Head & Neck Cancer Care in Victoria

Towards optimal care

Mr Stephen Tudge
Head & Neck Cancers Summit working party

**Chairs:**
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Mr David Deutscher
Dr Tsien Fua
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**Aim:**
- Identify variations in care
- Starting point for discussion
- Statewide perspective

**Data analysis:**
CCV / DHHS
Ella Stuart
Dr Luc te Marvelde

**Victorian Tumour Summits project team:**
Luellen Thek
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Rebecca Miller
Amy Sercombe
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In this presentation

- Characteristics of head & neck cancer population
- Incidence and survival
- Volumes of surgery and RT
- Patient movement across ICS
- Treatment planning
- Timeliness to treatment
- Treatment utilisation and survival for oral cavity cancer and oropharynx and base of tongue cancer
Head & Neck Cancers Optimal Care Pathway (OCP)

- Prevention and early detection
- Presentation, initial investigations and referral
- Diagnosis, staging and treatment planning
- Treatment
- Care after initial treatment and recovery
- Managing recurrent and residual disease
- End-of-life care
**Linked data sources**

- Victorian Cancer Registry (VCR) 2012 – 2016
- Hospital in-patient data (VAED)
- Radiotherapy data (VRMDS)
- National/Victorian Death Index

**Unlinked data sources**

- Cancer Services Performance Indicator (CSPI) medical record audit 2017
- Malnutrition in Victorian Cancer Services Point Prevalence Study 2016

*Data linkage performed by The Centre for Victorian Data Linkage*
Features of linked cancer dataset

- Statewide data - reliable linkage program
- Population level outcomes - offers general indicative patterns
- Limitations:
  - Does not identify out of hospital care
  - Relies on hospital coding
  - Currently lacks specific disease features (e.g. staging, HPV)
  - Use of proxy for stage (distant metastases / no distant metastases)
  - Hume RICS – no surgery or chemotherapy data for patients treated in Albury (NSW)
Incidence, Demographics & Survival
Incidence of head & neck cancers is decreasing

Data source - http://vcrdata.cancervic.org.au
Incidence of oropharynx and base of tongue cancers is increasing

Data source: VCR 2008-2016
Head & neck cancer patient demographics and tumour groups (2012 - 2016)

<table>
<thead>
<tr>
<th>Number of head and neck cancers</th>
<th>3,823</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age at diagnosis (Median)</td>
<td>65 years</td>
</tr>
<tr>
<td>Male (%)</td>
<td>71%</td>
</tr>
</tbody>
</table>

O/U - other/unspecified; C07 - excludes cutaneous SCC metastatic to parotid gland; Data source: VCR 2012-2016
Proportion of patients with lymph node or metastatic cancer codes within 4 months diagnosis (2012 - 2016)

<table>
<thead>
<tr>
<th>Group*</th>
<th>Oral cavity C02**-C06</th>
<th>Salivary gland C07, C08</th>
<th>Oropharynx C01, C02.4, C09, C10</th>
<th>Nasopharynx C11</th>
<th>Hypopharynx C12, C13</th>
<th>Larynx C32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lymph node negative</td>
<td>924 (71%)</td>
<td>285 (71%)</td>
<td>301 (29%)</td>
<td>65 (36%)</td>
<td>67 (37%)</td>
<td>584 (80%)</td>
</tr>
<tr>
<td>Lymph node positive</td>
<td>294 (23%)</td>
<td>75 (19%)</td>
<td>624 (60%)</td>
<td>78 (43%)</td>
<td>92 (51%)</td>
<td>110 (15%)</td>
</tr>
<tr>
<td>Distant metastases</td>
<td>77 (6%)</td>
<td>44 (11%)</td>
<td>110 (11%)</td>
<td>38 (21%)</td>
<td>21 (12%)</td>
<td>34 (5%)</td>
</tr>
</tbody>
</table>

*Based on hospital data
**Excluding C02.4
Data source: VCR and VAED 2012-2016
Head & neck cancer survival in Victoria (2012 - 2016)

Data source: VCR 2012-2016

<table>
<thead>
<tr>
<th>Cancer group</th>
<th>1-year survival % (95% CI)</th>
<th>5-year survival % (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral cavity</td>
<td>83.5 (81.5 - 85.6)</td>
<td>62.7 (59.4 - 66.2)</td>
</tr>
<tr>
<td>Salivary gland</td>
<td>89.7 (86.8 - 92.7)</td>
<td>70.1 (64.4-76.2)</td>
</tr>
<tr>
<td>Oropharynx</td>
<td>86.1 (84.0 - 88.3)</td>
<td>69.1 (65.6 - 72.8)</td>
</tr>
<tr>
<td>Nasopharynx</td>
<td>88.8 (84.2 - 93.5)</td>
<td>62.6 (54.3 - 72.2)</td>
</tr>
<tr>
<td>Hypopharynx</td>
<td>67.6 (61.0 - 74.9)</td>
<td>33.6 (25.4 - 44.4)</td>
</tr>
<tr>
<td>Larynx</td>
<td>82.5 (79.7 - 85.3)</td>
<td>57.9 (53.1 - 63.1)</td>
</tr>
<tr>
<td><strong>All Head and Neck</strong></td>
<td><strong>84.2 (83.0 - 85.4)</strong></td>
<td><strong>62.8 (60.9 - 64.9)</strong></td>
</tr>
</tbody>
</table>
Integrated Cancer Services (ICS) and head & cancer treatment campuses 2016-17

*Hume data limitation
Includes campuses that treated 3 or more patients
Radiotherapy and surgery volume

Data source: VAED 2016 and 2017
Victorian radical RT volume for head & neck cancers (2016 - 2017) (N = 590)

Data source: VRMDS 2016 and 2017
Patient movement across ICS

*Excludes patients with distant metastases at diagnosis
## Patient flow for surgery: head & neck cancers (2012 - 2016) (N = 1,936)

### Data source: VCR, VAED 2012-2016

<table>
<thead>
<tr>
<th>ICS of residence</th>
<th>NEMICS</th>
<th>SMICS</th>
<th>WCMICS</th>
<th>BSWRICS</th>
<th>GRICS</th>
<th>HRICS</th>
<th>LMICS</th>
<th>GICS</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEMICS</td>
<td>200 (44%)</td>
<td>62 (14%)</td>
<td>197 (43%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>459 (100%)</td>
</tr>
<tr>
<td>SMICS</td>
<td>15 (3%)</td>
<td>368 (70%)</td>
<td>144 (27%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>527 (100%)</td>
</tr>
<tr>
<td>WCMICS</td>
<td>37 (9%)</td>
<td>25 (6%)</td>
<td>359 (85%)</td>
<td>3 (1%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>424 (100%)</td>
</tr>
<tr>
<td>BSWRICS</td>
<td>2 (1%)</td>
<td>1 (1%)</td>
<td>12 (8%)</td>
<td>126 (89%)</td>
<td></td>
<td></td>
<td></td>
<td>1 (1%)</td>
<td>142 (100%)</td>
</tr>
<tr>
<td>GRICS</td>
<td>6 (5%)</td>
<td>59 (47%)</td>
<td>49 (39%)</td>
<td>2 (2%)</td>
<td>10 (8%)</td>
<td></td>
<td></td>
<td></td>
<td>126 (100%)</td>
</tr>
<tr>
<td>HRICS *</td>
<td>10 (16%)</td>
<td>8 (13%)</td>
<td>35 (56%)</td>
<td></td>
<td></td>
<td>10 (16%)</td>
<td></td>
<td></td>
<td>63 (100%)</td>
</tr>
<tr>
<td>LMICS</td>
<td>3 (3%)</td>
<td>5 (5%)</td>
<td>59 (55%)</td>
<td></td>
<td>33 (31%)</td>
<td>8 (7%)</td>
<td></td>
<td></td>
<td>108 (100%)</td>
</tr>
<tr>
<td>GICS</td>
<td>2 (2%)</td>
<td>3 (3%)</td>
<td>24 (28%)</td>
<td>7 (8%)</td>
<td>1 (1%)</td>
<td>50 (57%)</td>
<td></td>
<td></td>
<td>87 (100%)</td>
</tr>
</tbody>
</table>

### 60% of patients had surgery locally

*Hume data limitation

- ≤ 9%
- 10% - 29%
- 30% - 49%
- 50% - 69%
- 70% - 89%
- ≥ 90%

Data source: VCR, VAED 2012-2016
Patient flow for radical radiotherapy: head & neck cancers (2012 - 2016) (N = 1,986)

<table>
<thead>
<tr>
<th>ICS of residence</th>
<th>ICS of radiotherapy campus</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NEMICS</td>
</tr>
<tr>
<td>NEMICS</td>
<td>200 (44%)</td>
</tr>
<tr>
<td>SMICS</td>
<td>5 (1%)</td>
</tr>
<tr>
<td>WCMICS</td>
<td>39 (10%)</td>
</tr>
<tr>
<td>BSWRICS</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>GRICS</td>
<td>2 (2%)</td>
</tr>
<tr>
<td>HRICS *</td>
<td>8 (9%)</td>
</tr>
<tr>
<td>LMICS</td>
<td>1 (1%)</td>
</tr>
<tr>
<td>GICS</td>
<td>2 (2%)</td>
</tr>
</tbody>
</table>

52% of patients had radiotherapy locally

*Hume data limitation

Data source: VCR, VAED, VRMDS 2012-2016
Treatment planning
Documented multidisciplinary team meeting in the patient’s central medical record (2017) (N = 215)

Data source: CSPI medical record audit 2017. Bars - 95% CI. Data limitation - The CSPI audit includes all public hospitals and few private hospitals.

Difference between ICS: P-value <0.001
Proportion of patients who had a prospective multidisciplinary team meeting (2017) (N = 184)

Data source: CSPI medical record audit 2017. Bars - 95% CI. Data limitation - The CSPI audit includes all public hospitals and few private hospitals.
Timeliness of treatment

*Excludes patients with distant metastases at diagnosis
Optimal Care Pathway timeframes

Initial referral → 2 weeks → First specialist appointment → 2 weeks → MDM / decision to treat → 2 weeks → Treatment
- Radiotherapy as primary treatment with palliative intent

MDM / decision to treat → 4 weeks → Treatment
- Surgery, chemotherapy or radiotherapy as primary treatment with curative intent

Treatment post surgery Adjuvant radiotherapy

Linked data timeliness dates

Diagnosis date

Treatment Surgery admission date

Treatment post surgery Adjuvant radiotherapy/chemo-radiation start date

Treatment Definitive radiotherapy/chemo-radiation start date
Overall 93% of head and neck cancer patients underwent surgery within 8 weeks of diagnosis

- 92% of regional patients treated in regional campuses
- 90% of regional patients treated in metro campuses
- 93% of metro patients treated in metro campuses

Time from diagnosis to first treatment - surgery (2012 - 2016) (N = 1,860)

*Hume data limitation

Data source: VCR, VAED, VRMDS 2012-2016
Time from diagnosis to first treatment - definitive RT/CRT (2012 - 2016) (N = 853)

- Overall 77% of head and neck cancer patients started definitive RT/CRT within 8 weeks of diagnosis
  - 66% of regional patients treated in regional campuses
  - 76% of regional patients treated in metro campuses
  - 80% of metro patients treated in metro campuses

*Hume data limitation

Data source: VCR, VAED, VRMDS 2012-2016
Time from surgery to adjuvant RT/CRT (2012 - 2016) (N = 816)

- 37% (302/816) of head and neck cancer surgery patients started adjuvant RT/CRT within 6 weeks.
- The proportion increased from 25% in 2012 to 45% in 2016.

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*Hume data limitation

Data source: VCR, VAED, VRMDS 2012-2016
Adjuvant RT/CRT within 6 weeks of surgery by surgery campus (2012 - 2016) (N = 816)

Data source: VCR, VAED, VRMDS 2012-2016
Emergency admissions following radiotherapy

*Excludes patients with distant metastases at diagnosis
Emergency admissions to hospital in the 12 weeks following radical radiotherapy: head & neck cancers (2012-2016)

Radiotherapy only (n = 862)

Chemo-radiation (n = 1124)

Data source: VCR, VAED, VRMDS 2012-2016
Malnutrition

Bars - 95% CI.
Data source: Malnutrition in Victorian Cancer Services Point Prevalence Study 2016
Public health services: 10 metropolitan, 2 regional

Statewide malnutrition prevalence for all tumour streams 23%
Difference between ICS: P-value 0.417
Percentage of patients receiving dietetics care: head & neck cancers (2016) (N = 109)

Difference between ICS: P-value 0.098

Bars - 95% CI
Data source: Malnutrition in Victorian Cancer Services Point Prevalence Study 2016
Public health services: 10 metropolitan, 2 regional
Oral cavity cancer: treatment and survival

*Excludes patients with distant metastases at diagnosis
Treatment pathways for oral cavity cancer

Deaths measured at one year post diagnosis. Data source: VCR, VAED, VRMDS 2012-2016
Utilisation of neck dissections and adjuvant RT/CRT for surgical patients: oral cavity cancer (N = 916)

<table>
<thead>
<tr>
<th>ICS of surgery</th>
<th>Lymph node negative</th>
<th>Lymph node positive</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Neck dissection n/N (%)</td>
<td>Adj. RT/CRT n/N (%)</td>
</tr>
<tr>
<td>NEMICS</td>
<td>12/84 (14%)</td>
<td>17/84 (20%)</td>
</tr>
<tr>
<td>SMICS</td>
<td>37/173 (21%)</td>
<td>38/173 (22%)</td>
</tr>
<tr>
<td>WCMICS</td>
<td>89/339 (26%)</td>
<td>85/339 (25%)</td>
</tr>
<tr>
<td>BSWRICS</td>
<td>5/47 (11%)</td>
<td>4/47 (9%)</td>
</tr>
<tr>
<td>GRICS</td>
<td>0/3 (0%)</td>
<td>0/3 (0%)</td>
</tr>
<tr>
<td>HRICS*</td>
<td>0/4 (0%)</td>
<td>0/4 (0%)</td>
</tr>
<tr>
<td>LMICS</td>
<td>2/18 (11%)</td>
<td>1/18 (6%)</td>
</tr>
<tr>
<td>GICS</td>
<td>2/25 (8%)</td>
<td>6/25 (24%)</td>
</tr>
<tr>
<td>Victoria</td>
<td>147/693 (21%)</td>
<td>151/693 (22%)</td>
</tr>
</tbody>
</table>

*Hume data limitation

Data source: VCR, VAED 2012-2016
No difference in survival by ICS of surgery: oral cavity cancer

**Lymph node negative (N = 693)**

- ICS of surgery
  - NEMICS
  - SMICS
  - WCMICS
  - BSRWICS
  - GRICS + HRICS

**Lymph node positive (N = 222)**

- ICS of surgery
  - NEMICS
  - SMICS
  - WCMICS
  - BSRWICS

Difference between ICS: P-value **0.638**. Adjusted for age, sex, comorbidities

Difference between ICS: P-value **0.598**. Adjusted for age, sex, comorbidities

Data source: VCR, VAED 2012-2016
Oropharynx & base of tongue cancer: treatment and survival

*Excludes patients with distant metastases at diagnosis
Treatment pathways for oropharynx and base of tongue cancer

Deaths measured at one year post diagnosis. Data source: VCR, VAED, VRMDS 2012-2016
Survival by treatment group: oropharynx & base of tongue cancer (N = 796)

Data source: VCR, VAED, VRMDS 2012-2016
Survival by treatment group for patients ≤ 70 years: oropharynx & base of tongue cancer (N = 654)

Data source: VCR, VAED, VRMDS 2012-2016

Difference between RT and other treatment groups: P-value 0.002
No difference in survival by ICS of CRT: oropharynx & base of tongue cancer (N = 445)

*ICS with <10 patients not included (GRICS=1; HRICS=2)

Data source: VCR, VAED, VRMDS 2012-2016
In summary, what we know

- Head and neck cancer age standardised incidence rates in Victoria have decreased since 1986.
- The majority of patients had primary surgery (93%) or radiotherapy (77%) within 8 weeks of diagnosis.
- No difference in survival between ICS of surgery for oral cavity cancer.
- No difference in survival between ICS of chemo-radiation for oropharynx and base of tongue cancer.
Variations in data

1. Many centers provide treatment for less than 10 patients per year (39 surgical, 12 radiotherapy)

2. Many patients have treatment outside their ICS of residence

3. There was variation in the proportion of patients with evidence of an MDM discussion of their treatment, with lower rates in Barwon & South Western and Loddon Mallee ICS
Variations in data

4. Fewer regional patients treated locally (66%) start their radiotherapy within 8 weeks of diagnosis than regional patients treated in metro (76%) and metro patients treated in metro centers (80%)

5. Of all patients having adjuvant radiotherapy, only 37% started within 6 weeks of surgery, with lower rates in Barwon & South Western and Grampians ICS and in 1 metro and 1 regional center
Variations in data

6. The proportion of patients receiving dietetic care may be lower in regional treatment centers

7. There was poorer survival for oropharyngeal and base of tongue cancer patients who were treated with radiotherapy only compared to other treatment types
Variations we would like to know about

- What is the patient experience of care?
- HPV status and cancer stage (data issue)
- What is the concordance between MDM recommendation and treatment given?
- Do lower volume centres have the service capability for managing complex patients (e.g., specialist dietetics and speech pathology)?
Acknowledgments

Big thanks for data:
Kathryn Whitfield - CSPI Audit
Data custodians of the VCR, VAED, VRMDS, VDI
Centre for Victorian Data Linkage (CVDL) - DHHS
Jane Harrowfield - Malnutrition in Victorian Health Services Point Prevalence Study

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Victorian Integrated Cancer Services
DHHS Cancer Strategy & Development