Developing Clinical Costing Capacity for Activity Based Funding
Melbourne Health

- Major metropolitan tertiary health service.
- Main site is Royal Melbourne Hospital.
- Includes Royal Park, a rehabilitation and sub acute facility.
- Northwestern mental health co-located campuses.
- Over 80,000 inpatient services in 13/14.
- One of the two major trauma centres in Victoria.
- More than 8,000 staff employed across 33 sites.
- About 1,400 beds across north western Melbourne.
- More than 800 staff involved in clinical research across all disciplines.
- RMH co-located with the Royal Women’s hospital and situated in the health precinct adjacent to Melbourne University, The Royal Children’s Hospital and the new Peter MacCallum Cancer Centre.
Costed Activity in 2013/14

- 909,273 episodes were costed.
- $841 million dollars allocated to these episodes.
What is Clinical Costing?

- All expenses which are part of Health Service Agreement funding must be allocated to the most appropriate patient level hospital activity.

- Integration of hospital feeder system data is linked to episode data from the hospital PAS so that patient costs can be allocated using actual service volumes (e.g. actual pathology tests, minutes in theatre, expenditure on prostheses etc.).

- The sum of all services utilised by a patient during their episode becomes the cost of that episode. This includes indirect costs from the non-patient general ledger cost centres (e.g. IT, Payroll, etc.).

- Health services must comply with the Australian Hospital Patient Costing Standards and with the business rules set by the relevant state authority for processing and reporting costs.
Calculation

Indirect Cost Centre $ → Direct Cost Centres
(Examples: Cleaning = floor space, Payroll = Headcount)

Direct Cost Centre $ → Patient Services
(Examples: Imaging = CMBS fee, Nursing = Ward minutes)

<table>
<thead>
<tr>
<th>Total Ward Costs</th>
<th>$3,175,287</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Episodes</td>
<td>1,646</td>
</tr>
<tr>
<td>Total Ward Minutes</td>
<td>10,475,370</td>
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</table>

<table>
<thead>
<tr>
<th>Episode 123</th>
<th>14,003</th>
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</thead>
<tbody>
<tr>
<td>% of Total Ward Time</td>
<td>0.1337%</td>
</tr>
<tr>
<td>% of Total Ward Costs</td>
<td>$4,244.58</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Total Imaging Operating Costs</th>
<th>$20,000,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Tests</td>
<td></td>
</tr>
<tr>
<td>Total MBS Fees</td>
<td>15,000,000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>57703 SHOULDER OR SCAPULA ®</th>
<th>54</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of Total MBS Fees</td>
<td>0.0004%</td>
</tr>
<tr>
<td>% of Fees x % of Operating Costs</td>
<td>$72.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Length of Stay</th>
<th>9.7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ward Cost per Bedday</td>
<td>$436.49</td>
</tr>
<tr>
<td>Ward Cost per Minute</td>
<td>$0.30</td>
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</table>
Why use Clinical Costing?

- Compliance with state submissions and NHCDC.
- Providing data for clinical research papers.
- Supporting business cases and decision support functions.
- Routine management reporting.
- Benchmarking with other hospitals.
- Influencing funding for specific activity, e.g. market share DRGs.
- Understanding the full resource consumption in the patient journey.
- All of the above.
Building Costing Capacity

- Recruiting and retaining staff.
  - Skills needed include accounting, casemix and IT.
  - Career path is uncertain.
- Understand the organisation and its complexities.
- Identify patient activity and map out clinical pathways.
- Identify data sources.
- Assemble coded/classified activity.
- Integrate data sources.
- Understand general ledger and accounting practices for costs and revenue.
- Develop a costing methodology in line with standards.
- Apply costing algorithms.
Developing Costing Capacity

- Map results to standard reporting structures.
- Incorporate revenue and allocate to the patient level.
- Develop standard internal reports.
- Develop interactive BI tools.
- Support ad hoc reporting and support internal decision making.
- Develop a strategic understanding of costs and the funding environment.
- Integrate clinical costing with other reporting and management processes.
Improving the Results

- Patient level costing versus cost modelling.
- Cost data exists on a continuum between exact measures and high level weights.
- Clinical costing versus bottom up costing.

Outpatient Costing Project:
- Extract all outpatient clinic attendances.
- Match to the clinic templates for booking appointments.
- Match total and direct costs from the costing system.
- Build bottom up costing with Finance.
- Compare results.
- Explain differences, e.g. utilisation rates.
- Build into ongoing reporting.
## Comparing Results

<table>
<thead>
<tr>
<th></th>
<th>AHOTMON</th>
<th>ORTHFRI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinic_Code</td>
<td>AHOTMON</td>
<td>ORTHFRI</td>
</tr>
<tr>
<td>Clinic_Description</td>
<td>Allied OT Monday</td>
<td>Orthopaedic Fracture</td>
</tr>
<tr>
<td>TotalAttendances</td>
<td>515</td>
<td>53</td>
</tr>
<tr>
<td>Duration</td>
<td>20,287</td>
<td>5,453</td>
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</table>

| Vacs_Code   | 604              | 310              |
| Vacs_Name   | Occupational therapy | Orthopaedics |
| Clinic_Purpose | Allied VACS      | Medical VACS    |
| Total VACSWeight | 515              | 57.134           |

| Tier2Code   | 40.06            | 20.29            |
| Tier2Description | Occupational Therapy | Orthopaedics     |
| FundingType  | ABF              | ABF              |
| AssignedTier2Weight | 13.9565          | 2.65             |

| VACS_Funding | $33,475 | $10,513 |
| NWAU_Funding | $69,894 | $13,271 |

| AllocatedRevenue | $30,731 | -$21,893 |
| TotalCost        | $68,834 | $19,698 |
| DirectCost       | $59,898 | $16,659 |
| Bottom Up Cost   | $55,841 | $15,874 |

| VACS Result     | -$35,359 | -$9,186 |
| NWAU Result     | $1,060   | -$6,427 |

| VACS per clinic | -$68.66 | -$173.32 |
| NWAU per clinic | $2.06   | $121.27 |
Educating the Audience

- Costing for management.
- Costing for clinical engagement.
- Detail versus performance.
- Retrospective versus real time.
- Cost versus activity.
- Presenting the results...
The Organisation
Episodes
Utilisation

Clinical Costing

Inpatients

Patient Pathway Chart

Total Revenue: $0.00
Total Cost: $0.00
Surplus/(Loss): ($0.00)

Length of Stay

No. of Episodes: 10
Total LOS: 110 days
Average LOS: 11 days
Min LOS: 1 day
Max LOS: 3 days
Median LOS: 1 day

Costs by Buckets

Patient Utilisation

- Total Cost: $17,594
Clinical Engagement

- Costing everything, not just what is reportable.
- Full transparency: show all allocations, including aggregates.
- Mental health costing:
  - Melbourne Health received seed money to cost mental health.
  - Difficulties were found tracking patients.
  - Overlapping hospital catchments risked duplicating episodes.
  - Lack of ECT details.
  - Feeder data not available for some patients.
  - All was costed and submitted.
  - Feedback from Northwestern Mental Health Executive was positive.
  - Methodology shared with other hospitals.
  - Process is still maturing.

- Partnering with other projects...
Identifying Patient Pathways

Referral
- Patient referred to hospital
  - Initial contact with patient
  - R: Transplant Coordinator
  - V: By mail
  - E: None

Has the patient completed initial work up elsewhere?
- Yes
  - Referral
- No
  - Referred to hospital

Patient referred to hospital
- Initial contact with patient
  - R: Transplant Coordinator
  - V: By mail
  - E: None

Other Health Investigations/Changes (As Required)
- Other unit investigation EG: Cardiology
  - R: Other specialist
  - V: Other clinic
  - E: Various
  - 45 min

Other tests required
- R: Other specialist
  - V: Other clinic
  - E: Various
  - 40 min

Patient Behavioural Changes
- Weight target
  - Quit Smoking
  - Other complications
  - R: Social worker nutritionist
  - V: TBC
  - E: None
  - 45 min

Other Health Investigations/Changes (As Required)
- Health Power
  - R: Other specialist
  - V: Other clinic
  - E: Various
  - IPM

Final assessment
- R: Nephrologist
  - V: Renal clinic
  - E: None
  - 30 min

Assessment complete

Transplant Assessment
- R: Nephrologist
  - V: Renal Clinic
  - E: None
  - 90 min

Initial Medical Assessment
- R: Doctor
  - V: Renal clinic
  - E: None
  - 15 min

Initial Surgical Assessment
- R: Surgeon
  - V: Renal Clinic
  - E: None
  - 90 min

Renal Clinic Assessment/Reviews (As Required)
- IPM

Has there been a major clinical event?
- Yes
  - Clinical group meeting
    - R: 4 Nephrologists
    - 3 Surgeries
    - 1 Transplant coord
    - 1 Social worker
    - V: Renal Dept
    - E: None
    - 30 min

Is a clinical meeting required?
- Yes
  - Clinical group meeting
- No
  - Education session
    - R: Transplant Coordinator
    - R: Surgeon
    - V: Charles Latrobe
    - E: None
    - 130 Min

Is the patient potentially suitable?
- Yes
  - Education session
- No
  - Referred to hospital

Is patient suitable for transplant?
- Yes
  - Education session
- No
  - Referred to hospital

Has patient been waiting longer than two years?
- Yes
  - Patient on organ waiting list
    - Wait time commences start date of dialysis
    - R: Transplant Coordinator
    - R: Nephrologist
    - R: Surgeon
    - R: Other req
    - V: TBC
  - IPM

Is an organ available?
- Yes
  - Final assessment
- No
  - Referral

Kestral
Costing Patient Pathways

Referral

- Patient referred to hospital
  - Initial contact with patient
    - R: Transplant Coordinator
    - V: By mail
    - E: None

Has patient completed initial work up elsewhere?

- Yes
  - Patient completes required tests
    - Pathology
    - Imaging
    - R: Pathology nurse
    - V: Pathology
    - E: None

- No
  - Referral

Renal Clinic Assessment/Reviews (As Required)

- Transplant Assessment
  - R: Nephrologist
  - V: Renal Clinic
  - E: None
  - 40 min

- Initial Medical Assessment
  - R: Doctor
  - V: Renal Clinic
  - E: None
  - 30 min

- Initial Surgical Assessment
  - R: Surgeon
  - V: Renal Clinic
  - E: None
  - 60 min

Has there been a major clinical event?

- Yes
  - Has patient been waiting longer than two years?
    - Yes
      - Patient on organ waiting list
        - Wait time commences start date of dialysis
          - R: Transplant Coordinator
          - V: Nephrologist
          - E: None
          - R: Surgeon
          - E: None
          - V: TBC
      - No
        - Final assessment
          - R: Nephrologist
          - V: Renal Clinic
          - E: None
          - 500

    - No
      - Is an organ available?
        - Yes
          - Final assessment
          - R: Nephrologist
          - V: Renal Clinic
          - E: None
          - 500

      - No
        - Is a live donor available?
          - Yes
            - Final assessment
            - R: Nephrologist
            - V: Renal Clinic
            - E: None
            - 500
          - No
            - Final assessment
            - R: Nephrologist
            - V: Renal Clinic
            - E: None
            - 500

Other Health Investigations/Changes (As Required)

- Other unit investigation EG Cardiology
  - R: Other specialist
  - V: Other clinic
  - E: Various
  - 60 min
  - $200 - $3,000

- Other Tests Required
  - R: Other specialist
  - V: Other clinic
  - E: Various
  - 45 min
  - $500

- Patient Behavioural Changes
  - Weight target
  - Quit Smoking
  - Other complications
    - R: Social worker
    - V: Nutritionist
    - E: TBC
  - 45 min
  - $85

Final assessment

- R: Nephrologist
- V: Renal Clinic
- E: None
- 500

Assessment complete

- R: Nephrologist
- V: Renal Clinic
- E: None
- 500

- IPM
- 30 min
- $375

- Health Power
- 30 min
- $31,500
Gaining Acceptance

- Timeliness: “how soon after discharge can we see the costs?”
- Showing the full patient pathway.
- Engage users to help improve the data.
- Do not use it to penalise or punish.
- Drilling into the data to find the real costs:
  - Increasing the costs: The high cost drug basiliximab was being provided to patients out of ward stock and not allocated directly to the patient in the costing system. Showing the detailed utilisation to clinicians identified the problem.
  - Readmissions: Low cost or profitable DRGs can sometimes result in a readmission under a different high cost DRG.
  - Doctor attribution: many systems will allow the head of the medical unit to be the default attending clinician.
Peer Comparisons

Summary Clinical Costing

Patient Cost Breakdown

Total Cost
$159,946,824

12 months trend

Pharmacy
$12.31m
7.7%

Imaging
$9.51m
5.9%

Pathology
$18.55m
11.6%

PBS
$11.43m
7.1%

Act vs Avg Costs - 19,150 Procedures

Peer Comparison - Melbourne Health
Adding Value with Revenue

- Leveraging the value of the cost data.
- Allocating at the episode level is important.
- Calculating the revenue is relatively simple technically.
- Identifying patient targets for some revenue streams is difficult.
- Comparing funding streams subject to recall.
- Incorporating billing extracts for improved accuracy.
Improving Performance

- Improving clinical costing’s data sources inevitably improves the hospital’s performance.
- Improved data capture in outpatients has improved patient flow, clinic planning and more accurate clinical costing.
- Some process issues can be fixed along the way, e.g. pathology ticketing system devised to manage queuing and improve patient experiences.
- Involving clinical costing from the start of system implementation will deliver information needs at a lower cost than retrofitting the system later for reporting.
- Looking at data from the patients’ perspective can reveal hidden issues, e.g. patient ICD procedure codes used to audit unrecorded prostheses.
Understanding Cost Changes

- What to look for if the costs surprise you:
  - Cost per bedday.
  - ICU time.
  - Theatre costs or return to theatre.
  - High cost prostheses.
  - Expensive drugs.
  - Change in costing setup, methodology?
  - Change in coding or clinical practice?
Cost Trends
Benchmarking
Future Challenges

- Tracking activity with technology, e.g. RF tagging, GPS?
- EMR? A clinical incentive for better data.
- Medical precincts and shared services will increase the complexity of data integration.
- Aligning clinical needs with financial needs: new technology should meet the needs of both.
- “Where, in the funding rules, does it say I have to give you that data?”