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Blood Money: Paying for pathology services

Stephen Duckett



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Overview

Pathology tests are an essential part of modern medical care. They assist doctors to make or confirm a diagnosis so that they can advise on the correct treatment for a patient's condition.

Patients, health insurance funds and taxpayers spend a lot of money to get these benefits. Government, through Medicare, spent \$2.5 billion on pathology services in 2014-15.

Medicare-billed pathology services are mostly provided by the private sector. When private companies provide public services it is expected they can deliver services more efficiently than government, costing taxpayers less.

Australian pathology is certainly efficient. The industry's pursuit of process automation has led to ever-cheaper ways of delivering services. Thanks to market consolidation, two publicly listed firms now control more than 75 per cent of the market.

But taxpayers have seen minimal benefit from these developments. The way Australians pay for pathology services has hardly changed in the last fifty years. We pay as if testing was still done by thousands of small providers manually processing tests, and not by two industry giants with automated services.

As the Minister for Health recently noted, Medicare is not meant to provide guaranteed revenue for corporations. But pathology companies don't seem to agree. Negotiated caps on spending have been exceeded by industry for the last four years in a row. And when government wants to change policy settings,

companies threaten to shift costs to consumers, as they did recently in response to the 2015 Mid-Year Economic Forecast and Outcomes statement. There is a better way.

First, the way we pay for pathology can be improved to allow government – and taxpayers – to share in the massive efficiency savings that the industry currently keeps to itself.

Second, patient co-payments for tests should be abolished. Patients aren't the real consumers of pathology tests – the doctors who order and use them are. There is little point in co-payments if they don't improve care but in fact punish the sick, while enabling industry to use the threat of co-payments as a bargaining chip in policy battles.

Third, government could experiment with introducing price competition into the market. Companies could tender for contracts to provide the majority of pathology services in certain areas, provided they charge government less than the rebate and without adding co-payments. Public hospitals could also compete. Such a scheme could be piloted in Victoria from 2017.

These reforms could save government at least \$175 million annually. The savings come from narrowing the margins of profitable corporations, not from cutting services to the ill and vulnerable. In a time of increasing deficits, government must prioritise reforms that reduce spending without compromising the health of Australians. This opportunity should not be missed.

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1 Australian pathology payment is ripe for reform

Pathology is the science of understanding human disease.

Modern medicine is founded on a scientific understanding of the way the body functions. Together with diagnostic imaging, pathology, sometimes called laboratory medicine, gives today's practitioner an unprecedented ability to understand what changes in the body might be causing a patient's symptoms.

Pathology testing has changed dramatically over recent decades, with increased automation and an increasing range of tests available. There are a variety of pathology tests which measure various aspects of body function using blood, tissue or other samples, and new tests are becoming available every year.¹

Pathology tests are generally not initiated by a patient but are aids to a doctor or other practitioner in making a diagnosis, or monitoring the progression of an illness.²

The results of a pathology test can lead to specific treatment, reassurance, or identification that the patient may be at a higher risk than the general population of developing disease in the future.

As well as being a health service, pathology in Australia is big business. In 2014-15 doctors ordered just over 89 million

Medicare-billed pathology tests.³ In that year, \$2.5 billion was paid in Medicare rebates for pathology services,⁴ 13 per cent of total Medicare spending.

Australian patients enjoy good access to high quality pathology services, but taxpayers pay a heavy price for it. Payment structures have not changed to reflect modern cost structures in pathology provision, so that windfall efficiency savings enjoyed by industry are not shared with taxpayers. The time is ripe for reform.

1.1 The current system: who pays what

Medicare provides rebates towards the cost of pathology tests that medical practitioners, midwives and nurse practitioners determine are necessary, and order.⁵

The Medicare Benefits Schedule Book contains a list of pathology tests ('items') with a fee for each item (see Box 1). Pathology companies are not required to charge the published fee, and can charge more or less as they wish.⁶

¹ Kricka, *et al.* (2015)

² An exception might be a person with diabetes undertaking regular measurement of their control of their blood sugars.

³ This number includes the relatively small number of tests ordered by midwives and nurse practitioners. This number does not count pathology tests ordered for public patients in public hospitals or for outpatients of public hospitals, nor does it include Patient Episode Initiation items.

⁴ Including Patient Episode Initiation rebates.

⁵ Department of Health (2015) p. 29.

⁶ The additional bulk billing rebate is only paid if the patient is bulk-billed with no additional fee charged.

In Australia, out-of-hospital pathology services, and in-hospital pathology services for private patients, are paid for on a fee-for-service model.⁷

Medicare pays a rebate of 85 per cent of the fee for services provided to people who are not hospital inpatients, and a rebate of 75 per cent if they are private inpatients. Insured inpatients can recover the gap between the scheduled fee and the rebate from their private health insurance. Gaps from pathology fees count toward Medicare fee gap safety nets.⁸

For most pathology services, providers accept as full payment the rebates determined by government and paid through Medicare, rather than charging a higher fee.

In addition to the rebates payable for each test, Medicare pays a 'Patient Episode Initiation' rebate for collection of the specimens used in the pathology test.

Where a general practitioner orders multiple tests for a patient who is not a hospital inpatient, rebates are only paid for the three tests which attract the highest rebate, a rule known as 'episode coning'. Coning rules recognise that the additional costs of additional tests on a single patient are low.

The vast majority of pathology tests (89 per cent) are provided to patients who are not in hospitals.

⁷ Fee-for-service simply means that a fee (in most cases for out-of-hospital pathology services, the Medicare rebate) is paid for each service or item. Other payment methods include paying a fixed fee for a year of care, or an episode of hospitalisation.

⁸ Department of Health (Commonwealth) (2016b)

Box 1: Example pathology test – Medicare item 66512

Item description: Quantitation in serum, plasma, urine or other body fluid (except amniotic fluid), by any method except reagent tablet or reagent strip (with or without reflectance meter) of: acid phosphatase, alanine aminotransferase, albumin, alkaline phosphatase, ammonia, amylase, aspartate aminotransferase, bicarbonate, bilirubin (total), bilirubin (any fractions), C-reactive protein, calcium (total or corrected for albumin), chloride, creatine kinase, creatinine, gamma glutamyl transferase, globulin, glucose, lactate dehydrogenase, lipase, magnesium, phosphate, potassium, sodium, total protein, total cholesterol, triglycerides, urate or urea (5 or more tests)

66512 is the most common pathology item billed: 14,459,663 times in 2014-15, the 85 per cent rebate is \$15.05.

Source: Department of Health (2015)

1.2 More tests are being ordered but cost per head has not declined proportionally

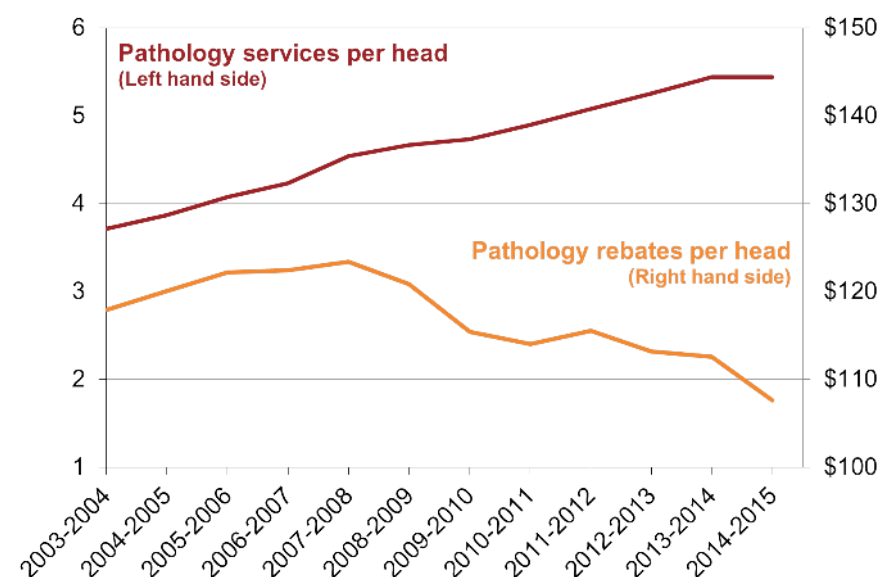
Over the last decade the average number of pathology services per person has risen 40 per cent, from around 3.9 per head in 2004-05 to 5.4 in 2014-15 (see Figure 1).

This rise is due to an increase both in the proportion of the population that had at least one test in a year (an increase of 15 per cent from 46.7 per cent in 2004-05 to 53.5 per cent in 2014-15) and the number of those who, having had one test, go on to have more (a 25 per cent increase from 5.6 to 7.0 per cent).

As test volumes increase, we would expect to see efficiency improve and average rebates come down commensurately. Pathology rebates have declined in real terms, but only by about 10 per cent relative to volume increases of 40 per cent (see Figure 1).

Figure 1: Test volume is increasing, but average rebates have not declined proportionally

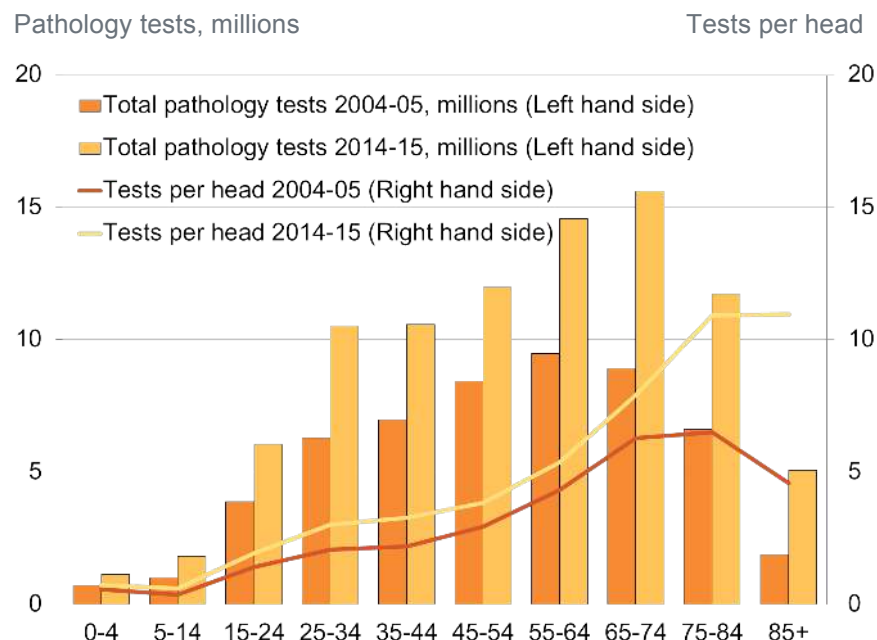
Pathology services (LHS) and rebates (RHS) per head



Notes: Per capita basis calculated using the yearly average of series A2060842F in Table 3 of ABS Catalogue 3101.0. Rebates adjusted for inflation using series A2331115L in Table 11 of ABS Catalogue 6401.0.

Source: Grattan analysis of Medicare data, Table 2, Department of Health (Commonwealth) (2016c)

Figure 2: Doctors order more tests per head today than a decade ago, particularly for older people



Notes: Per capita basis calculated using Table 59 of ABS Catalogue 3101.0. Tests defined as services falling into MBS pathology sub-groups P1-P9.

Source: Grattan Institute analysis of Medicare pathology services by patient demographic - Department of Human Services (Commonwealth) (2016a).

The increase in tests reflects a number of phenomena, including a small rise in inappropriate ordering (see Chapter 5). But the most significant factors are changes in practice patterns – doctors are ordering more tests on everyone – and the ageing of the population (see Figure 2).

Over the last decade, government spending on Medicare-billed pathology services has increased 67 per cent. When population growth and inflation over the period are taken into account, this represents a decline in spending per head of about 10 per cent in real terms.

Growth in government spending on Medicare-billed pathology services is slower than overall growth in Medicare rebates in the same period (which more than doubled) and for both specialist (an 82 per cent increase) and non-referred attendances (105 per cent). Spending control is in part due to specific budget initiatives that tweaked fee schedule descriptions⁹ or changed fee relativities.¹⁰

1.3 Pathology payment is excessive

The appropriate level of expenditure is the *efficient* level of expenditure, not how much other sectors are consuming, or how much we used to spend. Policymakers should be focused on getting taxpayers the biggest bang for the buck, through cheap, high quality services.

Pathology payment in Australia today is not efficient. This is because the way we pay for pathology hasn't changed while the cost of pathology provision has.

⁹ For example, in 2008-09, the descriptions for three groups of items were changed, saving \$103 million over four years.

¹⁰ In 2009-10 pathology collection fees were adjusted, saving \$348 million over four years.

1.3.1 Cost to government – prices

In a normal market, price would be determined by the interaction of supply and demand. But health care is not a normal market.¹¹ Market failure occurs for a host of reasons: consumers do not have the same information that providers do, and agents – essentially doctors – make many decisions on behalf of patients.

The question of agency is particularly important in pathology. Pathology tests are ordered by doctors to assist them to make a diagnosis. Patients generally have to rely on their doctor to make the right choices about what tests are needed. The corollary of this is that policies and incentives to improve test-ordering are best directed at changing the behaviour of doctors – the agent of the patient – rather than the patients themselves.¹²

The pathology industry in Australia is characterised by a high degree of concentration and regulated prices. Two companies listed on the Australian Stock Exchange dominate Medicare-billed pathology testing: Sonic Health Care (SHL), with 42.5 per cent of the market, and Primary Health Care (PRY), with 35.6 per cent.¹³

Many aspects of pathology are now highly automated,¹⁴ which means additional tests can be performed for very little cost. The larger the volume ('scale') of a pathology processing site, the greater will be the economies that the owner can achieve.

Economies of scale are considerable in those sections of the pathology schedule where testing is automated.¹⁵ For operators, the savings through automation can be very large indeed: one laboratory reported a 27 per cent increase in productivity (specimens per employee) each year over the period 1998 to 2000.¹⁶ Productivity improvements in the industry have continued since then.¹⁷

However, in Australia rebates are fixed for each test and do not vary directly with volume of tests ordered.¹⁸ The costs of collecting specimens and transporting them to the processing centre is labour-intensive, so economies of scale are less apparent for patient episode initiation.¹⁹

¹¹ Arrow (1963)

¹² Conrad (2015)

¹³ Richardson (2015). Primary Health Care has multiple trading names such as QML in Queensland and Dorevitch Pathology in Victoria.

¹⁴ Streitberg, *et al.* (2012)

¹⁵ Glauser, *et al.* (2015)

¹⁶ Sarkozi, *et al.* (2003)

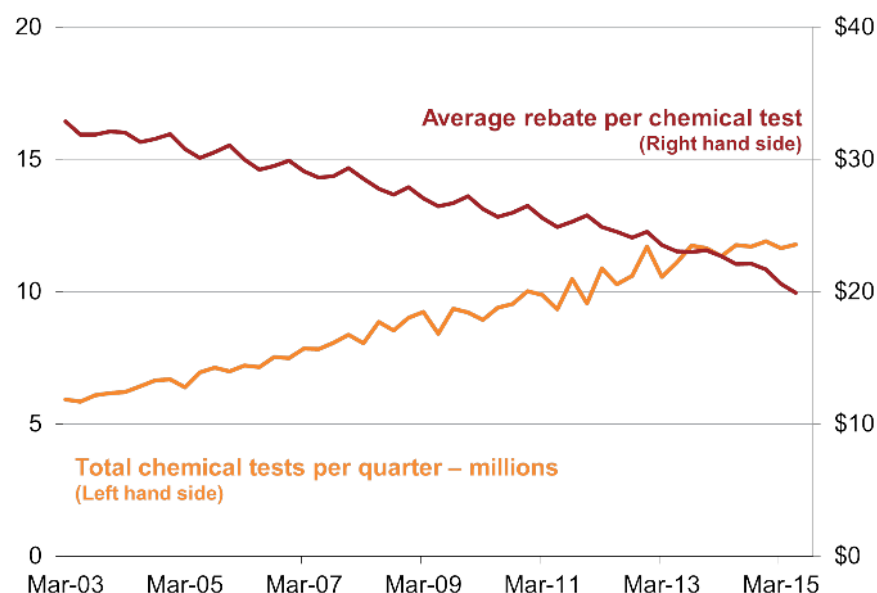
¹⁷ Armbruster, *et al.* (2014); Felder (2015)

¹⁸ Two sets of payment rules qualify this statement. The first is coning, discussed in more detail in section 3.2, which specifies that Medicare only pays for the first three pathology items ordered for out-of-hospital patients on any day. The second is 'laddering' where a number of pathology items are defined by how many of a specific list of tests is performed (e.g. four tests from a list might be counted as a single item). Laddered items have caps e.g. the item with the highest number of tests that might be performed is five, in which case if six or more tests were performed only the single item relating to five tests could be billed.

¹⁹ Distribution of patient collection centres is a business decision of the pathology companies, driven by commercial considerations including capturing market share. The prices paid to locate collection centres in medical practices may be inflated (see section 1.3.2).

Figure 3: Reduced average rebates capture less than half of cost savings from increased test volume

Tests in millions (LHS) and average rebate per test (RHS)



Notes: Rebates adjusted for inflation using series A2331115L in Table 11 of ABS Catalogue 6401.0.

Source: Grattan Institute analysis of Medicare pathology services group statistics - Department of Human Services (Commonwealth) (2016a)

Figure 3 shows that since March quarter 2003 the number of Medicare-billed chemical pathology tests increased around 100 per cent. Rebates per test declined around 40 per cent in real terms, principally as a result of other changes to the pathology schedule.

The increase in the number of billed tests probably resulted in lower costs per test for pathology providers due to economies of scale, such as, for instance, more intense use of existing equipment. Most of the benefits of the reduced cost per test were captured by the pathology corporations, with government (and taxpayers) receiving little of the benefit of increased test volumes.

Fixed pricing per test means that providers accrue all the benefits of the volume-related decline in cost, resulting in greater profits for greater volumes. As a result, pathology businesses appear to be quite profitable, with returns of around 13-15 per cent.²⁰

Technological change has had different impacts on different types of pathology tests. This means that relative prices in the current schedule no longer represent contemporary cost relativities.²¹ In those sections of the schedule which are now highly automated (e.g. chemistry), the marginal or incremental cost of performing additional tests is trivially small relative to the rebate, which is set at full average cost. Pathology companies are able to cross-subsidise from one type of test to another, this can create problems with niche providers.

Total cost of pathology services also include the cost of collecting specimens, which is paid through Patient Episode Initiation fees. Competition for market share potentially leads to pathology corporations paying relatively high prices to other medical practitioners to co-locate their collection centres.

²⁰ Returns derived from Grattan Institute analysis of company annual reports. The proposals in this report would reduce revenue for pathology businesses and encourage companies to drive efficiencies through consolidation or further automation.

²¹ New tests added to the schedule generally have fees more closely aligned to costs.

The private pathology lobby group, Pathology Australia, argues that its members are paying inflated rents for co-located centres, estimating the excess costs at \$200 million per year.²²

Prices paid for collection centres by pathology companies is a business decision, with potentially inflated prices traded off by the companies as part of their quest for market share and volume. Where the pathology company is also involved in primary medical care, the excess is simply an inter-company transfer.

Rental prices for collection centres are regulated by the Health Insurance Regulations which provide that rents cannot be more than 20 per cent above market rental.²³

The prices paid for collection centre rentals have been described as a 'nice earner' for general practitioners,²⁴ and are now incorporated into income flow expectations of general practitioners, partially offsetting the freeze on general practitioner rebates. Any government review of the rental arrangements should be within this wider general practice context.

The fact remains, though, that the prices paid by pathology corporations are commercial decisions and it is disingenuous for the pathology industry lobby group to complain about the commercial outcomes that their members negotiated. The excess prices paid by the industry might also be a place for industry to examine in making the savings identified in this report.

1.3.2 Cost to government – total spending

The total cost to government depends on the price of each test and how many tests it pays for.

A major focus of government pathology payment policy has been to moderate spending through negotiated deals with industry formalised in the Pathology Funding Agreement.

The current Agreement covers the period July 2011 to June 2016.²⁵ One of the key objectives of the Agreement is to 'promote value for money' for government outlays, and it includes agreed ranges of expected expenditure on pathology services (targets).

The Pathology Funding Agreement does not guarantee that either the base prices to be paid for pathology items, nor the indexation arrangements, will result in the most efficient prices being paid.

²² Pathology Australia (2015)

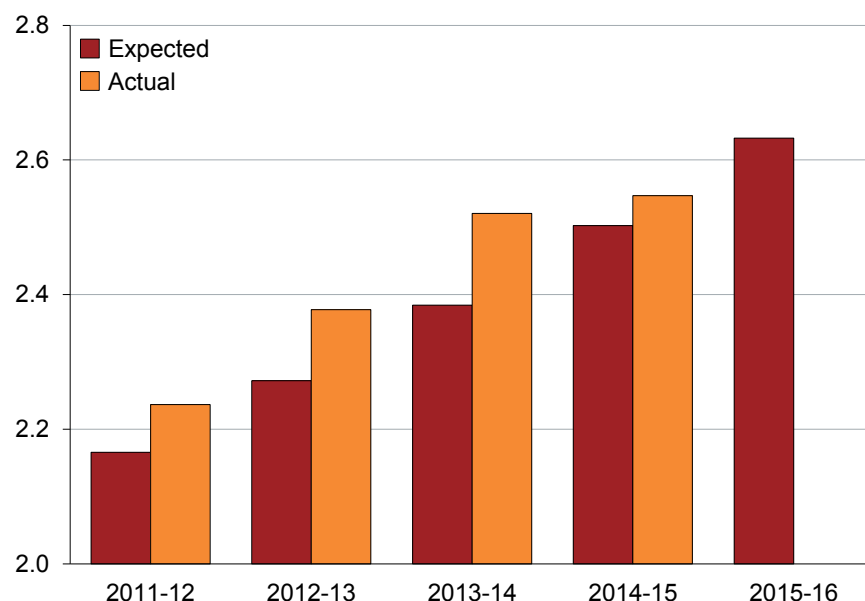
²³ Regulation 20CA

²⁴ Arnold (2012)

²⁵ The 2014 Commonwealth budget included provision for pathology co-payments. Although these changes did not proceed, they effectively overturned the Agreement and it is understood that no work on the Agreement has been undertaken since then.

Figure 4: Costs are increasing faster than the targets set in the Pathology Funding Agreement

\$, Billions



Sources: Pathology Funding Agreement (2011) and Medicare benefit data from Department of Human Services (Commonwealth) (2016a). Expected expenditure is not adjusted for any Government policy changes.

Further, the targets set in the Agreement have not been achieved, with overruns of 1 to 5 per cent each year (see Figure 4). The cumulative overrun in the first four years of the current five year Agreement is \$357 million.

The Agreement has a series of let-out and dispute resolution clauses which make management of the Agreement complex. For example, the Agreement provides that 'reconsideration' of the

outlay targets may occur if Medicare consultations increase by more than 3.5 per cent where there are 'demonstrable flow-on effects to pathology requesting'.²⁶

The previous Agreement had similar problems with overruns. The agreed rate of expenditure growth in that Agreement, for instance, was 5.3 per cent, whereas actual growth was 7 per cent.²⁷

The pathology lobby groups have commissioned reports from consulting companies to explain why the negotiated Agreement caps have been exceeded, generally arguing that government policy or other external factors justify the overruns.²⁸

In fact, the escalation provisions in the Pathology Funding Agreement were generous compared to similar policies internationally (see Chapter 2). In Canada, for example, the Ontario equivalent arrangement has been capped for many years. The Alberta contract provides for escalation which barely covers population growth and inflation.

1.4 The right cost?

The process of setting pathology rebates is opaque, despite a clause in the Pathology Funding Agreement which committed the Government and the pathology industry to work towards developing a transparent fee-setting mechanism.²⁹ Industry has

²⁶ clause 14 a

²⁷ Auditor-General (2008)

²⁸ KPMG Econtech (2011)

²⁹ Clause 21: *The Parties to this Agreement agree to contribute to developing a more transparent mechanism for setting and reviewing (pathology) schedule fees..., based on better cost information, such as direct costs of individual tests, the indirect costs (overheads) related to providing tests, the costs of collection,*

not provided the relevant cost information to allow a transparent fee-setting process.

The most recent publicly available information about the cost structure of the pathology industry is more than a decade old.³⁰ No information in the public domain suggests there has been any independent benchmarking used in setting pathology rebates under Medicare. It seems that rebates are simply adjusted as part of a negotiated Agreement with pathology providers.³¹

A recent review of pathology prices in Australia concluded that:

*It is becoming increasingly apparent that many pathology fees, historically set through Medicare arrangements, are not in line with contemporary practices.*³²

Updating of fee relativities requires good information on contemporary costs which the government does not have.

Pathology payment is in desperate need of updating. The Australian situation is not unique – technological change has made many countries' payment arrangements obsolete. International experience is reviewed in the next chapter of this report.

Potential savings from changes within the existing pathology payment arrangements are reviewed in Chapter 3. Chapter 4 examines a contemporary policy issue – the place of co-payments – arguing that they are not appropriate for pathology services. Chapter 5 identifies the need to examine the issue of potentially inappropriate pathology test ordering. Chapter 6 estimates savings from moving to a more business-like pathology payment arrangement.

and the professional medical and scientific time required to be spent on providing tests.

³⁰ Australian Bureau of Statistics (2003)

³¹ Pathology Funding Agreement between the Australian Government and the Australian Association of Pathology Practices and the Royal College of Pathologists of Australasia and the National Coalition of Public Pathology, signed 13 April 2015.

³² Medical Benefits Reviews Task Group. Department of Health and Ageing (2011)

2 Other countries are modernising pathology payment

The productivity transformation in pathology services is occurring around the world. Many other countries are struggling with outmoded payment policies that haven't kept pace with industry innovation and are modernising their policies.

As a result, even in the early stages of changes in pathology payment, other countries are paying lower prices for similar tests.

2.1 Australia tends to pay more for pathology than other countries

Figure 5 shows the prices paid for comparable pathology tests in the United States, New Zealand and Canada compared to Australia's Medicare out-of-hospital rebate.

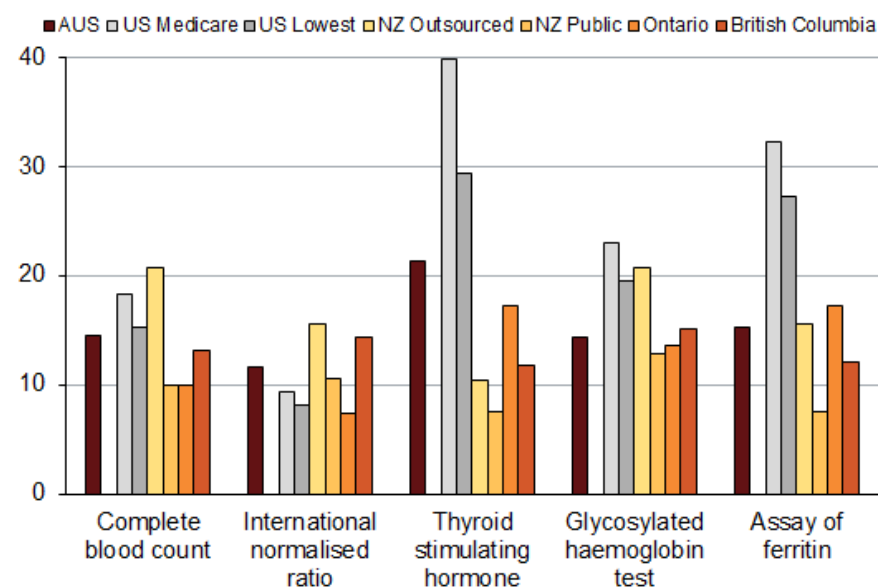
Although comparing pathology costs across countries is difficult,³³ it appears that prices for comparable pathology tests in Australia are higher than in other countries.

2.2 United States

As Figure 5 shows, US Medicare generally pays most for each test, with private US payers ('US Lowest') achieving better prices – in one case better than Australian Medicare prices.

Figure 5: Pathology prices in Australia are never the cheapest

\$AUD (2015)



Source: Grattan Institute analysis, see methodological appendix for detail on data sources and our approach to equating tests.

In some respects, government pathology payment in the United States is similar to Australia's. Medicare – the United States' scheme for the elderly and disabled – is the largest funder of pathology services. As in Australia, two large private firms dominate the US Medicare pathology market.³⁴ Also, payment is

³³ Other countries do not have the same coning rules as Australia, for example

³⁴ Gass Kandilov, *et al.* (2012)

made through uncapped, fee-for-service arrangements using a fixed price schedule.

Payment policy for pathology under US Medicare has been stagnant for many years, despite calls for more experimentation, such as shifting to a tendering process.³⁵

US Medicare has controlled spending primarily through very tight constraint on indexation. Average annual indexation of clinical laboratory services payments over the period 1995 to 2007 was 0.48 per cent, compared to the Consumer Price Index average of 2.6 per cent and average indexation of Medicare physician payments of 2.8 per cent.³⁶

But merely holding the line on payment indexation is not an adequate policy, especially given the technological innovation and economies of scale which have decreased costs per test for most of the high volume tests.³⁷ US Medicare's Inspector-General concluded that in 2011, Medicare paid between 18 and 30 per cent more than other insurers for 20 high-volume and/or high-expenditure lab tests.³⁸

A recent review of US Medicare pathology payment policy concluded that the system, designed in the 1980s, was out-dated:

Payments are not consistently related to costs, and neither the rates nor the basic payment methodology has evolved

*to take into account technology, market, and regulatory changes.*³⁹

The same may be said of Australian payment policy, which was designed in the 1970s.

US Medicare has recently announced a major change in its funding policy which aims to reap the benefits of competition by incorporating the prices paid by other funders of pathology services into its price-setting approach.⁴⁰

2.3 Canada

Canadian provinces are facing the same pathology pricing pressures as Australia. Two provinces, British Columbia and Ontario, have begun major overhauls of their payment systems.

In three common pathology services categories prices in British Columbia are below Australian prices; on average, British Columbia prices are about 15 per cent below the Medicare rebate.

Nevertheless a new legislative framework in British Columbia has taken laboratory services out of the general acts, which cover hospital and other community-based medical care, and placed them into a new consolidated act.⁴¹ This new act foreshadows the consolidation of laboratories to achieve greater economies of scale.

³⁵ Kautter and Pope (2013)

³⁶ Wolcott, *et al.* (2008)

³⁷ Glauser, *et al.* (2015)

³⁸ United States. Department of Health and Human Services. Office of Inspector General (2013)

³⁹ Gass Kandilov, *et al.* (2012)

⁴⁰ US Federal Register (2015)

⁴¹ Government of British Columbia (2015)

In Ontario, pathology expenditure has been capped for a number of years, with providers required to absorb the costs of volume increases and new technology.⁴²

Even so, an independent expert review panel has recommended major changes to funding arrangements including moving to long term (seven to ten year) 'performance-based' contracts⁴³, which involve a discount on contemporary prevailing prices. Prices in the Canadian province of Ontario are expected to fall after implementation of these reforms.

Pathology services in Alberta are provided by both public and private providers, with a monopoly provider in each market area. Services in Edmonton are currently provided by a private company, Dynalife. The Dynalife contract caps growth in pathology payments at 3 per cent, effectively requiring Dynalife to absorb all the costs of growth in volume of pathology tests per head of population.

2.4 England

The last decade has seen significant pressure to 'modernise' pathology services provided within the English National Health Service (NHS). Two external review reports (both chaired by Lord Carter of Coles) have championed consolidation, or 'networking', as a way of achieving efficiency gains via economies of scale.⁴⁴

⁴² Some new technologies can increase costs, as when older tests are replaced by new, more accurate tests, perhaps with a different scientific base (e.g. molecular tests).

⁴³ Ontario. Laboratory Services Expert Panel (2015)

⁴⁴ Beastall (2008); Great Britain. Department of Health (2006); Great Britain. Department of Health (2008)

The English NHS publishes 'reference cost' data on out-of-hospital pathology services.⁴⁵ Unfortunately these are only published at an aggregate level (e.g. clinical biochemistry) rather than an individual test level.⁴⁶ This means that it is not possible to compare English costs or prices with those prevailing in other countries.

2.5 New Zealand

In New Zealand the country's 20 District Health Boards are responsible for ensuring access to pathology services. District Health Boards may provide laboratory services themselves or contract out provision to private laboratories.

Two New Zealand prices were examined, one where a District Health Board uses an out-sourced provider, the other was the internal charging applied by another District Health Board. The New Zealand comparisons are instructive: the internal charging prices are significantly below Australian prevailing prices and possibly reflect before-profit prices that may be achievable in Australia (from public sector providers, for example). The out-sourced provider prices were higher than the in-sourced costs.

International examples suggest lower prices are feasible

Taken together, this analysis of comparative prices suggests there is scope for reduction in prices paid in Australia.

⁴⁵ Reference costs for pathology services for in-patients or out-patients are incorporated into the English equivalent of a Diagnosis Related Group rather than reported or paid separately.

⁴⁶ UK Government (2015)

3 Share the savings (and other savings measures)

Systematic reform of pathology payment has been canvassed for more than thirty years, but the only outcome has been minor adjustments to existing arrangements. As recently as 2011 a review canvassed more fundamental changes that would reflect the evolution in industry structure and processes. Recent proposed changes are outlined in this chapter.

3.1 Fee-for-service

Both out-of-hospital pathology services, and pathology services to private patients in hospitals, are paid for on a fee-for-service model.⁴⁷

Fee-for-service has been the predominant method of reimbursing professionals for centuries and is common in most developed countries.⁴⁸ It arose when medicine was principally practised by individual professionals in a one-to-one relationship with their patients, and the patient paid their provider. Neither of these elements applies to provision of pathology services in Australia today.

Fee-for-service has a number of strengths, including providing a direct reward for effort: a payment is made for every reimbursable test.

⁴⁷ Fee-for-service simply means that a fee (in most cases for out-of-hospital pathology services, the Medicare rebate) is paid for each service or item. Other payment methods include paying a fixed fee for a year of care, or an episode of hospitalisation.

⁴⁸ Glaser (1970)

But fee-for-service also has many weaknesses. Pathology services are no longer principally provided by individual professionals. In Australia the market for Medicare-billed pathology services is a duopoly, dominated by two large, stock-exchange listed companies employing hundreds of staff with a variety of backgrounds including nurses, scientists and pathologists.

3.2 Coning

Coning rules currently limit payment to three tests on each person per day. Each test is paid for in full, even though the costs of running the second test are lower than the first, and the costs of doing the third test are lower still.

Different approaches to coning could be adopted. In hospitals, for instance, the analogous rules for procedures involve discounting of second and subsequent procedures where multiple operations are performed on a patient in a single session. The total fee is the sum of 100 per cent of the fee for the most expensive procedure, plus 50 per cent of the fee for the second most expensive and 25 per cent of the fee for all other procedures.

3.3 No competition in the market

From the perspective of the payer – the government – there is no price competition in the out-of-hospital pathology market. Non-price competition, in areas such as service quality or timeliness, appears to be directed at capturing market share of referring practitioners. The only incentives in the funding system to

encourage practitioners to moderate their test ordering behaviour are the relatively blunt coning rules.

Existing fee-for-service funding pays pathology corporations for performing more tests on more people at the full value of the rebate. Government does not share in scale economies.

3.4 Reform so far

Fee-for-service payments for pathology services have evolved over time to address some of the system's limitations:

- the Pathology Funding Agreement was put in place to moderate cost growth;
- coning rules were established and item descriptions revised to recognise the efficiency involved in performing multiple tests on a single specimen;⁴⁹
- the costs of specimen collection were separated from the test payment; and
- some item descriptions have been changed to constrain some inappropriate test ordering.⁵⁰

⁴⁹ Because pathology companies only bill Medicare for the most expensive tests, a consequence of the coning rules is a loss of information about what tests are being performed, reducing government's the ability to monitor changes in practice patterns.

⁵⁰ Refining item descriptions may be of limited effectiveness if the doctors who order the test don't provide sufficient information on the order slip to verify that the request is consistent with the description.

Further enhancements to fee-for-service could include a Pathology Funding Agreement that introduces tighter control on cost growth through automatic rebate reductions to ensure target expenditure levels are met. The international experience with this approach is variable, although recent Canadian experience (discussed in section 2.3) suggests that tight control can work.⁵¹

3.5 Strategies to improve existing arrangements

Capping arrangements such as those incorporated in the Pathology Funding Agreement can be supplemented by a number of other strategies including:

- introducing a volume discount for large providers;
- revising the coning rules;
- reviewing and updating pathology rebate relativities to recognise technological advances;
- reviewing the patient episode initiation fee arrangements; and
- splitting the professional (pathologist) and technical component of tests.⁵²

The first four of these possibilities were canvassed in the 2011 pathology services review discussion paper.⁵³ Each has the

⁵¹ Barer, *et al.* (1996), Reschovsky, *et al.* (2015); Hahn (2014)

⁵² Weiss (2007)

⁵³ Medical Benefits Reviews Task Group. Department of Health and Ageing (2011)

potential to achieve some reductions in spending and should be pursued.

The greatest savings opportunity is at the top of the list. Introducing volume discounting for large providers would allow government to share in the benefits of scale economies. Currently, those benefits are primarily captured by providers (see Figure 3).

The 2011 pathology report suggested the discount rate should be at least 5 per cent. In addition, access to Medicare out-of-hospital pathology rebates should be conditional on bulk billing (see Chapter 4) and the incentive for bulk billing should be abolished.

Volume discounting should apply to all providers with activity above a particular threshold in any market area.⁵⁴ In the first instance, volume discounting might only apply to the chemical pathology section of the fee schedule.

The size of the discount can be negotiated as a commercial arrangement between the funder, government and the service providers.

This approach would change the nature of the government's engagement with the pathology industry. It would recognise that the industry is now dominated by large corporations. It would update the government's interaction with the corporations to

⁵⁴ The Australian Competition and Consumer Commission has considered the nature and size of the pathology market in a number of determinations reviewing mergers and acquisitions. For the purpose of volume discounting, markets might be determined as capital city metropolitan areas in larger states, and Primary Health Network areas in rural and regional Australia.

recognise that government is a purchaser of services from those corporations. The negotiations would recognise the commercial realities of the industry and aim to ensure a good return for the taxpayer. This new more pragmatic approach was signalled by Health Minister Sussan Ley in January 2016:

*Medicare is not designed to be a guaranteed bankable revenue for corporations, nor is a taxpayer-funded payment like this provided to cross-subsidise other costs of doing business for pathology companies.*⁵⁵

In the past, moving pathology payment to a more businesslike arrangement may have risked triggering the 'civil conscription' limitations in the Constitution about Commonwealth power over medical services.⁵⁶ Recent High Court decisions suggest that negotiated or tender arrangements for pathology corporations with multiple successful tenderers and limited to out-of-hospital pathology services would not breach those provisions.

A sufficiently large negotiated discount could achieve savings similar to those achieved through market testing.

Limiting the discount to larger providers in a particular market area would also protect the smaller players in the pathology market.

3.5.1 Tidy up existing scheme

More than \$1.8 billion was spent in 2014-15 (70 per cent of government pathology spend) on four sections of the pathology

⁵⁵ Ley (2016)

⁵⁶ See Faunce (2009); Faunce (2008)

schedule where there is a high prevalence of automation (haematology, chemical, microbiology and immunology).

Tidying up the existing funding arrangements to share the benefits of scale economies could yield savings of around \$75 million per year.⁵⁷

Further savings of around \$100 million a year could be achieved by abolishing the bulk billing incentive and requiring participating pathology companies to bulk-bill all services.

Reforming existing arrangements could save about \$175 million per year.

3.5.2 Longer term options, the role of primary medical care

About two thirds of pathology tests are ordered by general practitioners. Changing general practitioners' test ordering practices could have significant impacts on demand for pathology services. The issue of inappropriate test ordering is discussed further in Chapter 5. Consideration might also be given to encouraging appropriate point of care testing by general practitioners.

⁵⁷ Savings of 5 per cent estimated on the 78 per cent of the market controlled by the two large providers, it includes savings from all test types other than Tissue Pathology or 'Simple Basic Tests'. Savings estimate further discounted by 11 per cent to apply only to out-of-hospital share of pathology services. In some market areas other providers might face discounted fees. The 5 per cent savings target is based on the 2011 Discussion Paper. There has been further market consolidation and technological change since that time suggesting a higher target is appropriate, the abolition of the bulk billing incentive is proposed as an alternative to a higher target.

4 Co-pay, no way!

Pathology services are almost never initiated by consumers – professionals order tests to assist them to make a diagnosis. In those circumstances there is no theoretical argument to use financial incentives on consumers, in the form of co-payments, to limit demand.

4.1 Most pathology tests are bulk-billed

Almost 99 per cent of pathology tests for out-of-hospital patients are bulk-billed, an increase from 93 per cent a decade ago.⁵⁸

However, only two per cent of pathology services provided to private inpatients are bulk-billed.

The overall bulk billing rate is 88 per cent and varies slightly by state (91 per cent in South Australia, for instance; 87 per cent in New South Wales).⁵⁹

The bulk billing rate for out-of-hospital pathology services is significantly higher than the bulk billing rate for general practitioner/non-referred services (84 per cent bulk-billed) as well as for all types of service (on average 78 per cent bulk-billed).

⁵⁸ The rate dipped from 95 per cent in 2008-09 to 94 per cent in 2009-10, increasing to 97 per cent in 2010-11 with the introduction of the bulk billing incentive items.

⁵⁹ Figures taken from the Annual Medicare Statistics page, Department of Health (Commonwealth) (2015a)

When services are not bulk-billed, patients or their insurers pay an average of \$29 in out-of-pocket costs, with patients in New South Wales paying about \$5 per test more than this.

About two thirds of pathology rebate expenditure is for tests ordered by general practitioners, and the remaining third tests ordered by specialists.⁶⁰

The gap between fees charged and benefits paid was almost \$206 million, most of which (\$188 million) was for in-hospital pathology items.

4.2 The 2015 MYEFO

On 15 December 2015 the Commonwealth Government released its Mid-Year Economic and Fiscal Outlook (MYEFO) statement which included the abolition of an incentive for pathology providers to bulk-bill.⁶¹

The bulk billing incentive was introduced by the Labor government in 2009 and paralleled the bulk billing incentives for general practitioner visits introduced by the Liberal government in 2004-05. The pathology bulk billing incentives range from \$1.40 to \$3.40, depending on the test.

In 2014-15, the government paid \$101 million for pathology bulk billing incentives, so when the program is abolished the full year

⁶⁰ 2014-15 data provided by Commonwealth Department of Health.

⁶¹ Biggs (2015)

savings will be of the same magnitude, adjusted for inflation and growth in services.⁶²

Logically, if government outlays are to be reduced through abolition of bulk billing incentives then either pathology providers will absorb the reduction in revenue or consumers will pay more out of pocket – or there will be a mix of both.

Health Minister Sussan Ley suggested that because of the extent of competition in the industry, pathology providers would absorb the impact.⁶³ Listed company share prices declined precipitously with the announcement, suggesting the market shared that view.⁶⁴

The chief executive of one of the affected companies, however, argued that consumers would bear the brunt of the change:

*The government has a responsibility to run the country, we have a responsibility to look after our shareholders, and we will be looking to offset any changes in this process to make sure our shareholders are kept intact.*⁶⁵

This statement is entirely consistent with the corporation's listing obligations and corporate law – to pursue the interests of their shareholders. The pathology industry has opposed budget

savings in the past, including threatening to pass costs on to consumers.⁶⁶

Consumer groups and the main pathology industry lobby group also warned that consumer out-of-pocket costs might increase.⁶⁷

Limiting access to Medicare rebates to those providers that bulk-bill their out-of-hospital pathology services would remove the risk of corporations passing on the impact of government policy changes on to consumers.

4.3 Cost to patients

There are two main forms of cost to patients: out-of-pocket costs incurred when a pathology test is not bulk-billed, and the travel and time costs involved in providing a specimen for testing.

Possibly because of the high rates of bulk billing of pathology services, few consumers – less than 2 per cent – report that out-of-pocket costs have caused them to defer a pathology test.⁶⁸

Even though the proportion of people choosing not to have a test for cost reasons is low, the consequences of failure to have a test can be great (for example, failure to make a critical diagnosis) and are not easy for the consumer to assess. For this reason,

⁶⁶ Biggs (2015), plus campaigns on the impact of the MYEFO changes on pap smears (Guthrie (2016)) and patients with diabetes (Lee (2016)) provide contemporary examples.

⁶⁷ Biggs (2015)

⁶⁸ Medical Benefits Reviews Task Group. Department of Health and Ageing (2011), unpublished results from the 2014-15 Patient Experience Survey provided to Grattan Institute by the Australian Bureau of Statistics confirmed these results.

⁶² P12 'Management of Bulk Billed Services' and P13 'Bulk Billed Patient Episode Incentive'

⁶³ Ley (2015)

⁶⁴ ASX (2015a); ASX (2015b)

⁶⁵ Lewis and Tasker (2015)

whatever the argument for consumer co-payment in other parts of the Medicare Benefits Schedule, it is difficult to see any grounds for consumer co-payments in diagnostic tests.

4.4 Caps and co-payments

The focus of the Pathology Funding Agreement is on capping government outlays. It does not address consumer outlays through co-payments.

One weakness of the current 'capping' approach is that, as Figure 4 shows, the cap is not actually a cap. Even in terms of government outlays it has been breached in every year of the current Agreement so far.

The Agreement cap also leaves consumer co-payments uncapped. These are very significant for hospital inpatient stays, especially for patients admitted to an intensive care unit, and exist to a small extent for non-inpatients.

Patients do not order pathology tests nor are they the principal consumer of the information generated by the test. At least in the out-of-hospital market, there are very high levels of bulk billing. As a result, few patients defer tests because of costs. Co-payments therefore do not appear to play a significant role in reducing demand, but simply serve to increase provider revenues (and profits).

Co-payments have other weaknesses, including an adverse impact on equity and the fact that they do not distinguish between appropriate and inappropriate treatments.⁶⁹

Even if payment policy was reformed to involve sharing the benefits of economies of scale or tighter caps, the current option to charge co-payments means that pathology corporations may still be able to shift costs on to consumers.

⁶⁹ Kiil and Houlberg (2014)

5 Act on inappropriate ordering

The cost of pathology services is the result of the interaction of price and quantity. Whatever the price paid for a test, it is waste if the test was unnecessary in the first place.

5.1 The perils of pathology

Pathology tests can detect changes in the body which have no clinical signs or symptoms. The benefit of this is that treatment can be initiated early in the course of disease, potentially improving outcomes.

But identifying abnormalities through pathology tests can also lead to ‘over-diagnosis’ – declaring people ill when they aren’t.⁷⁰

There are a number of ways in which this occurs. Firstly, if a range of tests are performed, some might reveal an abnormal result due to random fluctuations and the normally occurring rate of ‘false positive’ results: by the time a retest is done, the aberrant result might have returned to normal but treatment may have been initiated in the meantime.⁷¹

Secondly, pathology results are used to assess risk of developing a disease (e.g. high cholesterol increases the risk of heart disease and stroke), but it is easy to mistake the pathology result as a disease in itself. Redefining the threshold between ‘high’ (or

abnormal results) and ‘low’ (normal results) can shift millions of people into an ‘at risk’ category, or reclassify them as suffering from a disease.

Pathology services can also be over- or underused without leading to over-diagnosis. Both overuse and underuse are inefficient: the first because tests are being ordered unnecessarily, the second because insufficient information may result in failure to make a diagnosis.

5.2 The right test?

The first element of pathology policy is about ensuring that the right tests are ordered, and only the right tests. Inappropriate test ordering incurs both direct and immediate costs (the waste associated with ordering an unnecessary test) and costs associated with inappropriate treatment that might be initiated because of spurious and irrelevant test results.⁷²

The reasons for the ordering of inappropriate tests can be complex, including the characteristics, attitudes and perceptions of the practitioner, social influences from other practitioners or the patient (for example, a patient’s high levels of anxiety), and the capability of the practitioner.⁷³

⁷⁰ Moynihan, *et al.* (2012); Moynihan, *et al.* (2014); Welch, *et al.* (2011); Justman (2015)

⁷¹ A ‘false positive’ result is where a test result comes back showing an aberrant (positive) result, but that the true underlying indicator (such as blood chemistry) is not indeed positive, so the result is a false one.

⁷² Jackson (2007), Fryer and Smellie (2013)

⁷³ van der Weijden, *et al.* (2002); Sood, *et al.* (2007)

5.2.1 Extent of inappropriate test ordering

Inappropriate test ordering is widely recognised as a serious issue, with high rates of both over- and underutilisation reported.⁷⁴ Because of the definition of pathology items and the coning rules, Medicare does not pay for all tests that might be ordered, and as a result, does not count them.⁷⁵

Supported and unsupported tests

The most comprehensive study of the appropriateness of Medicare-billed pathology test ordering is Bayram's doctoral dissertation, which analysed data collected as part of the 'BEACH' sample data from general practitioners.⁷⁶

Bayram concludes (p302) that she:

found no evidence to support concerns raised in the literature about widespread inappropriate ordering, or assertions that increases in ordering reflect disproportionate increases in inappropriate ordering.

As part of her research, Bayram examined test ordering for six conditions or types of presentations: hypertension; type 2 diabetes; lipid disorders; health checks, weakness/ tiredness, and overweight/ obesity.

Bayram classified tests ordered for those presentations into four categories, according to whether the test was supported by evidence in the literature or guidelines; conditionally supported; not supported; or not evaluated. Table 1 shows the results for the two clear categories of the schema.

Table 1: Ordering of supported and not supported tests by general practitioners (per 1000 problems managed)

	Supported			Unsupported		
	2000-02	2006-08	Change	2000-02	2006-08	Change
Hypertension	15.3	21	37%	1	1.7	70%
Type 2 Diabetes	49.1	63.7	30%	4.5	8.1	80%
Lipid Disorders	48.8	50.3	3%	3.1	5.9	90%
Health Check	41.4	43.5	5%	44.9	84.5	88%
Weakness / Tiredness	134.1	166.8	24%	13.3	20	50%
Overweight / Obesity	17.1	24	40%	6.4	10.8	69%

Source: Bayram (2013)

For four of the six types of presentations in 2006-08 there are around ten times as many tests ordered that are supported in the literature as tests which are not. For patients presenting with obesity, however, unsupported tests are ordered at just under half the rate of supported tests. There are almost twice as many

⁷⁴ Zhi, *et al.* (2013)

⁷⁵ Trevena, *et al.* (2013)

⁷⁶ Bayram (2013). BEACH (Bettering the Evaluation And Care of Health) is a University of Sydney program which collects information on General Practice consultations see Britt, *et al.* (2015)

unsupported tests ordered as part of ‘health checks’ as tests which are supported in the literature.

In all cases the rate of increase between 2000-02 and 2006-08 in tests unsupported by evidence was greater than for supported tests. The difference was particularly striking for presentations for lipid disorders (for example, high cholesterol), where supported testing increased by 3 per cent and unsupported tests increased by 90 per cent.

Bayram’s analysis looks at each presentation as a separate event. It does not examine how frequently a test might be repeated: an initial test may be supported, but second and subsequent tests that may not be justified empirically would still be assigned as supported if captured in her data set. These subsequent tests might be ordered simply to assist in motivating the unmotivated patient to change their behaviours⁷⁷ or to assist in converting intention into action on changing behaviour.⁷⁸

Although Bayram may well be correct that inappropriate test ordering is not ‘widespread’, inappropriate test ordering is still sufficiently prevalent, at least for some conditions, to warrant policy concern (for example, the case of Vitamin D testing, Box 2).

5.2.2 Addressing inappropriate test ordering

The Cochrane Effective Practice and Organisation of Care Review Group has identified four broad types of interventions that

can be adopted to change behaviour: professional (e.g. continuing medical education); financial; organisational and regulatory.⁷⁹

Professional interventions

Professional interventions have been shown to be successful in changing behaviour. A recent overview of professional interventions found that the three most effective interventions were educational outreach using academic detailing; audit and feedback; and reminders.⁸⁰ These interventions were more effective still if bundled together so that one intervention reinforces the others.⁸¹ In contrast, more diffuse mechanisms such as marketing and mass media campaigns, were less successful in achieving change.

The contemporary ‘Choosing Wisely’ initiative is an example of a more diffuse strategy. It involves developing a consensus on what ‘low-value care’ is and encouraging clinicians to avoid it in their practice. There are now more than 70 ‘choosing wisely’ lists in the United States, developed by various specialty societies.⁸² An analysis of the 25 United States lists published up to 2013 showed that 12 per cent of the low-value practices to be avoided were pathology tests.⁸³

⁷⁷ Hardcastle, *et al.* (2015)

⁷⁸ Webb and Sheeran (2006)

⁷⁹ Cochrane Effective Practice and Organisation of Care Review Group (2015)

⁸⁰ Johnson and May (2015), see also Cadogan, *et al.* (2015), Kobewka, *et al.* (2015). The Australian Commission on Safety and Quality in Healthcare has promoted an ‘anti-microbial stewardship’ program which could potentially be a model for a pathology stewardship program.

⁸¹ Smellie (2012). The interventions, however, may need to differ for different types of pathology tests see Gopal Rao, *et al.* (2003)

⁸² Choosing Wisely (2016)

⁸³ Morden, *et al.* (2014)

Box 2: The case of Vitamin D testing

An example of questionable test ordering is vitamin D tests (Bilinski and Boyages (2012)).

Vitamin D testing increased dramatically up to 2012 (see Figure 6). In that period the relevant item description (66608) was very broad. A revised item description (66833), constrained test ordering to specific conditions where the test was likely to produce useful information for clinical decision making.

Changes to the item description reversed the escalation in Vitamin D test ordering in 2015 (Boyages (2016)).

Original item description (broad)

Item 66608: Vitamin D or D fractions - 1 or more tests

Department of Health (2010)

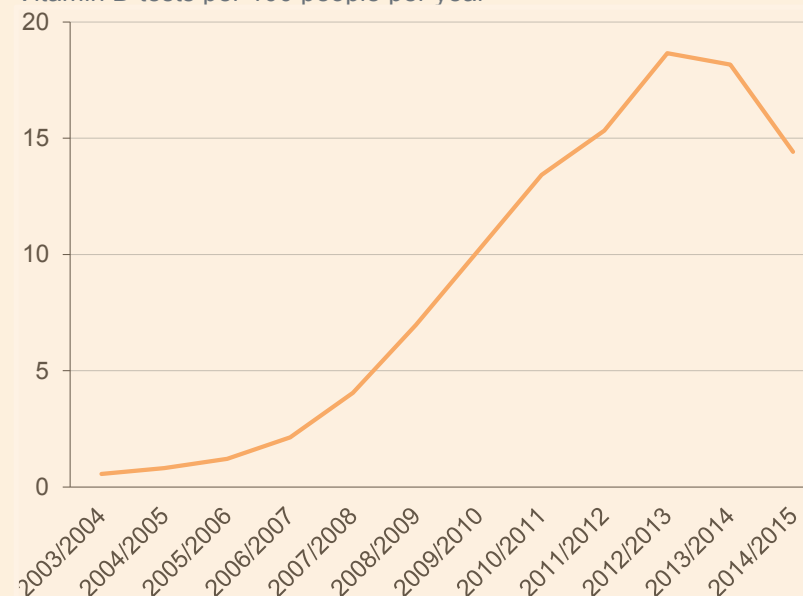
Revised item description (constrained)

Item 66833¹: 25-hydroxyvitamin D, quantification in serum, for the investigation of a patient who:

- a) has signs or symptoms of osteoporosis or osteomalacia; or
- b) has increased alkaline phosphatase and otherwise normal liver function tests; or
- c) has hyperparathyroidism, hypo- or hypercalcaemia, or hypophosphataemia; or
- d) is suffering from malabsorption (for example, because the patient has cystic fibrosis, short bowel syndrome, inflammatory bowel disease or untreated coeliac disease, or has had bariatric surgery); or
- e) has deeply pigmented skin, or chronic and severe lack of sun exposure for cultural, medical, occupational or residential reasons; or
- f) is taking medication known to decrease 25OH-D levels (for example, anticonvulsants); or
- g) has chronic renal failure or is a renal transplant recipient; or
- h) is less than 16 years of age and has signs or symptoms of rickets; or
- i) is an infant whose mother has established vitamin D deficiency; or
- j) is an exclusively breastfed baby and has at least one other risk factor mentioned in a paragraph in this item; or
- k) has a sibling who is less than 16 years of age and has vitamin D deficiency

Figure 6: Vitamin D tests increased dramatically in the decade to 2012

Vitamin D tests per 100 people per year



Notes: Vitamin D tests analysed as MBS items 66608-09, and 66833-37.

Source: Grattan Institute analysis of individual per capita MBS item reports - Department of Human Services (Commonwealth) (2016b)

Department of Health (2015)

An Australian Choosing Wisely initiative has been established and includes advice developed by the Royal College of Pathologists of Australasia.⁸⁴ Under its Quality Use of Pathology Program, the Commonwealth Government has also funded a large number of studies to test the effectiveness of different approaches to improve test ordering.⁸⁵

Financial interventions

Financial interventions include incentives for both patients and providers. As noted, medical practitioners are the principal ‘consumers’ of pathology tests because the tests are ordered by them to assist them in making a diagnosis. For this reason, consumer co-payments play little part in influencing test ordering patterns.

Financial incentives are generally effective in changing medical practitioners’ behaviour. Fee-for-service payments, for example, are effective in providing an incentive to practitioners to provide additional services.⁸⁶ Reward and other payments are also effective in changing practitioner behaviour to improve quality of care.

Design and implementation of financial incentives is complex.⁸⁷ The English National Health Service has been reorganised several times in recent decades to strengthen financial incentives, especially those aimed at encouraging general practitioners to improve care or control costs. These changes have included

providing either practices or groups of practices with budgets with which to purchase necessary care, including pathology tests.⁸⁸

Overall, evaluations of these changes have found mixed results.⁸⁹ There is some evidence that:

- practitioners gamed the system to position themselves better for the changes prior to implementation;⁹⁰
- there were high transaction costs associated with introducing purchasing arrangements;⁹¹
- preventive activities by GPs increased, but possibly at the expense of access for patients who were sicker;⁹²
- waiting times for hospital care were reduced and there was more feedback to general practitioners about patients’ progress.⁹³

Organisational and regulatory interventions

Organisational interventions include changes in workforce roles⁹⁴ and ‘structural’ interventions to change processes of care.

⁸⁸ The changes have varied over time and local implementation has also been varied: see Smith, *et al.* (2004). This variability may also account for why studies of the impact of financial incentives on general practitioner behaviour show more mixed results than more general studies (Scott, *et al.* (2011)).

⁸⁹ A review of fundholding and its equivalents (including ‘purchaser-provider’ splits), came to the same uncertain conclusion see Footman, *et al.* (2014).

⁹⁰ Croxson, *et al.* (2001), although an earlier study concluded the opposite see Gosden and Torgerson (1997).

⁹¹ Mannion (2011)

⁹² McGregor, *et al.* (2013)

⁹³ Smith, *et al.* (2004)

⁸⁴ Choosing Wisely Australia (2015)

⁸⁵ Department of Health (Commonwealth) (2015b)

⁸⁶ Flodgren, *et al.* (2011)

⁸⁷ Glasziou, *et al.* (2012)

Structural interventions include changes to computer-based test ordering systems – such as introducing alerts about appropriateness of tests or previous test results – which have been shown to improve test ordering.⁹⁵

Another important organisational intervention that could potentially reduce duplication of tests is an electronic health record or a 'health information exchange' which would notify practitioners in real time of the results of previous tests prior to their ordering a repeat test.⁹⁶ This would also prevent the cost and patient discomfort that comes with unnecessary tests.

Unfortunately, experience in the US suggests that the impact of such systems on test ordering is not good.⁹⁷ Further, Australia's experience with the 'personally controlled electronic health record' is a sorry one, but it is to be hoped that in the near future a revised record system will allow the potential benefits of such systems to be realised.⁹⁸

⁹⁴ As with many other parts of the health workforce, there are significant opportunities for efficiency improvement through workforce redesign in pathology. Pathology services (including histopathology) are also on the brink of significant change through automation (see Riben (2015)) which will transform the economics of the specialty. Workforce redesign in pathology is, however, outside the scope of this report.

⁹⁵ Shojania, *et al.* (2009), Georgiou, *et al.* (2007); Cheung, *et al.* (2012).

⁹⁶ As we have suggested previously (see Duckett, *et al.* (2015)), adding pathology data to the electronic discharge data set would also significantly enhance the value of that data set. See also Hammill, *et al.* (2015).

⁹⁷ McCormick, *et al.* (2012)

⁹⁸ Review of the Personally Controlled Electronic Health Record (2013)

Other organisational or regulatory interventions include changing item descriptions (see discussion of Vitamin D testing above).

Travel and time costs for patients providing specimens are affected by whether the specialist or general practitioner undertakes the pathology test ('point of care' testing), and the distribution of pathology collection centres where blood can be taken and where specimens collected at home or elsewhere can be dropped off and sent on to centralised pathology laboratories. Collection centres are operated by the laboratory owners. There are 5,442 collection centres nationally.⁹⁹

Point of care testing is obviously very convenient for patients. But the economic benefits overall are still uncertain.¹⁰⁰

Many general practitioners lease space to pathology providers for a collection centre in their practice. This maximises patient convenience. But it may increase the risk of inappropriate test ordering, especially where the practice is owned by the pathology provider.¹⁰¹

In the only Australian study on this topic, the unadjusted rate of pathology test ordering was found to be higher in practices which have a co-located collection centre.¹⁰² After adjusting for a

⁹⁹ Medicare Australia (2016)

¹⁰⁰ For example, the practitioner needs to have the relevant testing equipment on hand. See Laurence, *et al.* (2010) for a review of the cost effectiveness of point of care testing.

¹⁰¹ Robertson, *et al.* (2012)

¹⁰² Studdert, *et al.* (2010)

number of variables including size of practice, there was no difference in the rate of test ordering.¹⁰³

The difficulty of regulation

Pathology tests should only be ordered if there is a clinical reason for doing so. The potential value of a particular diagnostic test may vary based on the setting in which it is ordered.¹⁰⁴ For example, the likelihood of a positive result will be much higher for some tests ordered in an Intensive Care Unit than in a general practice.

This makes the setting of hard and fast guidelines about what should be ordered quite challenging, in turn making it more difficult to develop clinically defensible regulation of test ordering.

¹⁰³ This study did not analyse the effect of common ownership (the practice and the pathology provider) and it is possible that practice size – which *does* influence test ordering – is correlated with common ownership of practice and pathology provider.

¹⁰⁴ Brenner and Gefeller (1997); *ibid.* Brenner and Gefeller (1997); *ibid.* Brenner and Gefeller (1997); *ibid.* Brenner and Gefeller (1997); Sox (1986)

6 Try tendering

The first step in achieving savings in pathology services should be to seek a negotiated gain-sharing approach, whereby government, as purchaser, shares some of the benefits of improving economies of scale.

Further savings may be achievable with a more fundamental reform – one that recognises that pathology services are provided in a commercial world, and so moves towards commercial purchasing for pathology services.

6.1 Market-testing savings

Tendering for pathology services is not new to the industry. It is widely used, especially in Victoria, to procure pathology services for public hospitals.

The 2011 pathology review found that existing tenders had achieved the following outcomes:

- Victorian public hospitals achieved tender outcomes of around 65-75 per cent of Medicare fees, the equivalent of 10-20 per cent below out-of-hospital rebates;
- Defence settled at 80 per cent of Medicare fees 'generally without Patient Episode Initiation Fees', equivalent to a 5 per cent discount on out-of-hospital rebates.¹⁰⁵

¹⁰⁵ The savings against MBS rebates are in fact greater than 5 per cent because Defence does not generally pay Patient Episode Initiation fees (see Medical

The volumes of pathology tests involved in a general tender are significantly in excess of those involved in either of these examples. This might mean that the prices achieved in the previous tenders reflect the marginal cost of meeting the demand, suggesting that a more general tender (which had to meet base demand) might not achieve the same price levels.

Alternatively, the importance of the tender might make pathology corporations more aggressive in their pricing strategy, especially if there were a risk that they might not be one of the selected tenderers in a particular market.

On balance, it is reasonable to expect that the tender might achieve savings at the low end of the Victorian outcomes. This would also be consistent with prices prevailing in comparable countries (see Figure 5).

6.2 Phasing in a market testing approach

Introducing market testing will be a complex process involving high transition risk. This risk can be mitigated if there is an appropriate transition period, both to develop the tender specification and to phase in selected tenders.¹⁰⁶

Benefits Reviews Task Group. Department of Health and Ageing (2011) page 39).

¹⁰⁶ Tender specifications and service expectations (e.g. about patient waiting times in collection centres, expected average travel time to collection centres) can be obtained from overseas experiences in this area.

The proposed Victorian pilot tender could be for a three to five year period commencing on 1 July 2017, with existing (post-MYEFO) policies continuing over that period.¹⁰⁷

There should be an external review of the new approach in late 2018, potentially conducted by the Senate Standing Committee on Community Affairs References Committee.

Depending on the evaluation of a Victorian pilot, tenders could be called for in New South Wales and the Australian Capital Territory in 2019, and in other states and territories in 2020.

Again depending on evaluation of the pilot, government should consider using tendering in other areas of Medicare where provision is dominated by large corporations, such as diagnostic imaging.

In the first instance, there should be commercial negotiations between government and large providers aimed at securing for government (and taxpayers) a share of the benefits of economies of scale.

If these negotiations are unsuccessful, government should move, over the relatively near term, to procure access to pathology services by commercial contracts awarded on the basis of competitive bids to multiple providers. Public hospitals should be

¹⁰⁷ The discussion paper for the pathology review (Medical Benefits Reviews Task Group. Department of Health and Ageing (2011)) acknowledged that developing a tender for pathology services will be complex, and made even more so because of the difficulty of consulting during tender-development. Many potential people consulted are likely to be potential tenderers who will have a conflict of interest.

able to bid to provide Medicare pathology services provided their bids meet standards of competitive neutrality – that is, public providers do not get an advantage because of their different taxation liabilities, for example.¹⁰⁸

6.3 Pilot approach

The 2011 pathology review recognised the complexity of tendering and proposed that implementation should be preceded by a pilot stage. Respondents to the review also highlighted the potential for transition issues in changing funding arrangements.¹⁰⁹

This suggests that if tendering is pursued it should initially be introduced as a pilot. The pilot needs to be large enough to provide a serious test of tendering, but constrained enough to minimise any transition issues and run for long enough to be able to identify any problems associated with tendering.

6.3.1 Victoria is a place to start

Given Victoria's successful experience with tendering pathology services in public hospitals the initial round of tenders should be for pathology services provided in Victoria (and potentially in adjacent areas).¹¹⁰

¹⁰⁸ Rennie and Lindsay (2011)

¹⁰⁹ Medical Benefits Reviews Task Group. Department of Health and Ageing (2011). The main criticism was of the transition in New Zealand which involved monopoly tendering, which is not proposed here.

¹¹⁰ It may also be appropriate to conduct an Australia-wide tender for one component of the schedule, perhaps to commence from 1 July 2017. Given the

Separate tenders should be sought for the Melbourne metropolitan area and for the areas covered by each of the three regional Primary Health Networks. Multiple tenderers should be selected as successful bidders.¹¹¹ Running separate tenders for rural and regional areas would recognise the potentially higher cost of maintaining an adequate network of collection centres.

The tender specification should allow for organisations to tender for all types of pathology or for selected types of tests, and based on existing pathology test relativities as incorporated in the current Medicare Benefits Schedule. Over time, revised relativities – reflecting changing cost structures – should be adopted. Subsequent tenders may also incorporate value-based pricing, where the price paid for the test is structured to reflect the value of the test in achieving clinical outcomes.¹¹²

Consideration should be given to separating patient episode initiation from analysis in at least one of the Victorian regional tenders. This would allow evaluation of whether a single specimen collection service in rural and regional areas may provide better

concern about potential co-payment for pap smears (Guthrie (2016)), the cytology section of the schedule may be a good starting point.

¹¹¹ Selected tenderers may include tenders from public hospital based pathology services subject to their meeting Commonwealth competitive neutrality requirements (potentially as revised following the recent Harper Competition review see The Treasury (Commonwealth) (2015) and the similar Victorian government requirements see Department of Treasury and Finance (Victoria) (2012). Victorian public hospital pathology bids may be facilitated by a consolidation of the existing public hospital pathology services, especially in metropolitan Melbourne.

¹¹² St John, *et al.* (2015)

consumer access and responsiveness at an affordable cost than the existing, vertically integrated arrangements.¹¹³

6.4 Market testing through competitive tendering

Tinkering with the existing un-capped, fee-for-service payment scheme will not alter the fact that prices are regulated rather than determined by competitive processes.

The alternative path is to move over time to a commercial arrangement to purchase services from the corporate providers through tendering or ‘competitive bidding’. This would recognise that pathology services have long since ceased to function as a cottage industry and are now dominated by large corporate entities.

Competitive bidding would introduce price competition and generate prices that approximate those that would prevail in a competitive market – in contrast to the highly regulated market which currently prevails in Australia.¹¹⁴

The potential for market testing pathology services was canvassed in some depth in the 2011 review of pathology services and identified as an option in a review completed a decade earlier.¹¹⁵

¹¹³ There should still be multiple successful tenderers for test analysis.

¹¹⁴ Dranove, *et al.* (2009)

¹¹⁵ Review of Commonwealth legislation for pathology arrangements under Medicare (2002)

A paper prepared in 1991 for the National Health Strategy identified both contract provision and tendering as options for pathology services.¹¹⁶

Tendering was not supported by respondents to the review of pathology services. Opposition to tendering from stakeholders is not surprising given the status-quo bias common in decision making¹¹⁷ and, importantly, the potential loss of income that existing providers might face.

The 2011 pathology report indicated 'strong opposition' to tender arrangements that would create monopolies. Respondents are on much more solid ground here. Monopoly tendering has a number of disadvantages, including the inevitable absence of a market with competitive bidders at the end of the tender period.

In contrast, selecting multiple successful providers strengthens price competition while retaining the benefits of non-price competition.

Given the size of most potential market areas in Australia, tender arrangements involving multiple providers could provide substantial efficiency benefits.

A number of possibilities should be considered in the design of a tender, including:

- geographic coverage for each separate tender;

- mechanisms to ensure a viable competitive pathology market at the end of the tender period;
- methods for determining tender prices (e.g. paying all selected providers at the second lowest tender price rather than the lowest price)¹¹⁸ and the structuring of tenders to ensure benefits of scale economies are shared between providers and the taxpayer;
- whether the tender for collection of specimens and the analysis should be separated;
- whether the tender should include both in-hospital and out-of-hospital pathology services; and
- the place, if any, of consumer co-payments in pathology provision.

Tenders could be issued by government, groups of practitioners or organisations such as Primary Health Networks on behalf of consumers or practitioners in their area. Given the discouraging English experience with commissioning or fund-holding by groups of practitioners (discussed above), tendering in the Australian context should be undertaken by government.

Companies could tender for contracts to provide pathology services in certain areas, provided they charge government less than the rebate and without adding co-payments.

¹¹⁶ Deeble and Lewis-Hughes (1991)

¹¹⁷ Samuelson and Zeckhauser (1988)

¹¹⁸ Dranove, *et al.* (2009), see Kautter and Pope (2013) for options specifically related to tenders for pathology services.

6.4.1 Collection centres

One of the transition issues for a market testing approach is how to handle collection centres.

There are more than 5,000 collection centres across Australia with locations based on the business decisions of each pathology provider. Each provider's network of centres is a valuable asset and constitutes a barrier to entry for new providers.

Over time consideration could be given to changing funding arrangements for specimen collection – especially in rural and remote areas – to ensure a more efficient network of collection centres which optimises the balance between patient convenience and cost to government.¹¹⁹

6.4.2 Sharing the benefits of scale economies

Establishing efficient prices for government-funded services is exceedingly complex. Typically, companies providing services have more information about their cost structures than the government purchaser.

The current method for setting pathology rebates appears to be based on a combination of industry knowledge, guesswork and bluff. As the reaction to the MYEFO changes showed, industry will claim that any reduction in government funding will be passed on to consumers.

¹¹⁹ This would require a review of the Patient Episode Initiation items.

The task for the purchaser is to design pricing that will provide the strongest incentives for efficiency but at the same time minimise excess profits.¹²⁰ This often requires a 'menu of incentives' and use of the contracting process to extract information about the companies' cost structures.¹²¹

The tender for pathology services should be based on these principles and so allow government to share in the benefits of scale economies. This could be achieved by designing the tender specification to request tenderers to specify:

- a base price for each test;¹²²
- a threshold for test volumes in a given quarter above which a different price would apply; and
- a second and lower price for each test to apply if above-threshold volume is provided by that company.

Such a design approximates best practice in pricing, and would mean that, at least when a tenderer is providing high volumes, prices could approximate marginal cost.

6.4.3 In and out of hospital?

One of the options canvassed in the Reform of the Federation White Paper was that a Commonwealth hospital benefit could be

¹²⁰ Laffont and Tirole (1993) page 40.

¹²¹ Ibid. page 200.

¹²² In effect this would be a base price for the average test. The tender should specify a set of pathology test relativities to facilitate comparisons between bidders.

established to replace current Commonwealth funding for private in-hospital procedures through the MBS.¹²³

One of the advantages of this change is that it would create incentives to moderate pathology test ordering in private hospitals similar to those incorporated in the design of activity-based funding for public hospitals.

Whether or not the hospital benefit proposal proceeds, separating out funding arrangements for in-hospital services and out-of-hospital services has a number of advantages.

Firstly, it recognises that the markets are very different. For example, over the last decade more than 90 per cent of tests in the out-of-hospital market have been bulk-billed. Fewer than 5 per cent of tests on hospital inpatients have been bulk-billed.

Secondly, most hospitals – public and private – already have established arrangements for pathology services. Allowing these to continue, regardless of what happened with out-of-hospital arrangements, would reduce disruption for these services.

Thirdly, payment for pathology services in hospitals could, over time, be bundled into an ‘episode payment’ (activity-based funding) thus capturing incentives for greater efficiency. This payment would be made by private health insurers, or other payers, rather than Medicare.

A downside of moving to a bundled episode payment for in-hospital pathology, however, is that it may create too great a

transition burden for both purchaser and providers. The tender specifications for pathology services in Victoria should therefore only cover out-of-hospital services. The existing in-hospital rebate could continue pending further consideration of pathology arrangements for in-hospital services.¹²⁴

6.5 The size of the tender prize

Tendering or market testing should lead to additional savings, over and above those that could be achieved through a negotiated discount.

As noted in section 6.1 the importance of the tender might make pathology corporations more aggressive in their pricing strategy, especially if there were a risk that they might not be one of the selected tenderers in a particular market.

On balance, it is reasonable to expect that the tender might be able to achieve savings at the low end of the Victorian outcomes, and more in line with prices prevailing in comparable countries (see Figure 5).

Obviously the actual savings would only be known following the outcomes of tenders but assuming savings of 10 per cent on the rebate, a tendering approach to pathology services would have saved taxpayers up to \$240 million on pathology tests and episode initiation fees if it had applied in 2015-16. With a further \$100 million saved through abolition of the bulk billing incentives this could produce a total saving of around \$340 million in all, or

¹²³ Department of the Prime Minister and Cabinet (2015)

¹²⁴ The schedule fee for in-hospital pathology in Victoria could be reduced to align with the savings realised in the tender process.

about 13 per cent on current spending.¹²⁵ In addition, consumers would have saved around \$17 million in out-of-pocket payments.

The incremental cost to government (and participants) in market testing is likely to be a small proportion of the first year savings from tendering.

¹²⁵ The Victorian public hospital and the Defence tenders do not pay patient episode initiation fees. The savings assumptions here have assumed retention of those fees but with a savings of 10 per cent applied. The Victorian and Defence tenders also do not pay bulk billing incentives.

7 Conclusion

'Right test, right patient, right time at the right cost' is the responsibility of laboratory medicine professionals, says Blair Holladay, chief executive officer of the American Society for Clinical Pathology.¹²⁶

From a clinical management perspective, 'right patient, right time' are clearly important objectives. In terms of policy, 'the right test at the right cost' should be the goal for pathology services.

But as things stand, Australians are certainly not getting pathology services at the right price.

7.1 Lazy policy?

It is easy for policymakers to be trapped into considering only incremental changes to policy.¹²⁷ In Australia, many policy changes to medical care have been achieved by grafting new incentives onto the existing fee-for-service system.¹²⁸

The 2009 Labor Government changes were an example of this. The problem was perceived to be a decline in bulk billing rates; the solution was to add a bulk billing incentive.

Incrementalism has its place. But sometimes, where strong evidence exists, a major step-change in policy is called for.

¹²⁶ Holladay (2012), see also Thomas (2014)

¹²⁷ Lindblom (1959)

¹²⁸ See Table 7.2 of Duckett and Willcox (2015).

Pathology policy is at such a turning point. Industry consolidation and new technologies have dramatically changed the structure of the pathology industry since Medicare was introduced. The payment system put in place decades ago is no longer fit for purpose.

This report argues that the time is now ripe to shake up the pathology industry. Major change is required to ensure that consumers are protected from potential co-payments or up-front costs, and that government – and taxpayers – can reap further savings from the industry and still pay industry a fair price.

7.2 The current system can be fixed

The current pathology services funding arrangement is in need of reform.

There is no price competition in terms of the fee paid by Medicare. Every provider is paid a regulated price. Market testing by Victorian public hospitals and the Department of Defence has shown that the current regulated prices are too high.

Pathology testing is highly automated which means that there are significant economies of scale. But all the benefits of scale economies are kept by the pathology corporations.

Consumers are used as pawns in pathology policy, with pathology companies threatening to shift costs on to consumers if policy changes they do not support are introduced.

The changes proposed by the government in its Mid-Year Economic and Financial Outlook Statement do not go far enough, either in identifying potential savings or in protecting consumers. They leave the basic structure of the payment system intact.

The government needs to make three changes.

Firstly, the existing funding system needs to be tidied up, starting with government (and taxpayers) sharing the benefits of technological improvements and economies of scale.

Secondly, co-payments for pathology testing should be abolished. Co-payments do nothing to improve care – they merely penalise the sick and allow industry players to use the threat of price hikes as a bargaining chip in policy battles. Access to Medicare rebates should be limited to those providers that bulk-bill their out-of-hospital pathology services.

These reforms alone could produce savings of around \$175 million dollars.

A third, more fundamental change – letting the market rather than government set the price for pathology services – could generate further savings of up to \$160 million. Market competition could potentially yield a 10 per cent reduction in the price of pathology services. If pursued, market testing, or tendering, should be piloted in Victoria where pathology services in many public hospitals have already been allocated by tender.

These changes can be introduced in parallel. Government should announce a move toward both discounting and market testing of pathology as soon as possible – to minimise wasteful spending

and to ensure that the benefits of competition and improved efficiency in the pathology industry are shared by the taxpayer.

8 Methodological appendix – comparing pathology prices

Goal

To analyse price differences in equivalent pathology tests in various jurisdictions.

Sources

The primary source was a 2011 report comparing prices paid by US Medicare and other programs for 20 types of pathology tests.¹²⁹ Attempts were made to match each of these tests and their prices with corresponding tests in other jurisdictions. Five price schedules were identified:

- the January 2016 Australian Medicare Benefits Schedule (MBS), using the 85 per cent rebate as the price;¹³⁰
- the 'Laboratory Service Rotarua' schedule. This company provides pathology services in parts of New Zealand;¹³¹
- the Waikato District Health Board schedule of pathology fees. This is another New Zealand service but is not an out-sourced provider;¹³²
- the schedule of pathology fees for Ontario (ON), Canada;¹³³

- the schedule of pathology fees for British Columbia (BC), Canada.¹³⁴

Matches

Of the 20 tests considered, five were comparable across all six sources. These tests are outlined below with their descriptions and prices in 2015 AUD. Broadly speaking, these five tests are high volume and together account for nearly a quarter of all pathology tests.

¹²⁹ United States. Department of Health and Human Services. Office of Inspector General (2013)

¹³⁰ Department of Health (Commonwealth) (2016a)

¹³¹ Laboratory Services Rotarua (2015)

¹³² Waikato District Health Board (2016)

¹³³ Ontario Ministry of Health and Long-Term Care (2013) - The Ontario schedule fee presents a specified number of 'LMS units' for each tests. The benefit is calculated by multiplying this value by 51.7c, as stated in paragraph 22 of the preamble.

¹³⁴ British Columbia Ministry of Health (2015)

Table 2: Comparison of five common tests

US Desc	Medi care Price	Lowest Price	AUS Description	AUS 85% rebate	NZ1 Desc (Out- sourced)	Price	NZ2 Desc (in- sourced)	Price	Ontario Desc	Price	BC Desc	Price
Complete blood count (CBC) with auto-mated differential white blood cell count	18.23	15.21	Erythrocyte count, haematocrit, haemoglobin, calculation or measurement of red cell index or indices, platelet count, leucocyte count and manual or instrument generated differential count - not being a service where haemoglobin only is requested - one or more instrument generated set of results from a single sample; and (if performed) (a) a morphological assessment of a blood film; (b) any service in item 65060 or 65072	14.45	CBC	20.73	CBC	9.88	CBC	9.86	Haematology Profile (to include automated Hgb, WBC, platelet count, Hct, RBC indices, and differential white cell count when indicated)	13.07
Prothrombin time	9.30	8.17	Prothrombin time (including INR where appropriate), activated partial thromboplastin time, thrombin time (including test for the presence of heparin), test for factor XIII deficiency (qualitative), Echis test, Stypven test, reptilase time, fibrinogen, or 1 of fibrinogen degradation products, fibrin monomer or D-dimer - 1 test	11.65	Prothrombin, plasma	15.54	INR (Prothrombin Ratio)	10.47	Prothrombin Time	7.40	Prothrombin time/INR	14.39
Thyroid stimulating hormone (TSH)	39.74	29.34	TSH quantitation	21.30	TSH, serum	10.36	TSH	7.55	TSH	17.26	TSH - any method	11.80
Glycosylated haemoglobin test	22.96	19.54	Quantitation of glycosylated haemoglobin performed in the management of established diabetes - (Item is subject to rule 25)	14.30	Glycosylated Haemoglobin (HbA1C)	20.73	HbA1c whole blood	12.78	Glycosylated haemoglobin - HgbAl	13.56	Haemoglobin A1C	15.13
Assay of ferritin	32.24	27.28	Ferritin - quantitation, except if requested as part of iron studies	15.30	Ferritin, serum	15.54	Ferritin	7.55	Ferritin	17.26	Ferritin serum	12.07

Matched tests

Complete Blood Count

This is a standard pathology test. It is also known as a 'Full Blood Examination', or a 'Haematology Profile', which is the match for British Columbia. In the 2014-15 financial year, 11,363,746 of these tests were billed against Medicare. This accounts for 12.7 per cent of all pathology tests in that period.

International Normalized Ratio

Prothrombin Time, INR (International Normalized Ratio), and Prothrombin Ratio are all equivalent tests. It is most commonly measured using plasma. It is also important to note that although the match from the Australian MBS has various other tests as part of the item, the item clarifies that the fee and rebates payable are for one of the tests described. There were 3,128,308 of these tests billed against Medicare in Australia in 2014-15, accounting for 3.5 per cent of all tests.

Thyroid Stimulating Hormone (TSH)

TSH tests are a common and standard test across jurisdictions. There were 4,642,841 of these tests billed against Medicare in Australia in 2014-15, accounting for 5.2 per cent of all tests.

Glycosylated Haemoglobin Test

Glycosylated haemoglobin tests are also known as HbA1c, HgbA1, or haemoglobin A1C tests. Rule 25 in the January 2016 MBS restricts patients to four or less of these tests in any 12

month period. There were 1,138,075 of these tests in 2014-15, accounting for 1.3 per cent of all tests.

Assay of Ferritin

An assay is simply a count or quantitation. The MBS description refers to a broader test of 'Iron Studies' that bundles a ferritin quantitation in with other iron-related tests. There were 529,035 of these in 2014-15, accounting for 0.6 per cent of all tests.

Adjusting current prices and years

The baseline prices in the United States report were in 2011 US dollars. Two steps were taken to make them comparable to the prices in the 2011 Australian MBS:

1. The US prices were inflated to 2015 USD prices using the US Bureau of Labor Statistics (BLS) medical services CPI;¹³⁵
2. The inflated prices were then adjusted to AUD using the OECD GDP Purchasing Power Parity (PPP) Index for 2014 (2015 was unavailable).¹³⁶

The prices collected for New Zealand and the Canadian provinces were current prices, therefore the only adjustment was to convert them into AUD using the same OECD GDP PPP Index.

¹³⁵ US Bureau of Labor Statistics (Medical Services CPI)

¹³⁶ OECD.Stat (2015)

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