Over 150 potentially low-value health care practices: an Australian study

Internationally, there is a groundswell of activity seeking to identify and reduce the use of health care interventions that deliver marginal benefit, be it through overuse, misuse or waste. England’s National Institute for Health and Clinical Excellence (NICE) began this work in 2005,1 and most recently, the Choosing Wisely campaign led by physician groups in the United States is attracting worldwide attention.2 Other countries, and individual jurisdictions within countries, are also considering the best approaches to reducing the use of low-value health care practices. One problem has been fairness and transparency in identifying and prioritising suboptimal health care practices for consideration. Here, we report on Australian activities; in particular, on a collaborative project aiming to identify existing health care interventions that might warrant analysis from a health technology reassessment and practice optimisation perspective.

Australia’s Medicare Benefits Schedule (MBS) — a cornerstone of the Australian universal health care system — lists the rebates that are payable to patients for private medical services provided on a fee-for-service basis, and describes these services. In 2012, the MBS contains almost 6000 items (not including pharmaceuticals); only around 3% of these (accounting for about 1% of total MBS expenditure) have been formally assessed against contemporary evidence of safety, effectiveness and cost-effectiveness.3

In the 2009–10 Budget, the Australian Government announced funding over 2 years for a range of projects to develop and implement a new evidence-based MBS Quality Framework — subsequently named the Comprehensive Management Framework for the MBS (CMF)3 — for managing the MBS into the future. The CMF set out to establish new listing, fee-setting and review mechanisms to ensure that prospective and already listed items: (i) meet agreed standards for effectiveness and safety; (ii) are likely to lead to improved health outcomes for patients; and (iii) represent value for money. The CMF is consistent with international efforts to maximise health outcomes and efficiency. CMF reform sought to improve transparency and provide a stronger evidence base for services listed on the MBS. Box 1 lists the key elements and principles of the framework.

Before the initial Quality Framework was introduced on 1 January 2010, there was no formal process for evaluating existing MBS items that had not been assessed by the Medical Services Advisory Committee (MSAC). Without formalised reviews or a built-in method to update MBS items as clinical practice evolves, items on the MBS have become outdated. Thus, patients may receive treatments that have not been proven to be clinically effective, and financial incentives within the MBS may not always be aligned with best clinical practice.

A universal challenge in this area is to establish a systematic and transparent strategy to identify potential “low-value” clinical services for review.4-7 Traditional literature search strategies for “unsafe or ineffective care” offer limited utility in isolation.4 In this report, we describe one CMF project that used a range of information sources to identify items for review through an expanded “environmental scanning” approach. The 2-year CMF timeline dictated an expedited process. This work was developed and undertaken over 8 months in the financial year 2010–11.

Abstract

Objective: To develop and apply a novel method for scanning a range of sources to identify existing health care services (excluding pharmaceuticals) that have questionable benefit, and produce a list of services that warrant further investigation.

Design and setting: A multiplatform approach to identifying services listed on the Australian Medicare Benefits Schedule (MBS; fee-for-service) that comprised: (i) a broad search of peer-reviewed literature on the PubMed search platform; (ii) a targeted analysis of databases such as the Cochrane Library and National Institute for Health and Clinical Excellence (NICE) “do not do” recommendations; and (iii) opportunistic sampling, drawing on our previous and ongoing work in this area, and including nominations from clinical and non-clinical stakeholder groups.

Main outcome measures: Non-pharmaceutical, MBS-listed health care services that were flagged as potentially unsafe, ineffective or otherwise inappropriately applied.

Results: A total of 5209 articles were screened for eligibility, resulting in 156 potentially ineffective and/or unsafe services being identified for consideration. The list includes examples where practice optimisation (ie, assessing relative value of a service against comparators) might be required.

Conclusion: The list of health care services produced provides a launchpad for expert clinical detailing. Exploring the dimensions of how, and under what circumstances, the appropriateness of certain services has fallen into question, will allow prioritisation within health technology reassessment initiatives.
Key elements and principles of the Comprehensive Management Framework for the Medicare Benefits Schedule (MBS)

**Elements**
- Introducing a time-limited listing for new MBS items that do not undergo an assessment through the Medical Services Advisory Committee
- Requiring an evaluation process for all time-limited items at the end of the time-limited period and before items can be approved for long-term MBS listing, as well as evaluation of amendments made to MBS items
- Strengthening arrangements for appropriately setting fees for new MBS services
- Establishing systematic MBS monitoring and review processes to inform appropriate amendment or removal of existing MBS items

**Principles**
- Processes will focus on using evidence to support best outcomes for patients
- Processes will be timely, transparent and offer opportunity for stakeholder participation
- Conflicts of interest will be addressed and actively managed
- Continuous improvement techniques will be applied, and feedback mechanisms will be embedded in processes to foster a quality-improvement culture

**Principles to guide MBS reviews**
- Reviews have a primary focus on improving health outcomes and the financial sustainability of the MBS, by considering potential:
  - Patient safety risk
  - Limited health benefit
  - Inappropriate use (underuse or overuse) and/or intentional misuse of MBS services
- Reviews are evidence-based, fit-for-purpose and consider all relevant data sources
- Reviews are conducted in consultation with key stakeholders including, but not limited to, the medical profession and consumers
- Review topics are made public, with identified opportunities for public submissions and outcomes of reviews are published
- Reviews are independent of government financing decisions and may result in recommendations representing costs or savings to the MBS, as appropriate, based on the evidence
- Secondary investment strategies to facilitate evidence-based changes in clinical practice are considered
- Review activity represents efficient use of government resources

Source: Medical Benefits Reviews Task Group. Development of a quality framework for the Medicare Benefits Schedule discussion paper.3

**Search terms**

<table>
<thead>
<tr>
<th>String 1: safety</th>
<th>Terms</th>
</tr>
</thead>
<tbody>
<tr>
<td>unsafe* OR danger* OR adverse event OR (poor outcome) OR (low quality) OR (poor quality) OR (harm*) OR (contraindicated*)</td>
<td></td>
</tr>
<tr>
<td>OR</td>
<td></td>
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<tr>
<td>String 2: effectiveness</td>
<td>Terms</td>
</tr>
<tr>
<td>ineffect* OR (supersede*) OR (irrelevant*) OR (outdated) OR (new evidence) OR (overuse*) OR (unproven) OR (inappropriate) OR (equivocal*) OR (uncertain*) OR (obsolete) OR (inferiority) OR (superiority)</td>
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<tr>
<td>OR</td>
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<tr>
<td>String 3: policy solutions</td>
<td>Terms</td>
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<tr>
<td>disinvest* OR (coverage evidence development) OR (CED) OR (access evidence development) OR (AED) OR (access evidence generation) OR (reallocation) OR (resource release) OR (reinvest*)</td>
<td></td>
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<tr>
<td>NOT</td>
<td></td>
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<tr>
<td>String 4: pharmacy exclusion</td>
<td>Terms</td>
</tr>
<tr>
<td>(drug therapy [mh]) OR (drug industry [mh]) OR (pharmaceutical services [mh]) OR (pharmaceutical preparations [mh]) OR (pharmacogenetics [mh]) OR (pharmacoeconomics [mh]) OR (technology, pharmacologic [mh])</td>
<td></td>
</tr>
</tbody>
</table>

* = truncation character. AED = access and evidence development. CED = coverage with evidence development. [mh] = medical subject heading.

Methods

A multiplatform approach for searching for and identifying potential medical services for review was developed. This comprised the following three key elements.

Peer-reviewed literature search: a detailed search strategy was applied to the PubMed search platform (Box 2).

Targeted database search: these were conducted of the Cochrane Library, National Institute for Health and Clinical Excellence (NICE) “do not do” recommendations,8 BlueCross BlueShield Association Technology Evaluation Center assessments9 and the Canadian Agency for Drugs and Technologies in Health (CADTH) health technology assessments.10

Opportunistic sampling: drawing on our experience (from a previous and ongoing program of work in this area) and links with clinical and non-clinical stakeholder groups, both within Australia and internationally, from whom nominations (with evidence) for candidate services were collected. Each of these three elements contributed to the final sample that was screened for potential candidate services for reassessment.

Peer-reviewed literature search

We used a series of keyword and medical subject heading (MeSH) strings (Box 2) across the bibliographic databases to identify potential candidate services for prioritisation. Exclusion criteria were applied to screens of titles, abstracts and full texts of retrieved articles (Box 3), with further limits and filters applied as shown in Box 4. Subsets of results from Filters 2A (Level 1 evidence11), 2B (Level II evidence11) and 2C (remaining literature search) were selected based on their date of publication, with the most recently published studies (2000–2010) forming the subsets (Box 4). Additionally, we undertook relative oversampling from Filter 2A in consultation with representatives from the Department of Health and Ageing, based on the assumption that the higher level of evidence represented in the results would provide greater yield for the final list of services.

Targeted database search

All reports from the Cochrane Library and BlueCross BlueShield Association Technology Evaluation Center assessments were considered, after standard filters (humans, English language, not pharmaceuticals) were applied. All available reports from the NICE “do not do” recommendations and CADTH health technology assessments were considered for inclusion on the master list. These databases offer targeted and specific findings. NICE, for example, teamed with the Cochrane Collaboration to focus their search within Cochrane Reviews and guidelines.1 This complemented our broader method, but when mapped against existing MBS items, numerous services were filtered out as not relevant to the Australian funding context.

Opportunistic sampling

All reports identified by opportunistic sampling were included on the master list before inclusion and exclusion criteria were applied.
Inclusion and exclusion criteria

All reports retrieved from the targeted database searches and opportunistic sampling were placed on a master list, alongside results from the peer-reviewed literature search.

After the exclusion criteria (Box 3) were applied to titles, the abstract or executive summary of each included study was obtained and screened. Studies that reported the value of a medical service as inferior or similar to placebo were included, while studies that reported no difference between a service and an active comparator were excluded (because identifying the inferior service from such studies would likely require additional clinical expertise). Articles were screened by the authors of this report, with disagreements resolved through open discussion.

Medical services identified through opportunistic sampling (where evidence supported inclusion) were afforded prioritised inclusion, given they were nominated by clinical and other stakeholders and evidence existed in support. Services described in articles or reports that met the inclusion criteria were mapped to MBS items, with any services not covered by the MBS excluded from further analysis. Pharmaceuticals do not fall under the purview of the MBS and were excluded.

Eligible services were then tracked across search methods to triangulate medical service identification. This enabled us to identify services that appeared across the multiple elements of the search strategy. Triangulation may have value in prioritising...
5 Services identified by more than one search method

<table>
<thead>
<tr>
<th>No.</th>
<th>Broad service description</th>
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<tbody>
<tr>
<td>1</td>
<td>Testing of patients for factor V Leiden gene mutation</td>
</tr>
<tr>
<td>2</td>
<td>Arthroscopic surgery for knee osteoarthritis*</td>
</tr>
<tr>
<td>3</td>
<td>Testing for C-reactive protein†</td>
</tr>
<tr>
<td>4</td>
<td>Use of chest x-ray for acute coronary syndrome, preoperatively, or in diagnosing respiratory infections</td>
</tr>
<tr>
<td>5</td>
<td>Chlamydia screening</td>
</tr>
<tr>
<td>6</td>
<td>Exercise electrocardiogram (ECG) for angina</td>
</tr>
<tr>
<td>7</td>
<td>Imaging in cases of low back pain*</td>
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<tr>
<td>8</td>
<td>Liver function tests</td>
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<tr>
<td>9</td>
<td>Blood, urine or plasma testing in end-stage renal disease</td>
</tr>
<tr>
<td>10</td>
<td>Radical prostatectomy</td>
</tr>
<tr>
<td>11</td>
<td>Radiotherapy for patients with metastatic spinal cord disease</td>
</tr>
<tr>
<td>12</td>
<td>Routine dilatation and curettage</td>
</tr>
<tr>
<td>13</td>
<td>Surgery for obstructive sleep apnoea</td>
</tr>
</tbody>
</table>

* Denotes services identified by all three search elements. †C-reactive protein tests for community-acquired pneumonia from two sources, for urinary tract infections in children in a third. Refer to online appendix for evidence and context (eg, specified indications) for each item.

Further work, along with other criteria that we developed previously. This entire process was completed over 8 months by a two-member full-time-equivalent workforce.

Results

A total of 5209 articles were screened for eligibility, resulting in 156 potentially ineffective or unsafe services being flagged for consideration (Appendix; online at mja.com.au). The list includes examples where practice optimisation (ie, comparing the relative value of one treatment option against others) might be required. The Appendix details all the services we identified, including any citations that drew attention to their status as potential candidates, and an extract from the article highlighting key issues relevant to the service. Box 5 lists the 13 services identified by more than one search method; three services were identified by all three methods. While this serves to highlight the crossover points of the search strategies we used, there are other factors related to the candidate services that may influence their relative priority in any assessment process (eg, predominant safety concerns, strong evidence, high volume, cost-effective alternative, etc).4

Discussion

In this project, we sought to develop and implement a systematic, evidence-based and transparent process for identifying potentially low-value services in health care. We present this list of candidate services for analysis and debate within and between clinical, research, patient and policy stakeholder communities. Services were identified through a novel search strategy and, although created for and mapped against Australia’s MBS, they offer insights for any health care system considering a health technology reassessment agenda. The specificity of services is open for critique, and we expect that context-specific clinical detailing will exclude some services from consideration and/or refine the questions that have been raised within the literature about their uses.

The process we describe in this report has a number of limitations, primarily related to the short time frame imposed on it. Sampling from the broad literature searches based on date of publication is likely to identify technologies or services for which recent evidence may suggest a level of ineffectiveness, and therefore risks missing those whose safety, effectiveness or efficacy has not recently come into question. In addition, time and resource constraints also limited the number of articles retrieved through each filter that could be reasonably evaluated. Thus, only a fraction of potentially relevant articles were included. However, combining these searches with broad reviews of key assessment agencies (CADTH, NICE, etc), as well as obtaining expert clinical input, helps to moderate this potential bias and captures a breadth of medical services that are of key interest across clinical settings and stakeholder groups. Importantly, our process was not intended to be exhaustive or to act as a tool for prioritisation; rather, it aimed to provide a transparent, evidence-based approach to identifying potentially ineffective services. Further testing and refinement of search terms, inclusion and exclusion criteria and database sources is likely to yield important insights into how this process may be improved and tailored to suit specific needs.

Our analysis has highlighted some of the tensions that exist between the paradigm of health technology assessment and the nature of guided service reimbursement, including fee-for-service. Health technology assessment and other clinical assessments of health services are, by nature, geared towards examining services and technologies in very specific populations and for very specific indications. This can be at odds with the broader nature of schedule or service item descriptors. Our work has confirmed that services that are ineffective and/or unsafe across the entire patient population to which they are applied are probably quite rare. Most often, a service shows differential effectiveness profiles, dependent on the characteristics of the population in whom it is applied. Research must indicate the populations most likely to benefit from or be harmed by services, thus allowing the development of
discussed elsewhere.\textsuperscript{12-19} That do not beset those that are new
of technologies or practices have complexities as having low value. Existing technol-
ogies on. For example, initial rapid reviews
The greatest efficiency needs to be decided
being somewhat context-specific.\textsuperscript{4-7}
For groups pursuing a health tech-
nology reassessment agenda, the next
steps in the process requires further
prioritisation of candidate services to
a shortlist of those that may go on to
formal review. Numerous methods have
been proposed for this, each being somewhat context-specific.\textsuperscript{4-7}
The assessment type that offers the
greatest efficiency needs to be decided
on. For example, initial rapid reviews
as opposed to full health technology
assessments may offer an efficient
means of generating value of informa-
tion to enhance the prioritisation
process.

We also acknowledge that there are
challenges in reducing or removing
candidate services that are confirmed
as having low value. Existing technol-
ogies or practices have complexities that do not beset those that are new
or emerging, mostly because of their
established status in medicine and society. These challenges have been
discussed elsewhere.\textsuperscript{12-19}

Limited resources mean that
nations cannot escape having to make
difficult health care choices. Identifying
and reducing the use of low-value
care is becoming a priority for an
increasing number of jurisdictions.

Each recognises that cost savings or
cost-neutral changes can be made
within existing health budgets by
reducing the use of existing services
that offer little or no benefit relative to
the cost of their public subsidy. This
would allow funding to be reallocated
to more beneficial or cost-effective
services, thus maximising health gain.
We share this project as a step towards
fulfilling that objective.

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