%)	67% (45%, 83%)				92% (65%, 99%)		92% (87%, 95%)	**94% (89%, 97%)**
Lung	85% (76%, 92%)	90% (81%, 95%)	91% (82%, 96%)	55% (38%, 72%)	71% (53%, 84%)	100% (34%, 100%)	78% (59%, 89%)	38% (23%, 56%)		79% (74%, 83%)	**81% (76%, 85%)**
Melanoma	48% (36%, 60%)	57% (45%, 69%)	56% (42%, 69%)	17% (8%, 35%)	27% (11%, 52%)	27% (14%, 44%)	19% (8%, 37%)	0% (0%, 12%)		38% (33%, 44%)	**55% (48%, 62%)**
UGI	83% (73%, 90%)	95% (87%, 98%)	91% (81%, 96%)	41% (25%, 59%)	46% (23%, 71%)	25% (9%, 53%)	55% (34%, 74%)	73% (56%, 86%)		77% (72%, 81%)	**77% (72%, 82%)**
PICS TS									99% (94%, 100%)	99% (94%, 100%)	**99% (95%, 100%)**
2018 overall	80% (76%, 83%)	86% (83%, 88%)	80% (77%, 83%)	38% (32%, 44%)	53% (47%, 59%)	57% (51%, 64%)	53% (47%, 59%)	43% (37%, 49%)	99% (94%, 100%)	70% (68%, 72%)	
2018 overall – weighted	**83% (80%, 86%)**	**87% (84%, 90%)**	**85% (81%, 87%)**	**46% (39%, 54%)**	**59% (53%, 66%)**	**60% (53%, 66%)**	**60% (53%, 66%)**	**45% (38%, 52%)**	**99% (95%, 100%)**		**74% (72%, 75%)**

Notes: Colours have been used to aid in visual interpretation but do not provide any additional information. Dark purple indicates the target was reached. Light purple indicates the result was within 20 per cent of the target. White indicates the result was more than 20 per cent less than the target.

All blank cells indicate that no patients were audited.

Results in each cell include a raw estimate (or rescaled estimate for '2018 overall – weighted') and 95 per cent confidence intervals in brackets.

Patients audited from AWH have been excluded from HRICS results due to incomplete capture of the health service activity in the VAED.

'2018 overall – weighted' results have been rescaled to the population available for sampling to account for the weighted sampling method.

Performance indicator 2: Documented evidence of cancer staging in the multidisciplinary team meeting recommendations

Rationale	Staging is the cornerstone of treatment planning. MDMs across the state are working hard to include appropriately credentialled specialists to inform both clinical and histopathological staging. Quality standard 8.3 of *The Victorian cancer multidisciplinary team meeting quality framework* (2018) states that the MDM team ensures relevant information about the patient and optimal treatment are considered, including staging. The optimal care pathways outline staging requirements for each tumour stream. Staging should be recorded using the AJCC staging (TNM), SEER or other accepted staging system for the disease type as endorsed by local tumour groups or multidisciplinary teams. One example of a well-accepted 'other' staging system is the Dukes' staging system for colorectal cancer. Another is the International Federation of Gynaecology and Obstetrics staging system for gynaecological cancer. Disease stage is a data item mandated for notification to the VCR under the Improving Cancer Act (Diagnosis Reporting) Regulations.[10]
Definition	Of those patients who were audited and had documented evidence of MDM recommendations, the proportion who had cancer staging present in their MDM recommendations.
Target	**85 per cent**
Performance	Adjusted: 78 per cent statewide (raw estimate: 75 per cent)
Numerator	Total number of new cancer patients with documented evidence of cancer staging[11] in the MDM recommendations
Denominator	Total number of new cancer patients with documented MDM recommendations

Note: Accepted staging systems may be updated for future audits, with new staging criteria being incorporated as supporting evidence emerges.

The target for the indicator 'Documented evidence of cancer staging in the MDM recommendations' decreased from 100 per cent to 85 per cent. Feedback from the ICS suggested that the target of 100 per cent was unrealistic because final cancer staging does not always occur at the time of the MDM.

The acceptable evidence for cancer staging does not neatly fit into childhood cancer staging practice. Childhood cancers are rare and generally differ from adult cancer in their biology, clinical classification and treatment. The staging systems used for adult cancers, which are well-established and universally accepted, are not adequate for staging many cancers that occur in children. There is no universally accepted system for staging most childhood cancer types. Therefore, other staging systems that were appropriate for childhood cancers, such as WHO for CNS tumours, were considered acceptable for patients audited in PICS.

[10] Refer to Victorian Consolidated Regulations <http://classic.austlii.edu.au/au/legis/vic/consol_reg/icorr2015586/sch1.html>.

[11] Staging should be recorded as per AJCC staging (TNM), SEER or other accepted staging system for the disease type as endorsed by local tumour groups or MDMs.

Table 3: Percentage of patients with documented evidence of cancer staging in MDM recommendations compared with a target of 85 per cent, by tumour stream and ICS, 2018

Tumour Stream / ICS	NEMICS	SMICS	WCMICS	BSWRICS	GRICS	HRICS	LMICS	GICS	PICS	2018 overall	2018 overall – weighted
Breast	94% (87%, 98%)	90% (80%, 95%)	96% (88%, 99%)	91% (73%, 98%)	67% (53%, 78%)	73% (60%, 84%)	70% (55%, 82%)	96% (79%, 99%)		85% (81%, 88%)	**88% (83%, 91%)**
CNS	25% (11%, 47%)	80% (66%, 89%)	86% (71%, 94%)							71% (62%, 79%)	**74% (64%, 81%)**
Colorectal	81% (69%, 89%)	85% (74%, 92%)	70% (57%, 80%)	89% (67%, 97%)	75% (58%, 87%)	82% (69%, 91%)	100% (86%, 100%)	89% (67%, 97%)		81% (77%, 85%)	**84% (79%, 88%)**
Endocrine/thyroid	91% (72%, 97%)	94% (81%, 98%)	89% (75%, 96%)							91% (84%, 96%)	**91% (82%, 95%)**
Genitourinary	71% (59%, 80%)	91% (81%, 96%)	38% (26%, 53%)	100% (51%, 100%)	100% (21%, 100%)	50% (22%, 78%)	79% (52%, 92%)	88% (53%, 98%)		70% (64%, 76%)	**70% (63%, 76%)**
Gynaecological	96% (87%, 99%)	98% (91%, 100%)	93% (82%, 98%)		0% (0%, 79%)			73% (43%, 90%)		94% (89%, 97%)	**93% (84%, 97%)**
Haematological	61% (44%, 75%)	94% (82%, 98%)	46% (31%, 62%)	29% (8%, 64%)	33% (16%, 56%)	0% (0%, 35%)	37% (19%, 59%)	67% (21%, 94%)		55% (47%, 63%)	**59% (50%, 67%)**
Head & neck	85% (70%, 93%)	97% (88%, 99%)	72% (59%, 82%)	36% (16%, 61%)				100% (74%, 100%)		82% (75%, 87%)	**81% (74%, 87%)**
Lung	89% (79%, 95%)	84% (73%, 91%)	90% (80%, 95%)	88% (64%, 97%)	41% (23%, 61%)	50% (9%, 91%)	24% (11%, 45%)	100% (74%, 100%)		79% (73%, 83%)	**78% (72%, 83%)**
Melanoma	100% (88%, 100%)	83% (68%, 92%)	78% (59%, 89%)	60% (23%, 88%)	100% (51%, 100%)	75% (41%, 93%)	40% (12%, 77%)			83% (75%, 89%)	**88% (79%, 93%)**
UGI	58% (46%, 70%)	66% (53%, 76%)	47% (34%, 59%)	73% (43%, 90%)	33% (10%, 70%)	67% (21%, 94%)	18% (5%, 48%)	100% (85%, 100%)		59% (53%, 66%)	**58% (51%, 64%)**
PICS TS									24% (16%, 33%)	24% (16%, 33%)	**31% (21%, 44%)**
2018 overall	80% (76%, 83%)	87% (84%, 90%)	74% (70%, 77%)	74% (65%, 82%)	59% (51%, 67%)	70% (62%, 78%)	59% (50%, 67%)	93% (86%, 96%)	24% (16%, 33%)	75% (74%, 77%)	
2018 overall – weighted	**80% (76%, 84%)**	**89% (85%, 91%)**	**76% (72%, 80%)**	**82% (72%, 89%)**	**58% (49%, 67%)**	**71% (61%, 79%)**	**69% (60%, 77%)**	**93% (84%, 97%)**	**31% (21%, 44%)**		**78% (76%, 80%)**

Notes: Colours have been used to aid in visual interpretation but do not provide any additional information. Dark purple indicates the target was reached. Light purple indicates the result was within 20 per cent of the target. White indicates the result was more than 20 per cent less than the target.

All blank cells indicate that no patients were audited.

Results in each cell include a raw estimate (or rescaled estimate for '2018 overall – weighted') and 95 per cent confidence intervals in brackets.

Patients audited from AWH have been excluded from HRICS results due to incomplete capture of the health service activity in the VAED.

'2018 overall – weighted' results have been rescaled to the population available for sampling to account for the weighted sampling method.

Performance indicator 3: Documented evidence of patient ECOG performance status in the multidisciplinary team meeting recommendations

Rationale	Doctors and researchers use ECOG performance status scales and criteria to: • assess how a patient's disease is progressing • assess how the disease affects the daily living abilities of the patient • determine appropriate treatment and prognosis. The Improving Cancer Outcomes Act requires recording of ECOG status in notifications sent to the VCR. This allows appropriate risk adjustment and comparative analyses of patient health outcomes. Documenting ECOG in the MDM recommendations would enable easy identification of ECOG for notifying the VCR as required under the Improving Cancer Act (Diagnosis Reporting) Regulations.[12]
Definition	Of those patients who were audited and had documented evidence of MDM recommendations, the proportion who had patient ECOG performance in their MDM recommendations (PICS not included).
Target	**100 per cent**
Performance	Adjusted: 37 per cent statewide (raw estimate: 37 per cent)
Numerator	Total number of new cancer patients with documented evidence of patient ECOG performance status in the MDM recommendations
Denominator	Total number of new cancer patients with documented MDM recommendations

ECOG is not used in children's cancer because it is a measure for adult medicine. Data collected for ECOG in MDM recommendations is therefore not applicable to PICS, and hence PICS patients were excluded from this indicator.

[12] Refer to Victorian Consolidated Regulations <http://classic.austlii.edu.au/au/legis/vic/consol_reg/icorr2015586/sch1.html>.

Table 4: Percentage of patients with documented evidence of ECOG performance status in MDM recommendations compared with a target of 100 per cent, by tumour stream and ICS, 2018

Tumour stream / ICS	NEMICS	SMICS	WCMICS	BSWRICS	GRICS	HRICS	LMICS	GICS	2018 overall	2018 overall – weighted
Breast	21% (13%, 32%)	92% (82%, 96%)	10% (5%, 19%)	0% (0%, 14%)	4% (1%, 13%)	2% (0%, 11%)	62% (47%, 76%)	100% (86%, 100%)	33% (28%, 37%)	**39% (33%, 45%)**
CNS	0% (0%, 16%)	2% (0%, 11%)	20% (10%, 36%)						8% (4%, 14%)	**7% (4%, 14%)**
Colorectal	27% (18%, 40%)	43% (32%, 56%)	8% (4%, 18%)	0% (0%, 18%)	0% (0%, 11%)	2% (0%, 12%)	52% (33%, 71%)	83% (61%, 94%)	24% (20%, 29%)	**25% (20%, 31%)**
Endocrine/thyroid	14% (5%, 33%)	0% (0%, 10%)	33% (20%, 50%)						16% (10%, 25%)	**15% (9%, 24%)**
Genitourinary	18% (11%, 30%)	66% (53%, 76%)	2% (0%, 11%)	0% (0%, 49%)	0% (0%, 79%)	0% (0%, 32%)	43% (21%, 67%)	50% (22%, 78%)	30% (24%, 36%)	**26% (21%, 33%)**
Gynaecological	72% (58%, 82%)	98% (91%, 100%)	57% (42%, 70%)		100% (21%, 100%)			73% (43%, 90%)	77% (70%, 83%)	**83% (76%, 88%)**
Haematological	67% (50%, 80%)	33% (20%, 50%)	19% (9%, 34%)	0% (0%, 35%)	6% (1%, 26%)	0% (0%, 35%)	74% (51%, 88%)	67% (21%, 94%)	36% (29%, 44%)	**40% (32%, 49%)**
Head & neck	56% (41%, 71%)	68% (55%, 78%)	16% (9%, 27%)	0% (0%, 22%)				91% (62%, 98%)	45% (38%, 52%)	**44% (36%, 52%)**
Lung	75% (63%, 84%)	90% (80%, 95%)	48% (36%, 61%)	0% (0%, 19%)	55% (35%, 73%)	0% (0%, 66%)	43% (24%, 63%)	91% (62%, 98%)	64% (58%, 69%)	**60% (53%, 66%)**
Melanoma	45% (28%, 62%)	22% (12%, 38%)	0% (0%, 12%)	0% (0%, 43%)	50% (15%, 85%)	0% (0%, 32%)	20% (4%, 62%)		21% (15%, 29%)	**9% (6%, 15%)**
UGI	35% (24%, 48%)	30% (20%, 42%)	3% (1%, 12%)	9% (2%, 38%)	17% (3%, 56%)	0% (0%, 56%)	73% (43%, 90%)	100% (85%, 100%)	31% (26%, 38%)	**28% (23%, 35%)**
2018 overall	41% (37%, 45%)	54% (50%, 58%)	20% (16%, 23%)	1% (0%, 6%)	14% (9%, 21%)	2% (0%, 6%)	56% (48%, 65%)	88% (80%, 93%)	37% (35%, 39%)	
2018 overall – weighted	**36% (32%, 41%)**	**59% (54%, 64%)**	**21% (17%, 25%)**	**1% (0%, 7%)**	**14% (9%, 23%)**	**2% (0%, 6%)**	**55% (46%, 65%)**	**89% (80%, 94%)**		**37% (34%, 39%)**

Notes: Colours have been used to aid in visual interpretation but do not provide any additional information. Dark purple indicates the target was reached. Light purple indicates the result was within 20 per cent of the target. White indicates the result was more than 20 per cent less than the target.

All blank cells indicate that no patients were audited.

Results in each cell include a raw estimate (or rescaled estimate for '2018 overall – weighted') and 95 per cent confidence intervals in brackets.

Patients audited from AWH have been excluded from HRICS results due to incomplete capture of the health service activity in the VAED.

'2018 overall – weighted' results have been rescaled to the population available for sampling to account for the weighted sampling method.

Performance indicator 4: Documented evidence of supportive care screening

Rationale	Supportive care addresses a wide range of needs across the continuum of care for those affected by cancer. It is increasingly seen as a core part of cancer care. Improving supportive care for those affected by cancer is one of the priority areas for the ICS. This measure provides an indication of the level of documented appropriate supportive care screening.
Definition	Of those patients who were audited, the proportion who had documented evidence of supportive care screening using the one validated tool (the NCCN Distress Thermometer).
Target	**80 per cent**
Performance	Adjusted: 38 per cent statewide (raw estimate: 36 per cent)
Numerator	Total number of new cancer patients with documented evidence of supportive care screening
Denominator	Total number of new cancer patients audited

Note: For PICS, psychosocial assessments using the Psychosocial Assessment Tool (PAT) are routinely provided to all Royal Children's Hospital patients at diagnosis or first visit with a social worker. However, social workers refer to this period as a time of crisis in which patients and families respond better to verbal interaction recorded by the social work team. Because the PAT is a repeat of this information many patients do not complete it. Monash Children's Hospital uses its own assessment tool alongside the PAT. Monash does not offer the PAT to non–English speaking families.

Table 5: Percentage of patients with documented evidence of supportive care screening compared with a target of 80 per cent, by tumour stream and ICS, 2018

Tumour stream / ICS	NEMICS	SMICS	WCMICS	BSWRICS	GRICS	HRICS	LMICS	GICS	PICS	2018 overall	2018 overall – weighted
Breast	81% (70%, 88%)	65% (53%, 76%)	27% (18%, 38%)	45% (30%, 62%)	29% (20%, 40%)	94% (84%, 98%)	41% (30%, 54%)	56% (39%, 72%)		54% (49%, 58%)	**57% (51%, 62%)**
CNS	71% (51%, 85%)	42% (30%, 56%)	0% (0%, 7%)							31% (23%, 39%)	**30% (22%, 38%)**
Colorectal	25% (17%, 37%)	44% (33%, 56%)	6% (2%, 15%)	10% (4%, 24%)	31% (21%, 43%)	47% (34%, 60%)	42% (29%, 58%)	40% (26%, 56%)		30% (26%, 35%)	**29% (24%, 34%)**
Endocrine/ thyroid	11% (4%, 24%)	3% (0%, 13%)	4% (1%, 13%)							6% (3%, 11%)	**7% (3%, 13%)**
Genitourinary	22% (14%, 32%)	32% (22%, 44%)	1% (0%, 8%)	7% (2%, 21%)	10% (3%, 25%)	26% (15%, 41%)	14% (7%, 27%)	17% (8%, 32%)		17% (14%, 21%)	**16% (13%, 21%)**
Gynaecological	46% (34%, 59%)	81% (69%, 89%)	52% (39%, 64%)	12% (3%, 34%)	25% (5%, 70%)		57% (25%, 84%)	19% (8%, 40%)		52% (45%, 58%)	**63% (56%, 70%)**
Haematological	35% (24%, 47%)	64% (52%, 75%)	2% (0%, 8%)	41% (26%, 58%)	78% (59%, 89%)	61% (41%, 78%)	61% (41%, 78%)	50% (33%, 67%)		43% (38%, 49%)	**37% (32%, 43%)**
Head & neck	64% (49%, 77%)	77% (65%, 86%)	5% (2%, 14%)	48% (28%, 68%)				75% (47%, 91%)		49% (42%, 56%)	**42% (34%, 49%)**
Lung	37% (27%, 49%)	51% (39%, 62%)	8% (3%, 17%)	48% (31%, 66%)	84% (67%, 93%)	100% (34%, 100%)	63% (44%, 78%)	59% (41%, 74%)		44% (39%, 49%)	**47% (41%, 53%)**
Melanoma	8% (4%, 18%)	41% (30%, 54%)	0% (0%, 7%)	17% (8%, 35%)	0% (0%, 20%)	27% (14%, 44%)	19% (8%, 37%)	4% (1%, 18%)		17% (13%, 21%)	**26% (19%, 33%)**
UGI	36% (26%, 48%)	50% (38%, 62%)	9% (4%, 19%)	63% (44%, 78%)	92% (67%, 99%)	100% (76%, 100%)	65% (43%, 82%)	37% (22%, 54%)		43% (37%, 48%)	**44% (38%, 50%)**
PICS TS									34% (25%, 45%)	34% (25%, 45%)	**24% (16%, 34%)**
2018 overall	38% (35%, 42%)	52% (48%, 55%)	11% (9%, 13%)	32% (27%, 38%)	40% (34%, 46%)	56% (50%, 63%)	41% (35%, 47%)	38% (32%, 44%)	34% (25%, 45%)	36% (35%, 38%)	
2018 overall – weighted	**41% (36%, 46%)**	**57% (52%, 61%)**	**12% (9%, 15%)**	**28% (21%, 35%)**	**49% (42%, 56%)**	**56% (49%, 63%)**	**40% (34%, 48%)**	**38% (32%, 46%)**	**24% (16%, 34%)**		**38% (36%, 40%)**

Notes: Colours have been used to aid in visual interpretation but do not provide any additional information. Dark purple indicates the target was reached. Light purple indicates the result was within 20 per cent of the target. White indicates the result was more than 20 per cent less than the target.

All blank cells indicate that no patients were audited.

Results in each cell include a raw estimate (or rescaled estimate for '2018 overall – weighted') and 95 per cent confidence intervals in brackets.

Patients audited from AWH have been excluded from HRICS results due to incomplete capture of the health service activity in the VAED.

'2018 overall – weighted' results have been rescaled to the population available for sampling to account for the weighted sampling method.

Supplementary materials

Appendix 1: Tumour stream groupings

Tumour stream	ICD-10-AM codes
Breast	C50
Central nervous system	C69, C70, C71, C72
Colorectal	C18, C19, C20, C21
Endocrine/thyroid	C37, C73, C74, C75
Genitourinary	C60, C61, C62, C63, C64, C65, C66, C67, C68
Gynaecological	C51, C52, C53, C54, C55, C56, C57, C58
Haematological	C81, C82, C83, C84, C85, C88, C90, C91, C92, C93, C94, C95, C96
Head & neck	C00, C01, C02, C03, C04, C05, C06, C07, C08, C09, C10, C11, C12, C13, C14, C30, C31, C32
Lung	C33, C34, C38.4, C39, C45.0
Melanoma	C43
Upper-gastrointestinal	C15, C16, C17, C22, C23, C24, C25, C26

Appendix 2: Sampling mechanism

The 2018 cancer service performance indicator audit used weighted sampling to allow for equal sampling between tumour streams and health services. This ensures that enough patients across all tumour streams and health services are audited so that reasonable conclusions can be drawn. The sampling mechanism used for this audit differs from the 2017 cancer services performance indicator audit weighting sampling, which oversampled smaller tumour streams but did not account for individual health services. Prior to the 2017 audit, simple random sampling was the method used. A minimum of 10 patients was required for a tumour stream to be eligible for audit from a campus.

Weights were assigned to each patient in the audit population based on the tumour stream they belong to and the health service they were first treated at (according to the VAED) by the following equation:

$$Weight_{i,j,k} = \frac{1}{M_{i,k}} \frac{1}{N_{i,j,k}}$$

Where:

- *i* = ICS of treatment
- *j* = campus of treatment
- *k* = tumour stream
- $M_{i,k}$ = number of campuses within ICS *i* that identified patients in tumour stream *k*
- $N_{i,j,k}$= number of patients within ICS *i*, campus *j*, and tumour stream *k*.

For example, at 'ICS X' there were four campuses that had breast cancer patients identified. Therefore, the weight calculation is as follows:

$$Weight_{ICS\ X,Campus\ y,Breast} = \frac{1}{M_{ICS\ X,Breast}} \times \frac{1}{N_{ICS\ X,Campus\ y,Breast}}$$

Campus	Total patients in target population ($N_{ICS\ X,Campus\ y,Breast}$)	Weight
A	250	$\frac{1}{4} \times \frac{1}{250}$
B	130	$\frac{1}{4} \times \frac{1}{130}$
C	110	$\frac{1}{4} \times \frac{1}{110}$
D	50	$\frac{1}{4} \times \frac{1}{50}$
Total	540	

To rescale the population for the overall ICS and tumour stream results, a rescaling multiplier was calculated for each person based on the tumour stream and campus they were treated at. These multipliers aim to rescale the sample so the results represent the population distribution and not the sampling distribution. Summing the rescaling multiplier across the entire sample will equal the same number as the number of patients sampled. Patients within tumour streams and campuses that

were oversampled will have a rescaling multiplier less than one. Those within tumour streams and campuses that were under-sampled will have a rescaling multiplier greater than one.

$$RescaleMultiplier_{i,j,k} = \frac{N_{i,j,k}}{n_{i,j,k}} \times \frac{n_i}{N_i}$$

Where:

- *i* = ICS of treatment
- *j* = campus of treatment
- *k* = tumour stream
- $N_{i,j,k}$ = number of patients in target population within ICS *i*, campus *j*, and tumour stream *k*
- $n_{i,j,k}$ = number of patients sampled within ICS *i*, campus *j*, and tumour stream *k*
- N_i = number of patients in target population within ICS *i*
- n_i = number of patients sampled within ICS *i*.

Appendix 3: Cancer service performance indicator audit population, 2018

Table A3.1: Number of patients audited within each tumour stream, by ICS, 2018

Tumour stream / ICS	NEMICS	SMICS	WCMICS	BSWRICS	GRICS	HRICS	LMICS	GICS	PICS	Statewide
Breast	73 (11%)	66 (10%)	74 (11%)	33 (13%)	73 (29%)	51 (24%)	63 (25%)	32 (13%)		465 (14%)
CNS	24 (4%)	52 (8%)	51 (8%)						24 (27%)	151 (5%)
Colorectal	71 (11%)	66 (10%)	66 (10%)	39 (15%)	62 (24%)	53 (25%)	40 (16%)	35 (14%)		432 (13%)
Endocrine/thyroid	38 (6%)	38 (6%)	50 (8%)							126 (4%)
Genitourinary	74 (11%)	66 (10%)	67 (10%)	30 (12%)	31 (12%)	42 (20%)	43 (17%)	36 (14%)		389 (12%)
Gynaecological	56 (9%)	58 (9%)	56 (8%)	17 (7%)	4 (2%)		7 (3%)	21 (8%)		219 (7%)
Haematological	66 (10%)	64 (10%)	63 (9%)	32 (12%)	27 (11%)	23 (11%)	23 (9%)	28 (11%)	36 (40%)	362 (11%)
Head & neck	42 (6%)	61 (9%)	60 (9%)	21 (8%)				12 (5%)		196 (6%)
Lung	75 (12%)	69 (10%)	66 (10%)	29 (11%)	31 (12%)	2 (1%)	27 (11%)	29 (12%)		328 (10%)
Melanoma	61 (9%)	63 (9%)	48 (7%)	29 (11%)	15 (6%)	30 (14%)	27 (11%)	27 (11%)		300 (9%)
Paediatric solid tumour									30 (33%)	30 (1%)
UGI	72 (11%)	64 (10%)	64 (10%)	27 (11%)	13 (5%)	12 (6%)	20 (8%)	30 (12%)		302 (9%)
Total	652	667	665	257	256	213	250	250	90	3,300

Percentages are calculated as a percentage of the number of patients within the ICS, allowing for comparison between ICS.

Appendix 4: Abbreviations

Table A4.1: Victorian integrated cancer services names in full

Abbreviated name	Integrated cancer service name in full
NEMICS	North Eastern Melbourne Integrated Cancer Service
SMICS	Southern Melbourne Integrated Cancer Service
WCMICS	Western and Central Melbourne Integrated Cancer Service
BSWRICS	Barwon South Western Regional Integrated Cancer Service
GRICS	Gippsland Regional Integrated Cancer Services
HRICS	Hume Regional Integrated Cancer Service
LMICS	Loddon Mallee Integrated Cancer Service
GICS	Grampians Integrated Cancer Service
PICS	Paediatric Integrated Cancer Service

Table A4.2: Tumour stream names in full

Abbreviated name	Tumour stream name in full
CNS	Central nervous system
UGI	Upper gastrointestinal

Table A4.3: Other abbreviations

Abbreviated name	Name in full
CSPI	Cancer services performance indicators
ECOG	Eastern Cooperative Oncology Group
GP	general practitioner
ICS	Integrated Cancer Services
MDM	multidisciplinary meeting
VAED	Victorian Admitted Episodes Dataset
VCR	Victoria Cancer Registry