Health Technology Assessment in Australia

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Australian Medical System

- Fee for service
  - unregulated fees, mostly unlimited services
- Public hospitals
  - Public patients (70–95%) – no charge
  - Most major hospitals are public
  - Public hospitals used by middle class
- Private hospitals
  - Fee for service
  - Hospital insurance
Medicare Australia

- Single payer – Federal Government
- Funded from tax revenue
- Fixed rebate for each service
- In office or (private) hospital
- Self assessed with audit
- All residents eligible
- Grants to States to run public hospitals
Medicare Australia

- Universally supported
- Restrains medical costs
  - but not services
- Subsidised medical training
  - $60K for 6 year undergraduate course
  - Zero real interest, non-recourse loan
**Medicare Fees**

- Family physician (<20 min) $36
- Internist (<45 min) $130
- Obstetric ultrasound $100
- CT abdo/pelvis + contrast $410
- Bone scan with SPECT $600
- PET Scan $950
- MIBI stress/rest $1000
Medicare Schedule

- New items added in ad-hoc fashion
- Items for service – not indication
- Some attempts to encourage technological improvement
  - Echo only paid for colour Doppler machine
  - Additional $100 for SPECT
<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Fee</th>
<th>Benefit 75%</th>
<th>Benefit 85%</th>
</tr>
</thead>
</table>
| 61421 | BONE STUDY - whole body, with, when undertaken, blood flow, blood pool and delayed imaging on a separate occasion (R)  
(See para DIQ of explanatory notes to this Category) | $479.80  | $359.85     | $407.85      |
| 61425 | BONE STUDY - whole body and single photon emission tomography, with, when undertaken, blood flow, blood pool and delayed imaging on a separate occasion (R)  
(See para DIQ of explanatory notes to this Category) | $600.70  | $450.55     | $526.20      |
| 61426 | WHOLE BODY STUDY using iodine (R)  
(See para DIQ of explanatory notes to this Category) | $554.80  | $416.10     | $480.30      |
| 61429 | WHOLE BODY STUDY using gallium (R)  
(See para DIQ of explanatory notes to this Category) | $543.00  | $407.25     | $468.50      |
| 61430 | WHOLE BODY STUDY using gallium, with single photon emission tomography (R)  
(See para DIQ of explanatory notes to this Category) | $659.45  | $494.60     | $584.95      |
Computed Tomography

- New technology – no attempt at assessment
- New items to reflect new services
- Based on GE 9800 (1985)
  - 10 scans/day
  - Cost + (capital, running, professional)
  - Extra $100 for contrast
### Computed Tomography

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Description</th>
<th>Fee</th>
<th>Benefit 75%</th>
<th>Benefit 85%</th>
</tr>
</thead>
</table>
| 56501       | UPPER ABDOMEN AND PELVIS
  COMPUTED TOMOGRAPHY - scan of upper abdomen and pelvis without intravenous contrast medium, not for the purposes of virtual colonoscopy, not being a service to which item 56801 or 57001 applies (R) (K) (Anaes.)
  *(See para DIQ of explanatory notes to this Category)* | $385.00 | $288.75      | $327.25      |
| 56507       | COMPUTED TOMOGRAPHY - scan of upper abdomen and pelvis with intravenous contrast medium and with any scans of upper abdomen and pelvis prior to intravenous contrast injection, when undertaken, not for the purposes of virtual colonoscopy, not being a service to which item 56807 or 57007 applies (R) (K) (Anaes.)
  *(See para DIQ of explanatory notes to this Category)* | $480.05 | $360.05      | $408.05      |

Source: Medicare Australia
Rapid growth in imaging
“New” Technology (MRI, PET)
How to control cost?
Growth in Imaging Services

Source: Medicare Australia
Solution #1:
Don’t pay for new technology

- 1990 no MRI, no PET rebates
- Overuse of existing technology (CT)
MRI 1990

- No Medicare Rebate
- A few machines installed – private fees
- MS Society raised money for MRIs
- Government relented (mid 1990s)
Solution #2: restrict machines

- Rebate for “licenced” machines
  - ordered or installed at commencement date
  - extra licences based on “need”
- Steep increase in orders for MRI machines
  - month before announcement
Solution #3: Limiting Services

- Limit referrers
- Limit indications
- Limit number of scans rebated (not ordered)
  - Obstetrics
  - BMD
  - MRI
- Risk transferred to imaging practice
MRI indications

- Limited indications (sort of)
  - sciatica
  - derangement of shoulder, knee
- Limited referrers (specialists only)
- Limited number of scans/year
- Recently relaxed for <17 year olds
  - replace CTs and bone scans
# MRI

## GROUP 15 - MAGNETIC RESONANCE IMAGING

### SUBGROUP 1 - SCAN OF HEAD - FOR SPECIFIED CONDITIONS

MAGNETIC RESONANCE IMAGING (including Magnetic Resonance Angiography if performed), performed under the professional supervision of an eligible provider at an eligible location where the patient is referred by a specialist or by a consultant physician - *scan of head* for:

- tumour of the brain or meninges (R) (Contrast) (Anaes.)  
  *(See para DIQ of explanatory notes to this Category)*  
  Fee: $403.20  
  **Benefit:** 75% = $302.40  
  85% = $342.75

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Fee</th>
<th>Benefit 75%</th>
<th>Benefit 85%</th>
</tr>
</thead>
<tbody>
<tr>
<td>63001</td>
<td>tumour of the brain or meninges (R) (Contrast) (Anaes.)</td>
<td>$403.20</td>
<td>$302.40</td>
<td>$342.75</td>
</tr>
<tr>
<td>63004</td>
<td>inflammation of the brain or meninges (R) (Contrast) (Anaes.)</td>
<td>$403.20</td>
<td>$302.40</td>
<td>$342.75</td>
</tr>
<tr>
<td>63007</td>
<td>skull base or orbital tumour (R) (Contrast) (Anaes.)</td>
<td>$403.20</td>
<td>$302.40</td>
<td>$342.75</td>
</tr>
<tr>
<td>63010</td>
<td>stereotactic scan of brain, with Fiducials in place, for the sole purpose to allow planning for stereotactic neurosurgery (R) (Contrast) (Anaes.)</td>
<td>$336.00</td>
<td>$252.00</td>
<td>$285.60</td>
</tr>
</tbody>
</table>

Source: Medicare Australia
### SUBGROUP 2 - SCAN OF HEAD - FOR SPECIFIED CONDITIONS

NOTE: Benefits are payable for each service included by Subgroup 2 on three occasions only in any 12 month period.

MAGNETIC RESONANCE IMAGING (including Magnetic Resonance Angiography if performed), performed under the professional supervision of an eligible provider at an eligible location where the patient is referred by a specialist or by a consultant physician - scan of head for:

<table>
<thead>
<tr>
<th>Code</th>
<th>Service Description</th>
<th>Fee</th>
<th>Benefit 75%</th>
<th>Benefit 85%</th>
</tr>
</thead>
<tbody>
<tr>
<td>63040</td>
<td>acoustic neuroma (R) (Contrast) (Anaes.)</td>
<td>$336.00</td>
<td>$252.00</td>
<td>$285.60</td>
</tr>
<tr>
<td>63043</td>
<td>pituitary tumour (R) (Contrast) (Anaes.)</td>
<td>$358.40</td>
<td>$268.80</td>
<td>$304.65</td>
</tr>
<tr>
<td>63046</td>
<td>toxic or metabolic or ischaemic encephalopathy (R) (Contrast) (Anaes.)</td>
<td>$403.20</td>
<td>$302.40</td>
<td>$342.75</td>
</tr>
</tbody>
</table>

MAGNETIC RESONANCE IMAGING (MRI)

<table>
<thead>
<tr>
<th>Code</th>
<th>Service Description</th>
<th>Fee</th>
<th>Benefit 75%</th>
<th>Benefit 85%</th>
</tr>
</thead>
<tbody>
<tr>
<td>63049</td>
<td>demyelinating disease of the brain (R) (Contrast) (Anaes.)</td>
<td>$403.20</td>
<td>$302.40</td>
<td>$342.75</td>
</tr>
<tr>
<td>63052</td>
<td>congenital malformation of the brain or meninges (R) (Contrast) (Anaes.)</td>
<td>$403.20</td>
<td>$302.40</td>
<td>$342.75</td>
</tr>
<tr>
<td>63055</td>
<td>venous sinus thrombosis (R) (Contrast) (Anaes.)</td>
<td>$403.20</td>
<td>$302.40</td>
<td>$342.75</td>
</tr>
<tr>
<td>63058</td>
<td>head trauma (R) (Contrast) (Anaes.)</td>
<td>$403.20</td>
<td>$302.40</td>
<td>$342.75</td>
</tr>
<tr>
<td>63061</td>
<td>epilepsy (R) (Contrast) (Anaes.)</td>
<td>$403.20</td>
<td>$302.40</td>
<td>$342.75</td>
</tr>
<tr>
<td>63064</td>
<td>stroke (R) (Contrast) (Anaes.)</td>
<td>$403.20</td>
<td>$302.40</td>
<td>$342.75</td>
</tr>
<tr>
<td>63067</td>
<td>carotid or vertebral artery dissection (R) (Contrast) (Anaes.)</td>
<td>$403.20</td>
<td>$302.40</td>
<td>$342.75</td>
</tr>
<tr>
<td>63070</td>
<td>intracranial aneurysm (R) (Contrast) (Anaes.)</td>
<td>$403.20</td>
<td>$302.40</td>
<td>$342.75</td>
</tr>
<tr>
<td>63073</td>
<td>intracranial arteriovenous malformation (R) (Contrast) (Anaes.)</td>
<td>$403.20</td>
<td>$302.40</td>
<td>$342.75</td>
</tr>
</tbody>
</table>
PELVIS OR ABDOMEN, pregnancy related or pregnancy complication, fetal development and anatomy, ultrasound scan of, by any or all approaches, if:

(a) the patient is referred by a medical practitioner or participating midwife; and
(b) the dating of the pregnancy (as confirmed by ultrasound) is 12 to 16 weeks of gestation; and
(c) the service is not associated with a service to which an item in Subgroup 2 or 3 of this group applies; and
(d) if the patient is referred by a medical practitioner -- the referring medical practitioner is not a member of a group of practitioners of which the providing practitioner is a member; and
(e) if the patient is referred by a participating midwife -- the referring midwife does not have a business or financial arrangement with the providing practitioner; and
(f) one or more of the following conditions are present:
   (i) hyperemesis gravidarum;
   (ii) diabetes mellitus;
   (iii) hypertension;
   (iv) toxemia of pregnancy;
   (v) liver or renal disease;
   (vi) autoimmune disease;
   (vii) cardiac disease;
   (viii) alloimmunisation;
   (ix) maternal infection;
   (x) inflammatory bowel disease;
   (xi) bowel stoma;
   (xii) abdominal wall scarring;
   (xiii) previous spinal or pelvic trauma or disease;
   (xiv) drug dependency;
   (xv) thrombophilia;
   (xvi) significant maternal obesity;
   (xvii) advanced maternal age;
   (xviii) abdominal pain or mass;
   (xix) uncertain dates;
   (xx) high risk pregnancy;
   (xxi) previous post dates delivery;
   (xxii) previous caesarean section;
   (xxiii) poor obstetric history;
   (xxiv) suspicion of ectopic pregnancy;
   (xxv) risk of miscarriage;
   (xxvi) diminished symptoms of pregnancy;
   (xxvii) suspected or known cervical incompetence;
   (xxviii) suspected or known uterine abnormality;
   (xxix) pregnancy after assisted reproduction;
   (xxx) risk of fetal abnormality (R)

Footnote: For nuchal translucency measurements performed when the pregnancy is dated by a crown rump length of 45 to 84mm, refer to item number 55707 (R). Fee is payable only for item 55704 or item 55707, not both items.

(See para D1 of explanatory notes to this Category)

Fee: $70.00
Benefit: 75% = $52.50
85% = $59.50

55704
Extended Medicare Safety Net Cap: $38.50
PET

- Next technology to be considered
- New process
Medical Services Advisory Committee
– Established 1998
Advise Federal Government on new and existing items
Independent, Scientific, Evidence-based
Safety, Efficacy, Cost-effectiveness
Transparent, Consistent
MSAC

- Assesses all new procedures
- Recommends
  - Which technologies to be funded
  - Which indications
  - At what price
- Advises Minister of Health
  - Political decision
Process

- Applicant
  - Specific indication and procedure
- Expert Advisory Panel
- Protocol Advisory Subcommittee
- Assessment Group
- Evaluation Subcommittee
- Full MSAC
Decision Analysis

Staging Pancreatic Cancer

Conventional imaging studies (e.g., spiral CT)

- unresectable tumour or resectable tumour but patient not candidate for radical surgery
  - palliative treatment
- apparently resectable tumour and patient candidate for radical surgery
  - no PET
    - surgery – staging laparotomy
  - PET
    - metastatic disease
      - palliative treatment
    - no metastatic disease
      - no EUS
        - resectable surgery
      - EUS
        - non-resectable
          - no EUS
            - palliative treatment
          - EUS
            - palliative treatment
Assessment Group

- Professional consultants
- Search literature for appropriate data to assess agreed protocol
  - Sensitivity, specificity of tests
  - Risk/benefit of alternatives
  - Safety
  - Cost
Processes relating to the consideration by MSAC of Medical Services

From Initiation to Listing

Expression of Interest stage

Initiation of process
- Applicant submits Part A, B, C, D

Technical Discussion Meeting
- Dept

Initial meeting
- Dept and applicant

Eligibility check
- Dept
- Applicant submits Part B

MBS Management Committee
- Dept

Determination of Approach to Assessment stage

Proposed DAP
- Applicant submits Part C and D

Public notification of PASC agenda
- Dept

1st Consideration by PASC
- Reviews draft DAP
- Prepares consultation DAP
- Applicant comment

Public comment
- on consultation DAP
- Dept seeks specific input from prof bodies
- Applicant comment

2nd Consideration by PASC
- Reviews comments on consultation DAP
- Finalises DAP
- Applicant advised

Consideration of Evidence stage

Assessment
- Applicant Submission
- Assessment Group

Assessment review
- Assessment Group
- Applicant comment

ESC evaluation
- Focuses issues
- Prepares report
- Applicant comment

MSAC appraisal
- Deliberates
- Prepares advice and rationale

Minister
- Notes MSAC Advice
- Applicant advised
- Report & MSAC advice published

Implementation stage

Pre implementation of new items or changes
- Dept

Advice to Minister on item
- Dept

Costing of item
- Agreed across Depts

Advice to Government
- Makes funding decision

MBS listing
- Dept
MSAC Reference 2

- 1 August 1999 MSAC to review PET
- 17 November 1999:
  “there is insufficient evidence at this time from which to draw definitive conclusions about the clinical effectiveness and cost-effectiveness of (FDG) PET”
- MSAC recommended interim funding with data collection
PET Assessment

- 2002 Federal govt funded 8 PET cameras
- Tendered for lowest capital cost
- Broad range of PET funded (22 items)
  - Neuro (epilepsy, dementia)
  - Cardiac
  - Oncology
PET Data Collection

- March 2003 – April 2005
- 30,368 PET studies performed
  - Demographic data
  - Pre- & post-PET staging
- Prospective Clinical Protocols (PCPs)
  - Subset of indications
  - Looked at management change & outcome
  - Assumed to generalise
### Prospective Clinical Protocols

<table>
<thead>
<tr>
<th>MSAC Reference</th>
<th>Report Title</th>
<th>Report Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>Positron emission tomography (PET) for non-small-cell lung cancer and solitary pulmonary nodules</td>
<td>November 2003</td>
</tr>
<tr>
<td>35a</td>
<td>Positron emission tomography for recurrent colorectal cancer*</td>
<td>August 2007</td>
</tr>
<tr>
<td>35a</td>
<td>Positron emission tomography for recurrent ovarian cancer*</td>
<td>August 2007</td>
</tr>
<tr>
<td>35a</td>
<td>Positron emission tomography for recurrent melanoma*</td>
<td>August 2007</td>
</tr>
<tr>
<td>35b(i)</td>
<td>Positron emission tomography for oesophageal and gastric cancer*</td>
<td>June 2008</td>
</tr>
<tr>
<td>35b(ii)</td>
<td>Positron emission tomography for head and neck cancer*</td>
<td>November 2008</td>
</tr>
<tr>
<td>35c</td>
<td>Positron Emission Tomography for lymphoma*</td>
<td>September 2009</td>
</tr>
<tr>
<td>35d(i)</td>
<td>Positron emission tomography for glioma*</td>
<td>March 2010</td>
</tr>
<tr>
<td>35d(ii)</td>
<td>Positron emission tomography for sarcoma*</td>
<td>March 2010</td>
</tr>
<tr>
<td>35e</td>
<td>Positron emission tomography for cervical cancer</td>
<td>March 2010</td>
</tr>
</tbody>
</table>

Source: MSAC


## 2010 PET Items

<table>
<thead>
<tr>
<th>Disorder</th>
<th>Diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSC Lung cancer - staging</td>
<td>(Cardio) Esophageal ca - staging</td>
</tr>
<tr>
<td>Colorectal cancer - Resid/Recurrant</td>
<td>Head &amp; Neck cancer</td>
</tr>
<tr>
<td>Melanoma - Residual/Recurrent</td>
<td>Lymphoma</td>
</tr>
<tr>
<td>Brain cancer - Residual/Recurrent</td>
<td>Sarcoma</td>
</tr>
<tr>
<td>Ovarian Cancer - Resid/Recurrant</td>
<td>Refractory Epilepsy</td>
</tr>
</tbody>
</table>

Source: Medicare Australia
Lymphoma PET

- Initial staging
- Response to 1st line therapy
- Restaging following confirmed relapse
- Response to 2nd line therapy
  - when stem cell transplant is considered
- Indolent NHL – staging only (I or Ila)
PET excluded

- Lymphoma surveillance
- Gastric cancer
- Esophageal cancer relapse
- Colorectal staging
- Any neurology except epilepsy
- Any cardiology
- Any other oncology
In reviewing these items, MSAC advised Government to cease funding for some indications for which there was no evidence of cost-effective benefit, particularly where PET scanning has previously been used to provide reassurance for doctors and patients without changing treatment decisions or health outcomes.
Problems with MSAC

- Long process, individual items
- Typically 6 – 18 months
- PET: 2 – 5 years (10 years)
- Management change v Outcome
- Change in technology, costs during assessment period
- No appeal or update mechanism
**PillCam**

- Successful CED application to MSAC
- Applied August 2002
- Interim funding May 2004 – April 2007
- Australian data on safety, effectiveness, cost-effectiveness
- Unconditional funding November 2007

PillCam

- 18 months for CED approval
- Single indication
  - “obscure gastrointestinal bleeding”
- Single manufacturer
- Single doctor referred, performed, interpreted and acted
- Cost effectiveness easy (no competitor)
Other Successful Applications

- Double balloon enteroscopy
  - gastroenterologists

- Coronary CTA (CTCA)
  - cardiologists
NM Progress

- CT for SPECT/CT
- Coronary CTA (CTCA)
NM CT for ACAL

- Additional $100 fee for CT in SPECT
- No requirement to report or view CT
- Diagnostic CT paid as usual
  - reported by radiologist to usual standard
- All new gamma cameras now have CT
- NM physicians gain confidence with CT
CT scan performed at the same time and covering the same body area as single photon emission tomography for the purpose of anatomic localisation or attenuation correction where no separate diagnostic CT report is issued and only in association with items 61302 - 61650 (R)

(See para DIQ of explanatory notes to this Category)

**Fee:** $100.00

**Benefit:** 75% = $75.00  85% = $85.00

Source: Medicare Australia
Coronary CTA

- 3 craft groups share CTCA
  - Cardiology
  - Radiology
  - Nuclear Medicine
- Certification like SCCT
- 64-slice SPECT/CT or PET/CT