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Prostheses usage 2019-2020: product groups with the highest single-year volume growth across Australia

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Introduction

This report aims to highlight the highest growing areas of the Prostheses List between 2018-19 and 2019-20.

The use of medical devices is a vital part of modern medicine, providing significant consumer benefit.

However, some prostheses in Australia are overpriced, overused, and in some cases, there is little or no evidence that there is a patient benefit.

Prostheses use is one of the fastest areas of private health fund expenditure growth over the last decade. Current expenditure by health funds on prostheses is over \$2 billion per annum and growing at a higher rate than other parts of the system such as hospital benefits and medical benefits.

The Australian Government sets the price on over 11,000 individual items on the Prostheses List, determined by reference pricing rather than any market mechanism. Health funds are required to pay a set price regardless of quality, efficacy, efficiency or even safety.

As insurers must pay for items on the Prostheses List out of a limited pool of members' funds, the high growth in medical device funding means other areas of the system, such as hospitals and medical costs, are constrained, and/or premiums increase. If premiums increase too much, more people opt out of private health insurance, reducing the funding available further and putting pressure on the public health system.

Medical practitioners and their professional associations often have little visibility of the use of prostheses or the cost. Private Healthcare Australia will be taking a more active role in providing data to medical associations, so they may provide any advice to their members they consider necessary or useful. Hospitals may also find these data of use.

Private Healthcare Australia supports choice for medical practitioners and their patients when choosing medical devices. This choice should be informed, with data around indications for use, cost-benefit, safety and effectiveness all playing a part in ensuring medical practitioners offer the best options for their patients and the communities they serve.

Context

COVID-19 affected surgery in the last quarter of the financial year, meaning that the number of surgeries covered by private health insurance funds in 2019-20 declined.

In terms of costs, medical rebates were most affected, with a 3.5% decline on the previous year. Rebates for private hospitals and private patients in public hospitals also declined marginally. However, rebates for prostheses funded through the Prostheses List increased in 2019-20 compared to 2018-19.

In that context, this report highlights the areas of the Prostheses List which have had significant growth over the year but provides limited commentary. Professional medical associations will be better placed to assess these data.

Methodology

There are 446 unique product groups on the Prostheses List from financial year 2018/19 to 2019/20. Prostheses utilisation and benefits data have been sourced from unpublished Hospital Casemix Protocol (HCP) data. The HCP data collection is a legislated data collection for all private health

insurance funded admitted patient separations for which private health insurers have paid benefits. The data are collected by public and private hospitals, including day facilities, and then supplied to private health insurers, who in turn then submit the data to the Department of Health. These data are partially incomplete, and the proportion of data available increases during the subsequent financial year.

At the time of analysis (December 2020), the data set for 2018-19 was 90% complete, and the data set for 2019-20 was 87% complete.

The raw data on prostheses product groups were simply extrapolated to 100% (100/90 for 2018-19 data and 100/87 for 2019/20 data).

As the data are not complete, a generous interpretation of growth was applied. Product groups with small volumes for 2019-20 (<100) were excluded, as were product groups with low expenditure in 2019-20 (<\$100,000), as smaller numbers are more prone to extrapolation errors. Product groups were then only considered growth areas where the extrapolated year on year growth in volume and expenditure growth both exceeded 10%.

Results

51 product groups met the criteria, detailed below.

Discussion

There are wide variety of product groups represented in the high growth product groups. Much of the growth can be explained with reference to the uptake of new products or changes in Medicare Benefits Schedule (MBS) service numbers, while other product groups do not have clear explanations.

There are no items in the ophthalmic (01) or ear, nose and throat (02) categories that met the criteria for inclusion.

Human tissue (part B)

Orthopaedic human tissue (in Part B of the Prostheses List) experienced an estimated 31% growth in volume from 2018-19 to 2019-20. In terms of expenditure, this is the largest increase in the Prostheses List over the year, with an additional estimated \$17 million of expenditure.

Orthopaedic human tissue items are most commonly used for MBS item 51011 (*Spinal decompression or exposure via partial or total laminectomy, partial vertebrectomy or posterior spinal release, one motion segment, not being a service associated with a service to which item 51012, 51013, 51014 or 51015 applies*). This is a new item on the schedule, so it is not possible to examine the use of prostheses compared to the growth in Medicare items.

Examining AR-DRG classifications funded by private health insurance, an estimated 50% of orthopaedic human tissue claims are in spinal surgery. These data suggest orthopaedic human tissue items are used 50% of the time in spinal fusion surgeries (based on a 79% data sample). Using these AR-DRG data, there were an estimated 3,900 spinal fusion surgeries funded through private health insurance using orthopaedic human tissue in 2018-19 (out of a total estimated 9,300 spinal fusion surgeries), with an estimated 4,900 spinal fusion surgeries using orthopaedic human tissue in 2019-20 (out of a total estimated 9,800 spinal fusion surgeries).

There has also been an estimated 10.5% growth in the use of items in the Ophthalmic (Part B Human Tissue) category. This has occurred despite a slight decline in the use of MBS item number 42653 corneal transplantation.

General and miscellaneous

General and miscellaneous items can be used across many types of surgeries and are significant drivers of growth of costs for the Prostheses List. Items in this category have rarely been assessed for cost-effectiveness.

Four general and miscellaneous product groups experienced high growth:

- 03.01.03 Brachytherapy tissue expander/separator (est. 22% growth),
- 03.05.02 Haemostatic devices – powders (est. 19% growth),
- 03.06.04 Luminal stents – pancreatic (est. 18% growth), and
- 03.07.01 Drainage catheters (est. 10% growth).

The growth in the Brachytherapy item matches large increases in the use of the relevant MBS items 45566 and 35406.

Haemostatic powders are most commonly used for MBS item 51011 (*Spinal decompression or exposure*). This is a new item on the schedule.

Luminal stents are most commonly used with MBS item 30485 (*ENDOSCOPIC SPHINCTEROTOMY with or without extraction of stones from common bile duct*). Despite a significant increase in usage of the product group, the use of this MBS item declined in 2019-20. Notably, while growth in item usage was an estimated 18%, the growth in expenditure was more than 70%. Previously, this product group only included a range of stents priced at \$77-131. A new product sub-group, Self-expanding metal pancreatic stents, covered (03.06.04.01) was created in 2016-17 with benefits per item ranging from \$3610-\$4345. The use of these new products has driven the increase in benefits in excess of volume.

The increase in the use of drainage catheters billed on the Prostheses List is not matched by growth in the most common MBS item used, 38806 (*INTERCOSTAL DRAIN, insertion of, not involving resection of rib (excluding aftercare)*), which declined by more than 8%.

Neurosurgical

There has been an estimated 20% increase in the use of Liquid Sealant (>3 to 6ml) for Dura Defect Repairs (04.02.06) between 2018-19 and 2019-20. The most common MBS item used with this product group is 31575 (*Sleeve gastrectomy, with or without crural repair taking 45 minutes or less, for a patient with clinically severe obesity*), which is not a neurosurgical item. It is unlikely that the Prostheses List Advisory Committee considered the use of these products in this context to assess cost-effectiveness.

There has also been an estimated 20% increase in Neuro Intervention Coils (04.08.02) over the year. The most common MBS item used with this product group is 35321 (*PERIPHERAL ARTERIAL OR VENOUS CATHETERISATION to administer agents to occlude arteries, veins or arterio-venous fistulae or to arrest haemorrhage, (but not for the treatment of uterine fibroids or varicose veins) percutaneous or by open exposure, excluding associated radiological services or preparation, and excluding aftercare, not being a service associated with photodynamic therapy with verteporfin*), which experienced a drop in usage over the year. Again, this MBS item is not in the neurosurgical catalogue.

Urogenital

The use of inflatable incontinence prostheses (05.01.01) has increased by an estimated 19% between 2018-19 and 2019-20. There has been an 8% growth in the most common MBS item for this procedure, 37381 (*ARTIFICIAL URINARY SPHINCTER, insertion of cuff, perineal approach*).

Specialist orthopaedic

Specialist orthopaedic is the largest category by volume and expenditure on the Prostheses List. Five product groups experienced high growth between 2018-19 and 2019-20:

- 06.03.17 Tumour/limb deficiency items (est. 80% growth)
- 06.01.03 Ankle joint (est. 44% growth)
- 06.01.01 Ankle joint component (est. 33% growth)
- 06.03.08 Soft tissue substitute (est. 17% growth)
- 06.03.11 External fixateurs (est. 16% growth)

The increase in tumour/limb deficiency items comes from a small base, but the volume increase is significant. These items are most commonly used with MBS item 45794 (*OSSEO-INTEGRATION PROCEDURE - extra-oral, implantation of titanium fixture, not for implantable bone conduction hearing system device*). This item has also experienced a large growth in 2019-20.

Both ankle joints and ankle joint components have increased markedly, consistent with a 40% growth in MBS item 49715 (*ANKLE, total joint replacement of*). The reason for the very large increase in the number of total ankle joint replacements in a single year is unclear.

Soft tissue substitutes are used in many parts of the body. The most common MBS item used is 49542 (*KNEE, reconstructive surgery to cruciate ligament or ligaments (open or arthroscopic, or both), including notchplasty, meniscus repair, extracapsular procedure and debridement when performed, not being a service associated with any other arthroscopic procedure of the knee*), which experienced a 15% decline over the year. Use of soft tissue substitutes have not only grown by an estimated 17% over the year, but more expensive items are being used – expenditure has increased by an estimated 40% (over \$2 million additional expenditure).

The use of external fixateurs has increased markedly, while the most common MBS item used for the procedure, 49518 (*KNEE, total replacement arthroplasty of*) has decreased.

Plastic and reconstructive

In a year where volumes of plastic and reconstructive surgery was adversely affected by the pandemic, five product groups in this category experienced high growth.

- 07.05.03 Artificial Skin (est. 47% growth)
- 07.02.09 Anatomical biomodel (est. 38% growth)
- 07.05.04 Soft tissue and tissue expanders – coupler (est. 29% growth)
- 07.03.01 Dental implants – abutment (est. 26% growth)
- 07.02.05 Mandible, Maxilla and Temporomandibular Joint (TMJ) (est. 20% growth)

Artificial skin products have increased significantly from a low base. They are most commonly used with MBS item 45018 (*Dermis, dermofat or fascia graft (other than transfer of fat by injection)*), the use of which declined in 2019-20.

Anatomical biomodels have been increasing significantly, utilised in ways not envisaged when they were placed on the Prostheses List. Multiple biomodels are being used per implant, and biomodels

are also being used where there is no other prosthesis. These uses have driven an estimated 38% growth in the product group. Biomodels are used extensively outside of the plastic and reconstructive MBS items, although the most common item used is 45752 (*MANDIBLE AND MAXILLA, complex bilateral osteotomies or osteectomies of, involving 3 or more such procedures of each jaw, including genioplasty when performed and transposition of nerves and vessels and bone grafts taken from the same site and stabilisation with fixation by wires, screws, plates or pins, or any combination, and excluding services to which item 47933 or 47936 apply*). MBS item 45752 experienced an 8% increase last year.

The use of couplers has increased approximately 29% over one year, while the most common MBS item used, 45564 (*Free transfer of tissue reconstructive surgery for the repair of major tissue defect due to congenital deformity, surgery or trauma, involving anastomoses of up to 2 vessels using microvascular techniques and including raising of tissue on a vascular or neurovascular pedicle, preparation of recipient vessels, transfer of tissue, inseting of tissue at recipient site and direct repair of secondary cutaneous defect if performed, other than a service associated with a service to which item 30165, 30168, 30171, 30172, 30176, 30177, 30179, 45501, 45502, 45504, 45505 or 45562 applies*), increased by 12.8%.

Dental implants – abutment items also increased out of proportion to the most common MBS item used, 45841 (*ALVEOLAR RIDGE AUGMENTATION with bone or alloplast or both – unilateral*), which increased by 12.6%.

The 20% growth in Mandible, Maxilla and Temporomandibular Joint (TMJ) items was primarily driven by an increase in surgical guides, another item which is not implanted in the body. This significant growth added more than \$2 million in expenditure, despite the most common MBS item used, 45729 (*MANDIBLE OR MAXILLA, bilateral osteotomy or osteectomy of, including transposition of nerves and vessels and bone grafts taken from the same site and stabilisation with fixation by wires, screws, plates or pins, or any combination, and excluding services to which item 47933 or 47936 apply*) declined by almost 10%. This is another product group which is used extensively outside the indications for which it was assessed.

While not qualifying for inclusion in high volume growth items, fracture or reconstruction plates (07.01.05) experienced a 30% increase in estimated expenditure from 2018-19 to 2019-20, despite a small drop in estimated volume.

Cardiac

Each of the high growth product groups in the cardiac product category are new to the Prostheses List, and the high growth is most likely the result of accelerated implementation.

Cardiac Ablation devices (08.18) and Catheter Delivery devices (08.17) are new sub-categories on the Prostheses List. Cardiac Ablation devices (08.18) were introduced in 2018-19, and devices growth for the two product groups under this sub-category (Cryoablation and Radio frequency (RF) Ablation) have both increased by over 200% over the past 12 months (both increased by around 155% in terms of part year effect). Transcatheter Aortic Valve Implantation (TAVI) devices (08.17.01) were introduced in 2017/18, and usage last year increased by almost 39%. The estimated expenditure in these three product groups increased from around \$38 million in 2018-19 to \$67 million in 2019-20.

The fourth new product group in the cardiac product category are antibacterial envelopes in the pacemaker lead and accessories sub-category. This group is three years old and had an estimated growth of 16% in 2019-20.

Cardiothoracic

Tissue patches (09.05.01) have increased by an estimated 68% between 2018-19 and 2019-20. Tissue patches are most commonly used with MBS item 33500 (*ARTERY OR ARTERIES OF NECK, endarterectomy of, including closure by suture (where endarterectomy of 1 or more arteries is undertaken through 1 arteriotomy incision)*), which increased by 5% over the year.

The use of stented, anatomical tissue valves (09.02.01) increased by an estimated 12% over the year. The MBS item most common used with this device is 38488 (*VALVE REPLACEMENT with BIOPROSTHESIS OR MECHANICAL PROSTHESIS*), which decreased over the year. The estimated additional expenditure over the year was over \$1 million. This growth between 2018-19 and 2019-20 was against trend; the use of this category has declined over the past five years.

Vascular

Six product groups in the vascular category experienced high growth between 2018-19 and 2019-20:

- 10.08.05 Liquid occlusion devices (est. 77% growth)
- 10.02.10 Tube, peripheral, balloon expandable stent grafts (est. 22% growth)
- 10.02.11 Tube, peripheral, self-expandable stent grafts (est. 18% growth)
- 10.06.02 Arterial embolic protection devices (est. 15% growth)
- 10.02.05 Branched stent grafts (est. 12% growth)
- 10.01.01 Bare metal vascular stents (est. 11% growth)

There was a large increase in stents implanted in 2019-20 over the previous year. Each of the product groups of stents above exceeded the 8% growth in MBS item 35309 (*TRANSLUMINAL STENT INSERTION, 1 or more stents, including associated balloon dilatation for visceral arteries or veins, or more than 1 peripheral artery or vein of 1 limb, percutaneous or by open exposure, excluding associated radiological services or preparation, and excluding aftercare*).

Liquid occlusion devices are most commonly used with MBS item 32528 (*Varicose veins, abolition of venous reflux by occlusion of a primary or recurrent great (long) or small (short) saphenous vein of one leg (and major tributaries of saphenous veins as necessary), using cyanoacrylate adhesive, if it is documented by duplex ultrasound that the great or small saphenous vein (whichever is to be treated) demonstrates reflux of 0.5 seconds or longer*), which declined by more than 9% over the year.

The growth in Arterial embolic protection devices was less than the growth in the most common MBS item used, 35312 (*PERIPHERAL ARTERIAL ATHERECTOMY including associated balloon dilatation of 1 limb, percutaneous or by open exposure, excluding associated radiological services or preparation, and excluding aftercare*) which increased by 21%.

Hip

There was an estimated 24-25% annual increase in two product groups in the hip category; Resurfacing, cemented femoral heads (11.02.04) and Acetabular components – resurfacing cups (11.03.07). The growth in these two product groups was out of proportion with the growth of MBS item 49318 (Total hip replacement), which increased by less than 1% over the year. Volumes remain low (estimated at around 380), but the significant growth in 2019-20 goes against a downward five-year trend.

Knee

Knee reconstructions and revisions were affected by the pandemic in the last half of 2019-20, with MBS items 49517, 49518 and 49527 each experiencing a 4.7-5.7% decline from the previous financial year.

While there was a slight decline in estimated prostheses use in this category overall (although not as great as the decline in the number of procedures), five product groups experienced high growth:

- 12.03.05 Uncemented alloy tibial tray components: total knee arthroplasty (est. 76% growth)
- 12.11.06 Knee accessories – end caps (est. 27% growth)
- 12.02.03 Uncemented alloy femoral component: uni-compartmental knee arthroplasty (est. 22% growth)
- 12.11.11 Uncemented alloy, for mobile insert tibial tray components: uni-compartmental knee arthroplasty (est. 14% growth)
- 12.04.06 Knee accessories – stem extenders, sleeves and other couplings (est. 13% growth)

Spinal

There are thirteen product groups in the spinal category with high growth between 2018-19 and 2019-20:

- 13.02.03 Accessories: Cap/Cover Plate (est. over 160% growth)
- 13.14.01 Sacroiliac Joint Fixation Device (est. over 50% growth)
- 13.08.02 Staple (est. 39% growth)
- 13.06.03 Dual Unit rod (est. 33% growth)
- 13.10.01 Interbody, Integral Fixation fusion cage (est. 25% growth)
- 13.02.04 Accessories: Cap/Cover Plate, complex (est. 21% growth)
- 13.01.01 Pedicle, Monoaxial bone screws (est. 21% growth)
- 13.03.02 Offset connector (est. 20% growth)
- 13.05.01 Integral Fixation plate (est. 18% growth)
- 13.01.03 Standard bone screws (est. 17% growth)
- 13.02.08 Accessories: Sublaminar Cable (est. 17% growth)
- 13.03.01 In-Line connector (est. 15% growth)
- 13.04.01 Hooks (est. 14% growth)

Overall, there has been an estimated 10% increase across the spinal product category between 2018-19 and 2019-20, equating to an estimated \$10 million increase in expenditure. This rate of growth is approximately double the growth rates of surgeries funded by private health insurance for the spinal AR-DRG categories (due to changes in the MBS following the schedule review, there are no valid comparisons with MBS item usage).

In addition to these high growth product groups in the spinal category, spinal surgery is the most common MBS item used with orthopaedic human tissue and haemostatic powders (see above).