

Deloitte Access Economics

The economic impact of incontinence in Australia

Continence Foundation of
Australia

2011

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Glossary

ABS	Australian Bureau of Statistics
ACFI	Aged Care Funding Instrument
ACSA	Australian Council of Stoma Association Inc
ADL	activities of daily living
AEDEM	Access Economics Demographic Model
AEM	Access Economics Macroeconomic Model
AIHW	Australian Institute of Health and Welfare
AWE	average weekly earnings
BEACH	Bettering the Evaluation And Care of Health
CAAS	Continence Aids Assistance Scheme
CACP	Community Aged Care Package
CAPS	Continence Aids Payment Scheme
CFA	Continence Foundation of Australia
CPI	consumer price index
DALY	disability adjusted life year
DBICI	Dowell Bryant Incontinence Cost Index
DMMR	Domiciliary Medication Management Review
DOHA	Department of Health and Ageing
DSP	Disability Support Pension
DVA	Department of Veterans' Affairs
DWL	dead weight loss
EACH	Extended Aged Care at Home
FI	faecal incontinence
GP	General Practitioner
HACC	Home and Community Care
ICS	International Continence Society
IGR3	the third Intergenerational Government Report
ISSI	Incontinence Symptom Severity Index
MBS	Medicare Benefits Schedule
NCMS	National Continence Management Strategy
NHHRC	National Health and Hospitals Reform Commission
NHMRC	National Health and Medical Research Council

OTC	over the counter
PC	Productivity Commission
QUID	Questionnaire for Urinary Incontinence Diagnosis
RAC	residential aged care
RACGP	Royal Australian College of General Practitioners
RAP	Rehabilitation Appliances Program
SAS	Stoma Appliance Scheme
SCRGSP	Steering Committee for the Review of Government Service Provision
SDAC	Survey of Disability, Ageing and Carers
UDI	Urogenital Distress Inventory
UI	urinary incontinence
VSL	value of a statistical life
WTP	willingness to pay
YLD	years of healthy life lost due to disability
YLL	years of life lost due to premature death

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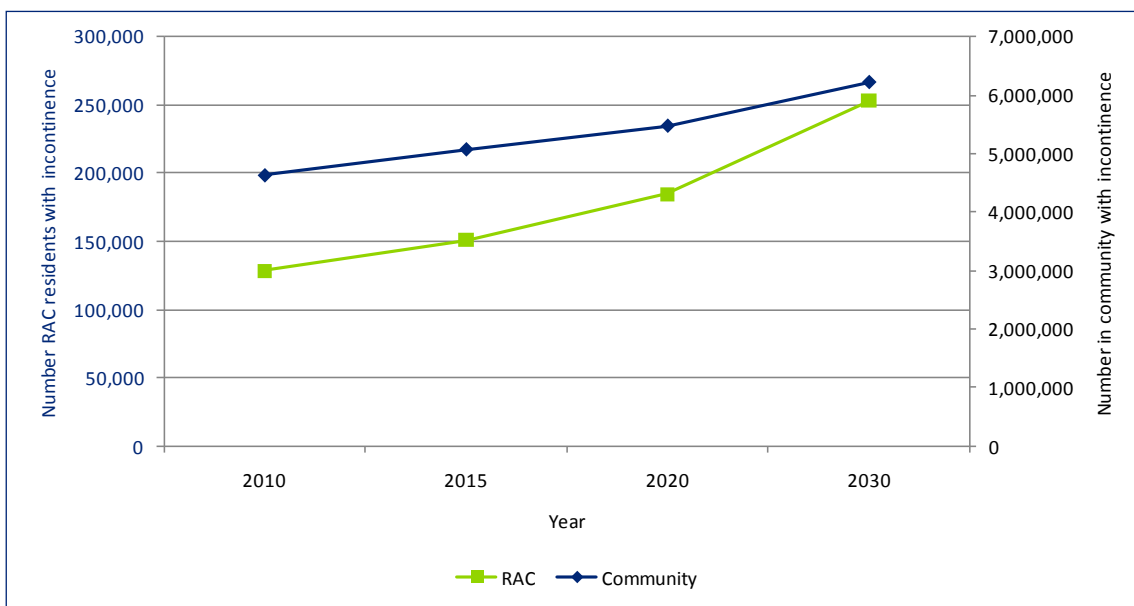
Executive Summary

In 2010, there are around 4.2 million Australians aged 15 years and over living in the community with urinary incontinence, and 1.3 million with faecal incontinence. In total, 4.6 million people or 21% of the community population have urinary or faecal incontinence, or both. The prevalence rate is much higher in the Residential Aged Care (RAC) population where 70.9% or almost 129,000 residents have urinary or faecal incontinence (or both).

The prevalence of incontinence is known to increase with age, more than half of individuals are aged 50 years and above. Women are more likely to have incontinence, in fact, 80% of those with urinary incontinence in the community are women. Moreover, over half of women living in the community with incontinence are aged under 50 years – some 1.7 million women.

It is projected the number of people (aged 15 years and above) with urinary incontinence living in the community will rise to 5.6 million in 2030 and 1.8 million with faecal incontinence (6.2 million with any incontinence). The number of individuals in RAC with incontinence is expected to rise to over 250,000. The projected rise in prevalence reflects demographic ageing, and assumes a policy-neutral environment. The rise in the number of Australians with incontinence is depicted in Chart i.

Chart i: Projected prevalence of incontinence in Australians aged 15 years and over, 2010 to 2030



Source: Hawthorne (2006), Access Economics Demographic Model (AEDEM), Department of Health and Ageing, Ageing and aged care data warehouse¹, Productivity Commission (PC) (2010).

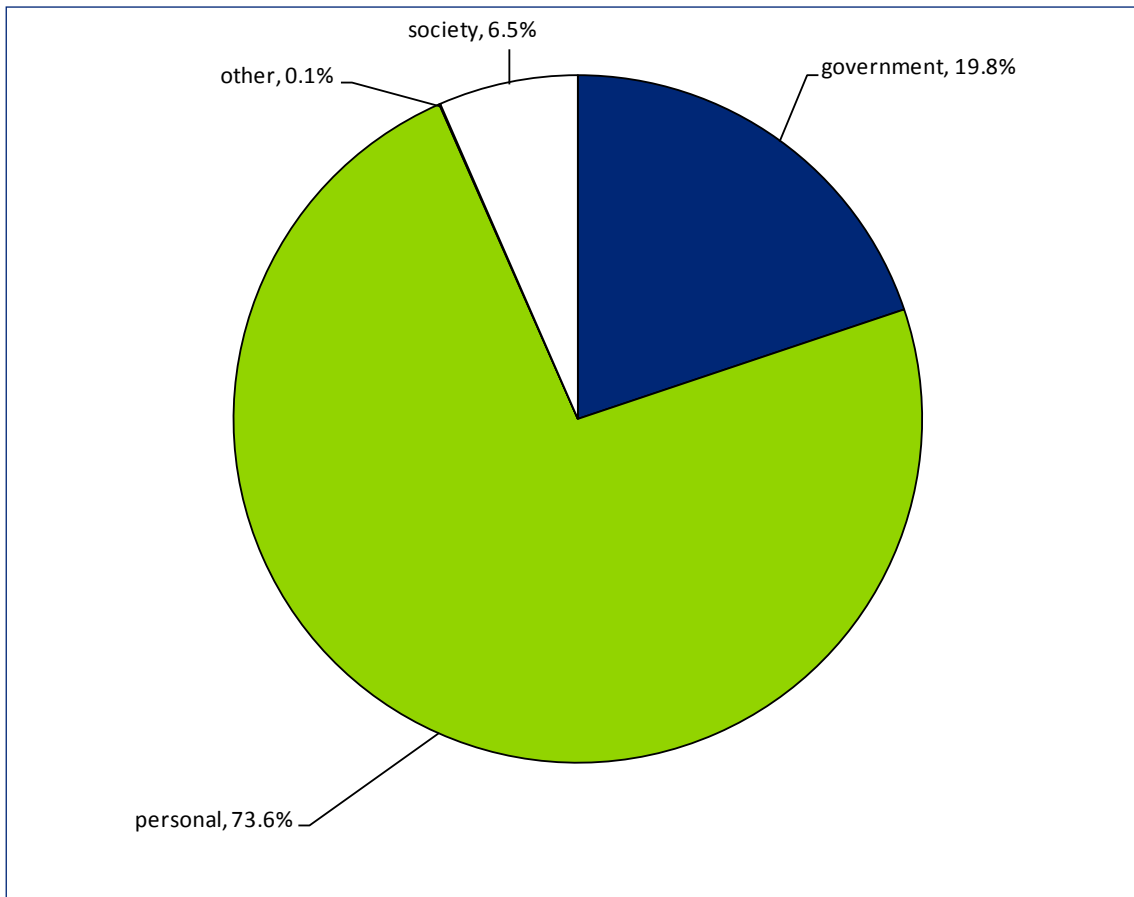
¹ This Report has been prepared with reference to data sourced from the Australian Government Department of Health and Ageing. Any analysis conducted using the data and any views expressed and recommendations made in this Report are those of Access Economics and do not necessarily reflect the views or recommendations of the Department of Health and Ageing

In 2010, the total financial cost of incontinence (excluding burden of disease) is estimated to be \$42.9 billion, or approximately \$9,014 per person with incontinence.

- In 2010, total health system expenditure on incontinence in the Australian population is estimated at \$271 million or \$57 per person with incontinence. This is projected to rise to \$450 million by 2020.
- Productivity losses of those with incontinence are estimated to be approximately \$34.1 billion in 2010 due to lower than average employment rates (adjusted for age) of those with incontinence.
- Productivity losses of family and friends who care for people with incontinence on an unpaid basis are around \$2.7 billion. This reflects the opportunity cost of informal carers' time.
- The costs of formal care and aids are approximately \$1.96 billion in 2010.
- Deadweight losses (the economic cost associated with administering the taxation and transfer system and which also arises because of distortions to behaviour) are estimated to be \$3.8 billion in 2010.
- The burden of disease that results from incontinence was estimated using Disability Adjusted Life Years (DALYs), which reflects detriment to health. In 2010, incontinence is associated with almost 140,108 DALYs or years of life lived with disability.

The monetary value of the burden of disease in 2010 is \$23.8 billion. If this is added to the financial costs, the overall cost of incontinence is \$66.7 billion in 2010, or approximately \$14,014 per person with incontinence. Chart ii illustrates the economic cost of incontinence by bearer. The *society* category reflects the deadweight loss associated with incontinence in 2010.

Chart ii: Cost of incontinence by payer, 2010 (a)



(a) 'society' pertains to the deadweight loss. All individual state contributions towards continence management schemes have not been included as the data was unavailable. Source: Access Economic calculations (2010).

1 Background and methods

Deloitte Access Economics was commissioned by the Continence Foundation of Australia to investigate the economic impact and burden of disease of incontinence in Australia in 2010.

Previous local and international studies have attempted to calculate the cost of incontinence, generally focusing on urinary incontinence in specific populations such as women and older people (Botlero et al 2009, Kwong et al 2010). Cost estimates differ markedly across studies because different definitions of incontinence are used and different methods of ascertaining severity. The Department of Health and Ageing (DoHA) (2004) developed a framework for economic and cost evaluations in the area of incontinence, focusing on the elderly, women of childbearing age, men and women at risk, people with dementia, and those with incontinence associated with neurological disease and injury. This framework is yet to be widely adopted.

In this report, a prevalence based costing approach has been taken since incontinence is a long term chronic condition. Prevalence refers to the number of people with incontinence in a population at a given point or over a certain period of time (2010 in this report), while the prevalence rate refers to those people expressed as a proportion of their respective source population.

This report is structured as follows:

- the epidemiology and prevalence of urinary and faecal incontinence in Australia in 2010 is discussed alongside projections of prevalence to 2030 in Section 2;
- the calculation of health system costs attributed to incontinence in 2010 including hospital, GP, pharmaceutical, and research contributions, and cost projections to 2020 are outlined in Section 3;
- other financial costs such as productivity losses due to incontinence, carer costs, aids and welfare payments are outlined in Section 4;
- the burden of disease attributable to incontinence in 2010 is discussed in Section 5; and
- finally, in Section 6, the cost components are summed and the total economic cost of incontinence in 2010 presented.

1.1 Literature searches

Literature searches for relevant medical journal articles were conducted through the PubMed/MEDLINE database in May and June 2010 and are reported in Appendix A, Table A.1.

2 Epidemiology of incontinence in Australia

2.1 Definition and pathogenesis of incontinence

Incontinence has most recently been defined by the International Continence Society (ICS) as *the unwanted and involuntary leakage of urine or stool*, and this definition has been adopted in this report. Previous definitions have made reference to a social or hygiene problem leading to varied interpretations and thus, wide ranging prevalence rates and cost estimations (Australian Institute of Health and Welfare (AIHW) 2006). Subtypes of urinary incontinence include stress, urge, overflow, functional incontinence and reflex (CFA 2010²). These however are only broad categories and there are many different abnormalities of lower urogenital tract dysfunction leading to incontinence.

The severity of incontinence can be measured in several ways. Grading systems include the Incontinence Symptom Severity Index (ISSI) developed by Sandvik et al (1993), Urogenital Distress Inventory (UDI) (Shumaker et al 1994), and the Wexner score for faecal incontinence (by Jorge and Wexner 1993), also known as the Cleveland Clinic Florida Fecal Incontinence Score.

Continence of urine is maintained by having normal urine output (between 1.5-2 litres of urine in 24 hours), intact nervous system, normal lower urinary tract anatomy, normal bladder and urethral function and adequate pelvic floor muscle activity. Faecal continence is very similar and also relies on normal bowel function, intact nervous system, normal anatomy and function of the rectum and anus and normal pelvic floor muscle activity. To maintain continence, there must be a balance between the forces that tend to retain urine and faeces and the expulsive forces. Any imbalance may result in incontinence.

2.2 Risk factors and comorbidity

Several risk factors have been reported for urinary incontinence (AIHW 2006) including:

- female gender, in particular pre and post natal women;
- advanced age;
- menopause;
- obesity;
- recurrent urinary tract infections;
- specific types of surgery such as prostatectomies, hysterectomies and neurological diseases such as multiple sclerosis;
- reduced mobility;
- some medications;

² <http://www.continence.org.au/pages/what-is-incontinence.html>

- Familial tendencies – especially paediatric nocturnal enuresis;
- Various neurological disorders;
- Various medical disorders including diabetes mellitus and insipidus; and
- Dementia.

Risk factors for faecal incontinence include many of the above factors together with:

- chronic diarrhoea; and
- Sphincterotomy.

Comorbidities associated with incontinence include immobility, recurrent falls (DoHA 2004), irritable bowel syndrome, and constipation (Rosenbaum et al 2008). In residents of RAC facilities, dementia commonly occurs with incontinence, as do candida infection (thrush), pressure sores, and skin infections.

2.3 Mortality

Several studies have investigated the link between incontinence and mortality. Nakanashi et al (1999) found severe incontinence was an increased risk factor for mortality after accounting for confounding factors such as age, general health and social activity but found no statistical link between mild and moderate incontinence and mortality.

Thom et al (1997) reported a small increased risk of mortality amongst incontinent men but concluded this may just be an association between incontinence and other health conditions not accounted for. Tilvis et al (1995) observed urinary incontinence ‘predicts both death and long-term institutionalisation in the general aged population’ however this observation was mainly explained by the close association of incontinence with dementia.

At this stage there is inconclusive evidence to suggest incontinence causes a higher risk of mortality.

2.4 Prevalence

Estimates of the prevalence of incontinence vary widely. As noted above, previous studies have used different definitions of incontinence and different methods of assessing severity leading to disparate prevalence estimates. Epidemiological studies using internationally consistent definitions are rare and generally not comprehensive (e.g. focusing only on women or on older people). Moreover, administrative data sets are not useful because less than half those with incontinence seek help (Pearson et al 2002).

A literature search was conducted in PubMed/MEDLINE in May and June 2010 as detailed in Appendix A, Table A.1. A search of grey literature was also conducted via the internet.

Nine potential sources of prevalence estimates for use in this report were identified (Table 2.1). These included national and State health surveys including the Australian Bureau of Statistics’ (ABS’) Survey of Disability, Ageing and Carers (SDAC) and National Health Survey (NHS), government reports – notably from the Australian Institute of Health and Welfare (AIHW), and peer reviewed research papers. Most studies focussed on urinary incontinence, using different definitions of incontinence and of the severity of the condition.

Table 2.1: Potential data sources for incontinence prevalence estimates

	ABS SDAC	ABS NHS	AIHW 2006	NSW health survey	Botlero et al (2009)	Hawthorne (2006)
Year	2003	2007-08	2003 (ABS 2004), 2004 (Hawthorne 2004)	2006	2008	2004
Location	Australia	Australia	South Australia	NSW	Victoria	South Australia
Sample characteristics	Household ³ (usual residents meeting criteria ⁴), cared accommodation ⁵ (selected occupants) Both genders All ages	Household (1 adult and 1 child surveyed) Both genders All ages	Combined two surveys – <u>ABS 2004</u> included households (usual residents) and cared accommodation (selected occupants), both genders, all ages <u>Hawthorne 2004</u> included households (1 person randomly selected), both genders, 15years+ NB: <u>ABS 2004</u> was used to report cared accommodation data only	Household (1 person randomly selected) Both genders All ages	Household (1 adult) Women only Aged 24–80 years	Household (1 person randomly selected) Both genders 15years+
Sample size	Household 36,241, Cared Accommodation 5,145	20,800	<u>ABS 2004</u> : household 36,241, cared accommodation 5,145 <u>Hawthorne 2004</u> : household 3,015	7,962	542 women	3,015
Definition of incontinence	Assistance needed to manage bladder or bowel control, uses aids for incontinence	Not defined	<u>ABS 2004</u> : assistance needed to manage bladder or bowel control <u>Hawthorne (2004)</u> : urinary incontinence (UI) – as per the Incontinence Severity Index (ISI) ⁶ and the Urogenital Distress Inventory – Short Form (UDI-6) ⁷ . faecal incontinence (FI) - as per the Wexner Continence Grading Scale (Wexner) ⁸	Urine leakage when physically active, exerted, coughed or sneezed during the day or night	UI as per the Questionnaire for Urinary Incontinence Diagnosis (QUID) ⁹	UI – ISI and UDI-6 FI - Wexner

³ An individual residing at a private dwelling

⁴ Survey criteria was: people with a disability, or people aged 60 years and over and people who were primary carers for people with a core-activity limitation, or living either in the same household or elsewhere, or who provided any care to persons living elsewhere

⁵ An individual residing in cared accommodation such as a Residential Aged Care (RAC) facility

⁶ Incontinence Severity Index (ISI) involves two questions, ‘How often do you experience urine leakage?’ and ‘How much urine do you lose?’

	ABS SDAC	ABS NHS	AIHW 2006	NSW health survey	Botlero et al (2009)	Hawthorne (2006)
Severity	<p><u>Level of assistance needed:</u> Always needs help or supervision, sometimes needs help or supervision, does not need help, has no difficulty.</p> <p><u>Use of aids :</u> Uses incontinence aid(s), does not use incontinence aid(s) but uses other aids(s), does not use</p>	Not reported by severity	<p><u>ABS 2004 : Assistance:</u> Always needs help or supervision, sometimes, does not need, has no difficulty</p> <p><u>Use of aids :</u> Uses incontinence aid(s), does not use incontinence aid(s) but uses other aids, does not use</p> <p><u>Hawthorne 2004 :</u> uses 2 indexes, ISI and UDI-6 for UI. (ISI) Less than once a month, several times a month, several times a week, every day and none, a few drops, a little, more</p> <p>(UDI-6) Not at all, slightly, moderately, greatly FI – Never, Rarely, Sometimes, Usually, Always</p>	<p>Frequency of incontinence in the last 4 weeks:</p> <p>Most of the time some of the time none of the time</p>	<p>UI occurs: Rarely, once in a while, often, most of the time.</p>	<p>Frequency of UI – Index 1 (ISI) :</p> <p>Less than once a month, several times a month, several times a week, every day/night and None, AND A few drops, A little, More</p> <p>Index 2 (UDI-6) :</p> <p>Not at all, Slightly, Moderately, Greatly FI – Never, Rarely Sometimes, Usually Always</p>
Reporting suitable for our use? (ie. Age/gender split?)	Reported by gender, private/non private dwelling or cared accommodation, 5 age groups in AIHW (2006)	10 year groups for UI, gender split for total population	Reported by gender, 4 age groups for UI, no age split for FI, only gender	Reported by gender, from 40 years onwards, reported by 5 year age groups, by socioeconomic disadvantage and location of residence (rural, urban and regionality)	Women only, <35, 35-75 in 10 year age groups, >75. Types of UI (stress, urge, mixed)	Reported by gender, and 10 year age groups for UI and FI 15 years to 80 years +
Prevalence	186,800 total (use aids)	UI : 216,100 total	545,000 severe incontinence	UI : 20.7% adults	41.7% women	UI or FI : 27% adults

UI – urinary incontinence, FI – faecal incontinence

⁷ Urogenital Distress Inventory – Short Form (UDI-6) has six questions about urination frequency, leakage due to urgency, leakage due to physical activity, small leakages, emptying bladder difficulties, and pain or discomfort.

⁸ Wexner Continence Grading Scale (Wexner) is based on questions concerning leakage/accidental faeces for solid, liquid, and gas, the need to wear a pad and alterations to lifestyle.

⁹ Questionnaire for Urinary Incontinence Diagnosis (QUID) is a six item questionnaire around the question, ‘Do you leak urine (even small drops), wet yourself, or wet your pads or undergarments?’

Table 2.1 (Continued): Potential data sources for incontinence prevalence estimates

	Kwong et al 2010	Brown et al 2010	Whitehead et al 2009
Year	2005-07	2003- 05	2005-06
Location	NSW	Norway	USA
Sample characteristics	Community dwelling participants of the Concord Health and Ageing in Men Project Men only 70 years +	Women due to give birth at six metropolitan public hospitals 18 years+	Non institutionalised population Both genders 20 years+
Sample size	1,705 men	1,507 pregnant, nulliparous women	4,308
Definition of incontinence	As per the International Consultation on Incontinence Questionnaire, 'urinary leakage at least two times a week over the past 4 weeks'	A leak, even small amounts of urine or liquid/solid bowel motions	Accidental leakage of solid, liquid, or mucus (faecal) at least once in the preceding month.
Severity	Never, once a week, two or three times a week, once a day, several times a day, all the time	Never, less than once per month, one or several times a month, one or several times a week, or every day AND drops or just a little, more like a trickle, or more than a trickle	1-3 times a month, once a week, 2-6 times a week, once or more per day
Reporting suitable for our use? (ie. Age/gender split?)	5 year age groups, 70-90 years +, men only	5 year age groups, 18-35 years	Specific data by gender, overall rates in graph, 15year age groups
Prevalence	UI : 14.8% men 70 years+	UI : 55.9% in third trimester	FI : 8.3%

UI – urinary incontinence, FI – faecal incontinence

The Health Omnibus Survey conducted by the South Australian Department of Health and Harrison Research, and reported by Hawthorne (2006) is the preferred source of prevalence data for this report. The reasons are as follows.

- The Health Omnibus Survey included both urinary and faecal incontinence and uses definitions consistent with the ICS. (As noted above, the ICS definition of incontinence is preferred for this report.)
- The survey used internationally recognised, validated questionnaires, namely, the Incontinence Severity Index (ISI), Urogenital Distress Inventory – Short Form (UDI-6), and the Wexner Continence Grading Scale (Wexner). The ISI was developed, and further refined by Sandvik et al (2000) and has been used subsequently in numerous publications to ascertain prevalence estimates (such as Hannestad et al, 2000, Espuña-Pons, 2009, and Arrue et al, 2010). The UDI-6 has been validated and used in many population surveys (Pang et al 2005, Onur, 2009, Lewicky-Gaup et al, 2008), as has the Wexner scale (Titi, 2007, Parant et al, 2010), which was originally developed in 1993 to assess leakage of solid and liquid faeces, and gas.
- The survey provided comprehensive coverage of the population (with the exception of those living in residential aged care). Data are therefore available by gender and 10 year age groups for the entire adult population (Hawthorne 2006).

The Health Omnibus Survey prevalence estimates (Hawthorne et al 2006) are in Table 2.2.

Table 2.2: Prevalence of urinary (assessed by ISI) and faecal incontinence (assessed by Wexner, excluding flatus) in households, 2004

Age	URINARY INCONTINENCE		FAECAL INCONTINENCE		URINARY INCONTINENCE, FAECAL INCONTINENCE OR BOTH	
	Males	Females	Males	Females	Males	Females
15-19	2%	11%	2%	6%	5%	11%
20-24	5%	18%	5%	4%	10%	18%
25-29	5%	18%	5%	4%	10%	18%
30-34	4%	40%	6%	8%	9%	42%
35-39	4%	40%	6%	8%	9%	42%
40-44	6%	44%	2%	8%	7%	45%
45-49	6%	44%	2%	8%	7%	45%
50-54	17%	55%	7%	14%	20%	57%
55-59	17%	55%	7%	14%	20%	57%
60-64	13%	48%	8%	11%	18%	52%
65-69	13%	48%	8%	11%	18%	52%
70-74	26%	40%	15%	17%	30%	44%
75-79	26%	40%	15%	17%	30%	44%
80+	30%	41%	9%	17%	30%	44%

Source: Hawthorne (2006).

Unfortunately, the Health Omnibus Survey only covered individuals in private dwellings. The exclusion of people in RAC is likely to bias that Survey's results. Hence, data from Hawthorne

(2006) are complemented by data from the DoHA Ageing and aged care data warehouse¹⁰ for people living in RAC who have urinary or faecal incontinence. This method for estimating prevalence is consistent with that of the AIHW (2006).

Using prevalence rates from Table 2.2, **the number of individuals with urinary or faecal incontinence living in the community in 2010 was estimated to be 4,158,101 and 1,330,844 respectively.**¹¹ **Around 8% of females experience both urinary and faecal incontinence and 3% of males (Hawthorne 2006). It is therefore estimated there are 4,626,624 Australians living in the community aged 15 years or over who experience any symptoms of urinary incontinence, faecal incontinence, or both.**

The prevalence of incontinence in RAC was derived from Aged Care Funding Instrument (ACFI) 2009 data (special request from DoHA, Ageing and Aged Care Data Warehouse) outlined in Table 2.3¹². This instrument is used to allocate resources according to resident needs and is composed of three domains; Activities of Daily Living (ADL), behaviour/dementia, and complex health care. Continence together with Nutrition, Mobility, Personal Hygiene and Toileting contributes to the ADL assessment. A care recipient will be classified as requiring high medium, low or nil care against each of these domains. As such, the data represent those *needing care* for incontinence, rather than the number with a diagnosis of incontinence. It is likely these figures underestimate the prevalence of incontinence among residents of RAC because residents who 'self manage' their condition are included with residents who are continent. Data from the ACFI were not available by age and gender.

The use of the new ACFI commenced on 20 March 2008. From that date, new entrants to RAC have been appraised and classified using the ACFI. As of June 2009, almost all pre 20 March 2008 residents had had an ACFI appraisal (Access Economics 2010). As a consequence, data presented here are strongly representative of the RAC population as a whole.

¹⁰ This Report has been prepared with reference to data sourced from the Australian Government Department of Health and Ageing. Any analysis conducted using the data and any views expressed and recommendations made in this Report are those of Access Economics and do not necessarily reflect the views or recommendations of the Department of Health and Ageing.

¹¹ RAC residents aged 60 years and over were excluded. The number of people living in the community was estimated using Access Economics' Demographic model (AEDM) (which is based on ABS population projections) and includes everyone except RAC residents.

¹² While Department of Health and Ageing, Ageing and Aged Care Data Warehouse data were used as the basis for estimates of the prevalence of people in residential aged care facilities with incontinence, the analysis and conclusions made in this report are those of Access Economics and do not necessarily reflect the views of the Department of Health and Ageing.

Table 2.3: Aged Care Funding Instrument appraisal responses, June 2009

Question number	Description	Proportion of assessed residents
Urinary incontinence		
1	No episodes of urinary incontinence or self-manages continence devices	32.8%
2	Incontinent of urine less than or equal to once per day	4.8%
3	2 to 3 episodes daily of urinary incontinence or passing of urine during scheduled toileting	8.4%
4	More than 3 episodes daily of urinary incontinence or passing of urine during scheduled toileting	54.0%
	Total	100.0%
Faecal incontinence		
5	No episodes of faecal incontinence or self-manages continence devices	44.7%
6	Incontinent of faeces once or twice per week	7.8%
7	3 to 4 episodes weekly of faecal incontinence or passing faeces during scheduled toileting	12.7%
8	More than 4 episodes per week of faecal incontinence or passing faeces during scheduled toileting	34.8%
	Total	100.0%
Ratings(a)		
A	yes to (item 1) and (item 5)	29.1%
B	yes to (item 2) or (item 6)	5.0%
C	yes to (item 3) or (item 7)	7.2%
D	yes to (item 4) or (item 8)	58.7%
	Total	100.0%

(a) the overall rating is provided on the highest level of the urinary or faecal score. For example, if the score for urinary is 2, and the score for faecal is 5, then the rating applied would be B. However, if the score for urinary is 2, and the score for faecal is 8, then the rating applied would be D. Conversely, if the score for urinary is 1, and the score for faecal is 6, then the rating applied would be B (personal communication, DOHA, Ageing and Aged care Division, 23 July 2010). Source: special request from DoHA, Ageing and Aged Care Data Warehouse.

In 2009 70.9% of RAC residents experienced urinary incontinence, faecal incontinence or both. Using RAC population projections from the Productivity Commission (2010), this equates to 128,473 residents aged 60 years and over in 2010.

The total number of Australians in 2010 with urinary incontinence, faecal incontinence, or both therefore equals 4,755,097. This is equivalent to 26% of the population aged 15 years and above.

2.5 Prevalence projections to 2030

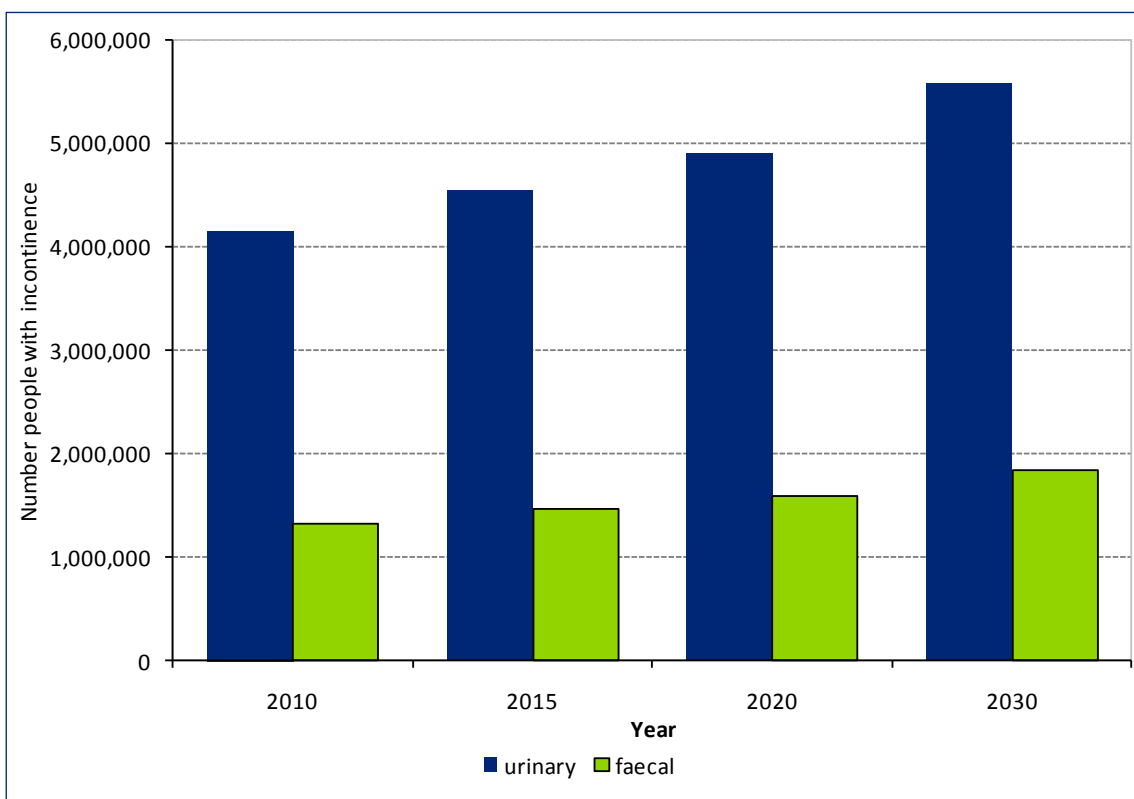
Community prevalence was projected to 2030 using population projections from AEDM as illustrated in Chart 2.1. The number of people aged 15 years and over with urinary incontinence in the community in 2030 is estimated to be around 5,589,420 and with faecal

incontinence, around 1,835,340 (Table 2.4). The total number of people with urinary or faecal incontinence or both in 2030 is projected to be 6,217,663.

Based on RAC population projections from the Productivity Commission (2010) and the abovementioned ACFI data, the estimated number of RAC residents aged 60 years and over in 2030 with urinary or faecal incontinence or both is around 253,113 people (Chart 2.2, Table 2.4).

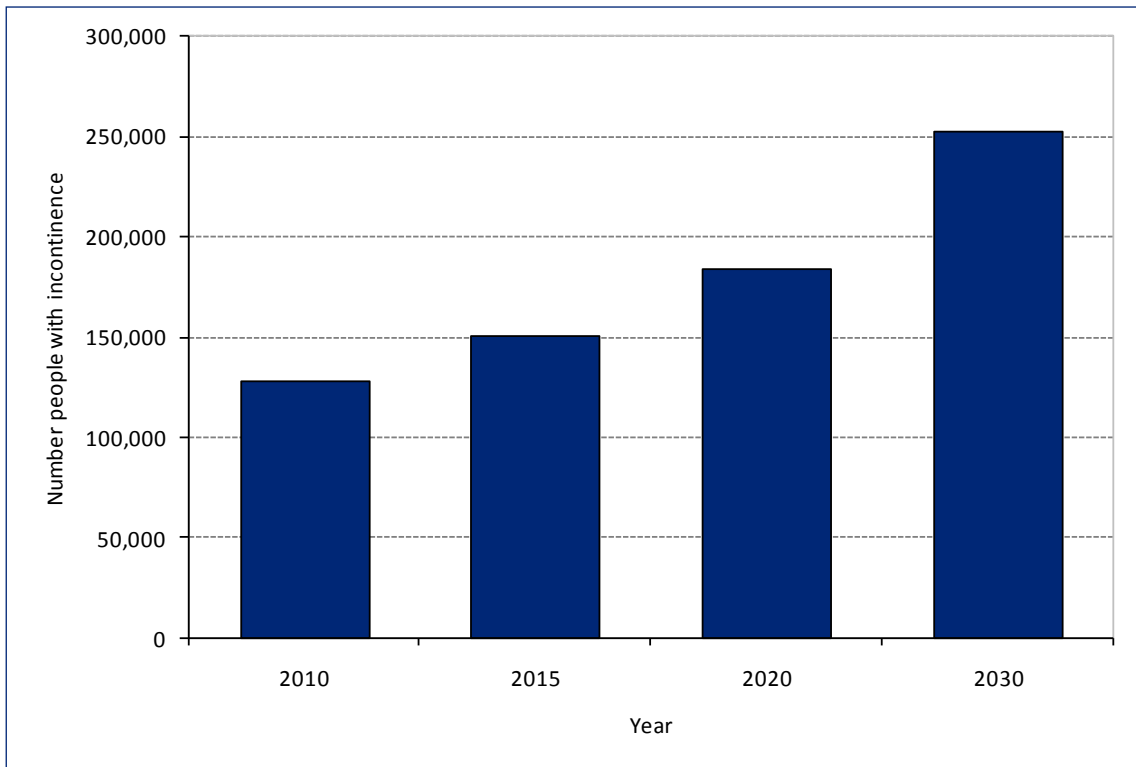
The projected number of Australians in 2030 with urinary incontinence, faecal incontinence, or both is therefore estimated to be 6,470,776 or 27% of the population aged 15 years and above.

Chart 2.1: Community dwelling population with incontinence, 2010 to 2030



Source: Hawthorne (2006), AEDEM.

Chart 2.2: RAC residents with incontinence, 2010 to 2030



Source: special request from Department of Health and Ageing, Ageing and aged care data warehouse¹³, Productivity Commission (PC) (2010)¹⁴.

¹³ This Report has been prepared with reference to data sourced from the Australian Government Department of Health and Ageing. Any analysis conducted using the data and any views expressed and recommendations made in this Report are those of Access Economics and do not necessarily reflect the views or recommendations of the Department of Health and Ageing

¹⁴ *ibid*

Table 2.4: Prevalence of urinary and faecal incontinence in 2010 and 2030, community and RAC populations

Community								
Age	Urinary 2010		Faecal 2010		Urinary 2030		Faecal 2030	
	Males	Females	Males	Females	Males	Females	Males	Females
15-19	15,552	81,003	15,552	44,183	17,921	93,283	17,921	50,881
20-24	41,681	141,913	41,681	31,536	47,553	161,039	47,553	35,787
25-29	41,729	146,257	41,729	32,502	47,159	160,949	47,159	35,766
30-34	30,623	304,090	45,934	60,818	39,469	378,500	59,203	75,700
35-39	32,185	324,997	48,277	64,999	41,394	397,005	62,092	79,401
40-44	46,430	343,183	15,477	62,397	61,982	439,410	20,661	79,893
45-49	46,900	348,926	15,633	63,441	58,193	421,539	19,398	76,643
50-54	123,457	407,882	50,835	103,824	144,345	465,952	59,436	118,606
55-59	111,476	368,059	45,902	93,688	142,294	469,567	58,591	119,526
60-64	77,967	290,466	47,980	66,565	94,001	374,304	57,847	83,915
65-69	58,180	219,274	35,803	50,250	162,454	366,175	93,723	115,425
70-74	88,274	144,725	50,927	61,508	130,115	271,588	75,066	94,909
75-79	64,476	113,307	37,197	48,155	111,574	223,316	33,472	70,518
80+	53,304	91,788	15,991	38,059	94,001	170,074	57,847	83,915
Total	832,232	3,325,869	508,918	821,926	1,196,717	4,392,701	712,592	1,122,749

Residential Aged Care		
	Urinary and/or Faecal 2010	Urinary and/or Faecal 2030
Total	128,473	253,113

Source: special request from DoHA, Ageing and Aged Care Data Warehouse, Hawthorne (2006), Productivity Commission (2010), AEDEM.

Table 2.4 shows that 47% of Australians with urinary incontinence living in the community are aged under 50, and 44% of those with faecal incontinence. By 2030, the proportion of all those with urinary incontinence aged less 50 will fall to 42% and 39%. Currently, over half of women with urinary incontinence are aged under 50 – some 1.7 million women.

Overall, females comprise around 80% of people with urinary incontinence living in the community, and 62% of those with faecal incontinence. The proportion of people with incontinence living in the community who are female is projected to remain relatively constant over time — by 2030 the share of those living in the community with incontinence who are female are 79% and 61% respectively.

3 Health costs

3.1 Description

This chapter estimates the direct health system costs of incontinence in Australia, disaggregated by cost components for the year 2010.

Direct financial costs to the Australian health system comprise hospital costs, GP and specialist services funded through Medicare, the cost of prescribed pharmaceuticals (Pharmaceutical Benefits Scheme listed and private), specialist nursing, allied health services such as physiotherapy, and research.

3.2 Methodology

In this report, health system expenditure has been estimated using a bottom up methodology. Data were sourced as follows:

- GP management of incontinence from the Bettering the Evaluation And Care of Health (BEACH) data for April 2005 to March 2009 (special request). The BEACH dataset from the Australian General Practice Statistics and Classification Centre, Family Research Centre and the University of Sydney is based on an annual survey of around 1,000 GPs, who each record details about 100 consecutive consultations, thus providing an annual database of approximately 100,000 records per year;
- hospital cost data from the AIHW (2006) inflated to 2010;
- pathology, imaging, specialist services provided in a community setting and allied health from the Medicare Benefits Schedule (MBS) (DoHA 2010a);
- pharmaceutical (prescribed and over the counter (OTC)) from the Pharmaceutical Benefits Schedule (DoHA 2010b); and
- research costs from DoHA (2009c) and personal communication with the National Health and Medical Research Council (NHMRC).

Personal contributions (such as copayments and gap payments) are discussed in Section 3.3.8.

3.3 Health expenditure in 2010

3.3.1 Hospital

Inpatient costs encompass:

- the costs of patients admitted to treat conditions associated with incontinence (falls, urinary tract infections);
- those admitted for unrelated reasons but have incontinence as secondary diagnosis; and
- patients who have incontinence as a primary diagnosis.

Typically, inpatient medical records are coded in accordance with Australian Refined Diagnosis Related Groups and disease diagnoses, and these codes are used to quantify the costs of hospital care for patients with a particular condition. However, DoHA (2004) concluded this approach cannot be used to calculate the inpatient cost of incontinence as the diagnosis is often absent from the patient medical record leading to an underestimation of hospital costs.

For this report, therefore, hospital inpatient costs have been sourced from AIHW (2006) which gathered information about incontinent patients from the Survey of Disability, Ageing and Carers (SDAC) and Hospital Morbidity database for primary and secondary diagnoses of incontinence. The total inpatient spend in 2003 was estimated to be \$89.8 million, or \$140 million in 2010 applying the Consumer Price Index (CPI) hospital and medical services inflation rate between 2003 and 2010 of 1.54 (ABS 2010) and accounting for population growth over this period.

3.3.2 General practice

According to the BEACH data (based on survey responses from 630 GPs), from April 2005 to March 2009 there were an average of 209,000 consultations involving incontinence per year. The breakdown is provided in Table 3.1. It should be noted that incontinence may be one of several issues discussed during the consultation therefore attributing all of the consultation costs may overstate expenditure on GP services for incontinence. Individuals may be reluctant to disclose difficulties with incontinence to their GP (Pearson et al 2006).

Table 3.1: GP visits for incontinence (2010)

Type of consultation	Number of consultations
Incontinence urine	159,000
Bladder symptom/complaint, other	26,000
Incontinence of bowel	23,000
Bedwetting/enuresis	1,000
Total	209,000

Source: Secondary analysis of data (April 2005 – March 2009) from the Bettering the Evaluation and Care of Health (BEACH) program, a continuous national study of general practice activity, supplied by the Australian GP Statistics and Classification Centre, University of Sydney.

More than half of GP consultations for incontinence were *standard surgery consultations*. The associated costs of consultations are listed in Table 3.2.

Table 3.2: Type of urinary and or bowel incontinence related GP visits and associated cost (2010)

	Proportion of GP consultations (%)	MBS fee per consultation (\$)	Total cost per 100 GP consultations
Short surgery consultation	0.42	18.45	\$7.75
Standard surgery consultation	59.44	40.40	\$2,401.38
Long surgery consultation	25.07	76.65	\$1,921.62
Prolonged surgery consultation	2.68	112.90	\$302.57
Home visit	3.24	58.35	\$189.05
Residential aged care facility	2.68	77.55	\$207.83
Other (including workers compensation)	6.47	\$64.05 (b)	
Total			\$5,444.60

(b) average of above listed fees. Source: Secondary analysis of data (April 2005 – March 2009) from the Bettering the Evaluation and Care of Health (BEACH) program, a continuous national study of general practice activity, supplied by the Australian GP Statistics and Classification Centre, University of Sydney, DoHA (2010a).

In total, \$5,445 was spent on each 100 GP consultations, or \$11.4 million for all consultations in 2010.

3.3.3 Specialists

Several medical specialists are involved with the care of incontinent individuals including gynaecologists, urologists and gastroenterologists. BEACH results show just over one fifth of GP appointments for incontinence resulted in a specialist referral. The number and type of specialist referrals are detailed in Table 3.3.

Table 3.3: Number of GP referrals to medical specialists for incontinence per annum

Specialist	Per 100 GP consultations for urinary and bowel incontinence
gynaecologist	8.75
urologist	6.27
surgeon	2.09
gastroenterologist	1.17
clinic/centre	1.04
obstetrician/gynaecologist	0.52
other	0.91
Total	20.75

Source: Secondary analysis of data (April 2005 – March 2009) from the Bettering the Evaluation and Care of Health (BEACH) program, a continuous national study of general practice activity, supplied by the Australian GP Statistics and Classification Centre, University of Sydney.

BEACH data suggest there were 209,000 GP consultations per annum involving incontinence (Table 3.3). Following discussions with a clinical expert (personal communication 27 July 2010) it was conservatively estimated four consultations take place for each GP referral. More complicated cases, such as those referred to an Urogynaecologist would result in many more

appointments. Applying the MBS fee for an initial visit to a specialist¹⁵ of \$80.85 (DoHA 2010a), and assuming each referral results in four consultations, the total spend on specialist consultations for incontinent individuals equals \$6,711 per 100 GP consultations, or in total, \$14 million in 2010. Pharmaceuticals

BEACH data suggest around 40% of incontinence related GP consultations result in the recommendation of a pharmaceutical treatment. Of these, 94% were prescribed, 3% OTC recommendations, and 3% supplied by the GP.

Charges for the list of medications in Table 3.4 reflect the dispensed price per maximum quantity from the Schedule of Pharmaceutical Benefits, June 2010, consistent with the method required by the Pharmaceutical Benefits Advisory Committee (2008) and DoHA (2009b). If not available on the schedule, the cost of the non subsidised medicine was sourced from an online pharmacy, www.e-pharmacy.com.au.

Upon advice of a clinical expert (personal communication 27 July 2010) patients were assumed to take medication for incontinence on an ongoing basis. Each item in Table 3.4 was considered to provide one month of treatment and the unit cost was multiplied by 12 for the annual cost.

¹⁵ Medicare Benefits Schedule item number 104

Table 3.4: Medications prescribed by GPs for patients with incontinence (2010)

Drug	Prescriptions per 100 GP consultations for urinary and bowel incontinence	Dispensed price max quantity	Total annual cost per 100 GP consultations for urinary and bowel incontinence
Ditropan	11.75	\$15.77	\$2,223.57
Vesicare (a)	3.39	\$43.21	\$1,757.78
Tofranil	3.13	\$8.63	\$324.14
Ovestin vaginal	2.48	\$19.09	\$568.12
Vagifem	1.83	\$23.24	\$510.35
Endep	1.44	\$8.44	\$145.84
Detrusitol (a)	1.17	\$54.37	\$763.35
Pro-banthine	1.17	\$26.46	\$371.50
Oxybutynin	0.91	\$15.77	\$172.21
Minirin	0.78	\$83.73	\$783.71
Flomaxtra	0.52	\$63.36	\$395.37
Lomotil	0.52	\$10.36	\$64.65
Amitriptyline	0.39	\$8.44	\$39.50
Gastro-stop	0.39	\$8.55	\$40.01
Other	7.28	\$27.82 (b)	\$2,430.36
Total cost per 100 GP consultations			\$10,590.46

Source: PBS online (a) not listed on PBS online, price sourced from epharmacy.com.au. Secondary analysis of data (April 2005 – March 2009) from the Bettering the Evaluation and Care of Health (BEACH) program, a continuous national study of general practice activity, supplied by the Australian GP Statistics and Classification Centre, University of Sydney, DoHA (2010b) (b) average price of above listed products.

Applying this to the BEACH estimates for the number of incontinence related GP consultations per year (Table 3.1) suggests \$22.1 million is spent on pharmaceuticals prescribed by GPs in 2010.

As BEACH data are from 2005 to 2009, agents more recently added to the Schedule of Pharmaceutical Benefits such as oxybutynin transdermal patches are not considered in this cost estimation.

Agents prescribed by specialists, and OTC items were not able to be included in this estimate due to lack of data, so this figure underestimates the amount spent on pharmaceuticals for incontinence in a community setting.

3.3.4 Allied health

BEACH data were used to estimate the 2010 spend on allied health services to treat incontinence.

Physiotherapy

Specialist physiotherapists are employed to develop exercise programs which strengthen pelvic floor musculature. Neumann (1998) suggested five consultations with a pelvic floor physiotherapist over a six month period are commonly required. The MBS fee of \$58.85 (DoHA 2010a¹⁶) was applied to calculate the total expenditure on physiotherapy.

Nurse continence advisors

Nurse continence advisors work in many healthcare settings including inpatient facilities, community clinics, the continence helpline and rehabilitation services (DoHA 2004). Upon advice of a continence nurse specialist (personal communication 16 June 2010), the hourly rate for a registered nurse level two¹⁷ (\$30.46 gross) was used. Three consultations per GP referral was considered appropriate (and has been assumed here) for most patients. It is recognised individuals with complications such as indwelling catheters would be require more frequent consultations, approximately every six to eight weeks.

Pharmacy

Pharmacists can undertake medication reviews to elucidate which medications may be contributing to incontinence. A Domiciliary Medication Management Review can be completed by a community pharmacist to review client medications and suggest medication management strategies, a written medication management plan is developed and discussed with the patient. This is available under the MBS¹⁸ upon referral from a medical practitioner for a schedule fee of \$143.40.

Table 3.5: GP referrals to allied health for urinary and bowel incontinence (2010)

	Referrals per 100 GP consultations	Cost per consultation (number of consultations per referral)	Cost per 100 GP consultations
Physio	4.7	\$58.85 (5)	\$ 1,382.98
Nurse	1.57	\$30.46 (3)	\$ 143.47
Pharmacist	0.26	\$143.40 (1)	\$37.28
Other	0.65	\$176.34 (b)	
Total cost per 100 GP consultations	7.18		\$1,678

(b) average of above listed fees. Source: Secondary analysis of data (April 2005 – March 2009) from the Bettering the Evaluation and Care of Health (BEACH) program, a continuous national study of general practice activity, supplied by the Australian GP Statistics and Classification Centre, University of Sydney. DoHA (2010a), ANF (2009).

The total expenditure on allied health consultations per 100 GP referrals is \$1,678, or \$3.5 million in 2010.

¹⁶ Medicare Benefits Schedule item number 10960

¹⁷ As Level 2 registered nurse wages vary across states, an average was taken of Level 2 Year 1 rates in ACT, NT, Tasmania and Western Australia (Australian Nursing Federation (ANF) 2009)

¹⁸ Medicare Benefits Schedule item number 900

It is likely this underestimates in the costs of specialist nursing and physiotherapy, as presentations to these allied health professionals do not require a GP referral.

3.3.5 Pathology

Around 15% of incontinence related GP consultations resulted in a request for pathology as listed in Table 3.6.

Table 3.6: Pathology referrals by GPs for patients with urinary and/or bowel incontinence (2010)

Pathology	Referrals per 100	MBS fee per item	Total cost per 100 GP consultations
Urine microbial culture and sensitivity (MC&S)	13.58	\$ 17.80	\$241.72
Full blood count	1.7	\$ 17.05	\$28.99
Electrolytes, Urea, Creatinine	1.44	\$ 17.80	\$25.63
Prostate specific antigen	0.91	\$ 20.30	\$18.47
Chemistry; other	0.78	\$ 17.80	\$13.88
Pap smear	0.78	\$ 19.60	\$15.29
Glucose tolerance	0.65	\$ 19.10	\$12.42
Liver function	0.52	\$ 17.80	\$9.26
Faeces MC&S	0.52	\$53.25	\$27.69
Other	3.64	\$22.28 (b)	\$81.09
Total			\$474.44

(b) average of above listed fees. Source: Secondary analysis of data (April 2005 – March 2009) from the Bettering the Evaluation and Care of Health (BEACH) program, a continuous national study of general practice activity, supplied by the Australian GP Statistics and Classification Centre, University of Sydney, DoHA (2010a).

A total of \$474 is estimated to be spent per 100 consultation in 2010, or \$1.0 million for all GP consultations relating to incontinence. This is an underestimation as specialist referrals for pathology are not considered here.

3.3.6 Medical imaging

Medical imaging is not commonly used in the diagnosis and treatment of incontinence. ICS guidelines suggest imaging may be helpful if renal damage or pelvic pathology are suspected but the use of magnetic resonance imaging is considered investigational and not part of usual clinical practice (Artibani and Cerruto, 2005).

Table 3.7: Medical imaging referrals by GPs for patients with urinary and/or bowel incontinence (2010)

Imaging	per 100 GP consultations	Cost per item	Total cost per 100 GP consultations
Ultrasound;pelvis	1.44	\$111.30	\$160.27
Ultrasound;kidney/ ureter/bladder	1.44	\$109.10	\$157.10
Ultrasound;renal tract (a)	1.17	\$111.30	\$130.22
Ultrasound;kidney (a)	1.04	\$111.30	\$100.67
X-ray;abdomen	0.52	\$35.70	\$18.56
Ultrasound;prostate	0.26	\$109.10	\$28.37
CT scan;abdomen	0.13	\$466.55	\$60.65
Scan;bone(s)	0.13	\$96.80	\$12.58
CT scan;pelvis	0.13	\$360.00	\$46.80
CT scan;brain	0.13	\$283.90	\$36.91
Total			\$752.14

(a) pelvis ultrasound cost has been applied (b) Bone densitometry item number 12318 cost applied. Source: Secondary analysis of data (April 2005 – March 2009) from the Bettering the Evaluation and Care of Health (BEACH) program, a continuous national study of general practice activity, supplied by the Australian GP Statistics and Classification Centre, University of Sydney. DoHA (2010a).

Altogether, \$752 was spent on medical imaging per 100 GP consultations, or \$1.6 million in 2010.

3.3.7 Research

In Australia, continence research is primarily funded through the National Continence Management Strategy (NCMS) and the National Health and Medical Research Council (NHMRC).

3.3.7.1 The National Continence Management Strategy (NCMS)

The NCMS was established in 1998 by DoHA to support research and service development initiatives aimed at the prevention and treatment of incontinence in the community. Funding has been allocated through three different phases. NCMS phases one and two supported approximately 120 national research and service development projects during the period of 1998 to 2006 (DoHA, 2009c). In addition, a grants program was established in 2000 to promote innovation in the care, treatment, prevention and provision of information for adult Australians in respect of incontinence. Table 3.8 outlines funding provided by the NCMS.

Table 3.8: NCMS funding

Phase	Focus	Funding
One (1998-2002)	Public awareness, education and information; prevention and health promotion; quality of service; research	\$15.4 million
Two (2003-2006)	Administration of existing projects; further projects addressing continence prevention, education and management	\$16 million
Three (2007-2010)	Promote bladder and bowel health across the lifespan and improve access to quality continence care.	\$18.2 million

Source: DoHA (2009).

DoHA expenditure on the NCMS was \$3.8 million in 2008-09 (Steering Committee for the Review of Government Service Provision (SCRGSP), 2010).

3.3.7.2 The National Health and Medical Research Council (NHMRC)

The NHMRC administers funding for health and medical research on behalf of the Australian Government. Funding is provided for a range of diseases and health issues, and much of the research is multi-disciplinary. Using the keywords, 'incontinence', 'pelvic floor', 'bladder control' and 'nocturnal enuresis', it was determined that there are eight NHMRC research grants connected to urinary incontinence in 2010, with total funding of \$1,147,295 (NHMRC, 2010).

The NHMRC did not fund any specific projects regarding faecal incontinence.

3.3.8 Health costs summary

Total health system expenditure by the federal and state governments on incontinence is estimated to be \$198.6 million in 2010. By comparison, AIHW (2006) calculated \$232 million in health costs in 2003. This higher estimate included \$111.7 million in expenditure on continence aids which is not included here.

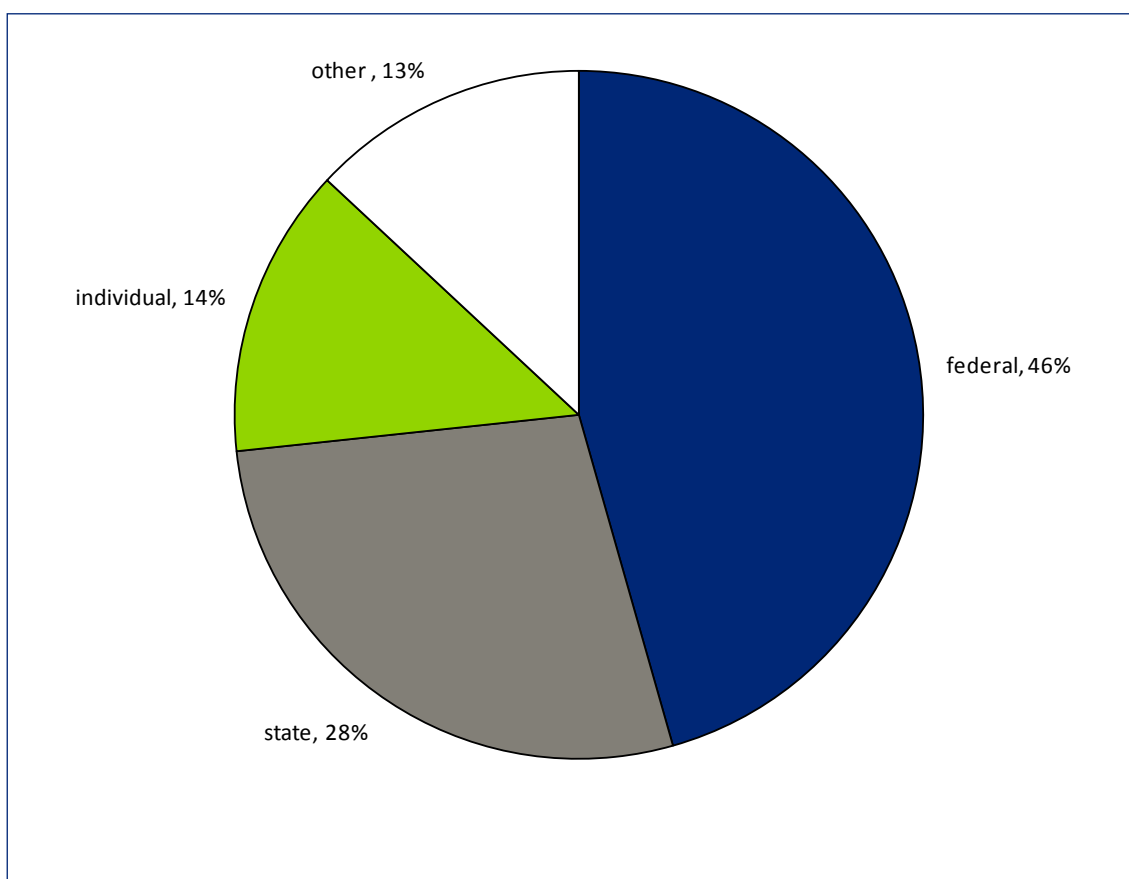
Out of pocket costs and other contributions such as health insurance funds were estimated based on AIHW (2009) as detailed in Table 3.9. Combining the government, personal, and other contributions to health system costs results in an overall estimate of \$270.8 million in 2010. This equates to approximately \$57 per person in the community (aged 15 years and over) and in the RAC (aged 60 years and over) populations with urinary incontinence and/or faecal incontinence.

Table 3.9: Health system expenditure by payer, 2010 (\$ million)

	Overall government contribution	Federal	State	Individual	Other	Total
Hospital	140	65.7	74.3	3.6	26.9	170
Specialist	14	14.0		2.1	1.8	18
Pharmaceuticals	22.1	22.1		20.3	0.4	43
Allied health	3.5	3.5		5.3	2.5	11
GP	11.4	11.4		1.7	1.5	15
Pathology	1	1.0		1.5	0.7	3
Medical imaging	1.6	1.6		2.4	1.2	5
Research	4.9	4.1	0.8	0.0	0.4	5
Total						270.8

Source: Access Economics calculations (2010), AIHW (2009).

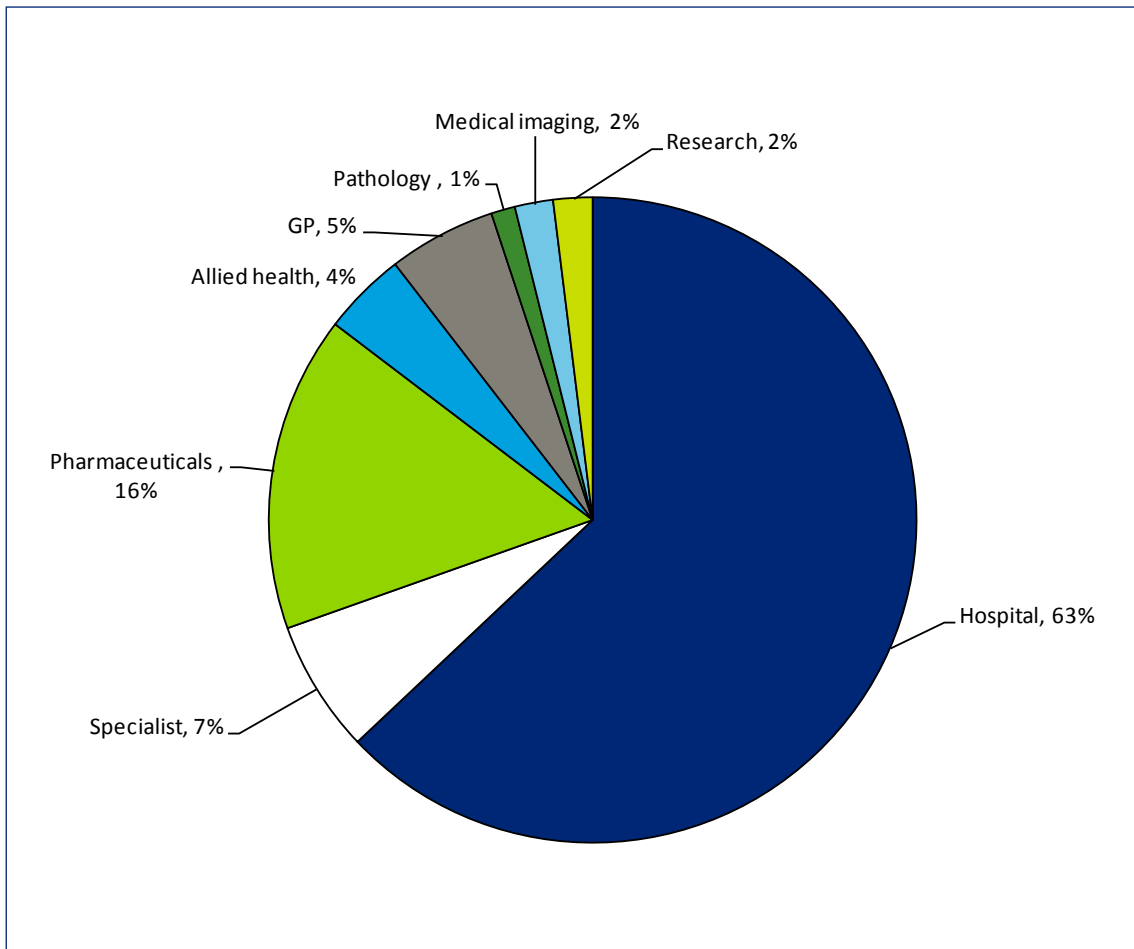
Chart 3.1: Health system expenditure by payer, 2010 (\$270.8 million) (a)



(a) components have been rounded and may not sum to 100%. Source: Access Economics calculations (2010), AIHW (2009).

The composition of health system costs in 2010 is shown in Chart 3.2.

Chart 3.2: Health system costs by modality, 2010



Source: Access Economics calculations (2010).

3.4 Projections to 2020

3.4.1 Factors that affect projections of health expenditure

The projections presented here are based on health inflation and demographic projections. Projected rises in spending are largely driven by population ageing.

Demographic ageing of Australia’s population has been a significant contributor to health care spending in the past, and is projected to drive overall future spending, given the demand for health care is highly correlated with age (National Health and Hospitals Reform Commission (NHHRC), 2009). The third Intergenerational Government Report (IGR3) highlights the persisting economic and fiscal pressures of an ageing population and noted that Australia’s total population growth will increase future demand for health care (The Treasury, 2010).¹⁹

¹⁹ The Treasury estimates that Australia’s population will grow by over 65% to reach over 35 million in 2049, from approximately 21.5 million currently (The Treasury, 2009). This is a significantly higher projection than the IGR2 projection of 28.5 million in 2047, and is driven by greater women of childbearing age in the population, increasing fertility rates and increased net overseas migration.

The projections of health spending in this report reflect current knowledge and clinical approaches, and do not make assumptions about advances in medical technology. The impact of technological change is difficult to predict. It may add to the set of services available, and/or replace some. Innovation in prevention may reduce the prevalence of incontinence. Improvements in effectiveness may reduce the need for further care at later stages of disease, or limit the need for repeat procedures and aids over time. Improvements in quality or effectiveness may also be associated with higher unit service costs. Consumer expectations may also change, for example, becoming more aware of what is available, or demanding procedures at earlier stages of disease.

Changes in incontinence health care implemented on a wide scale before 2020, or evolution in consumer expectations would necessitate a re-estimate of these projections.

At any given point in time, use of health services reflects current policy settings, including funding arrangements, patient co-payments and government subsidies, service quality standards, and other factors affecting access to services. Changes to the structure of the health system, for example through current reform processes, may also affect the veracity of the projections in this report, if they lead to substantial changes in either volumes of services provided or in the unit cost of those services between now and 2020.

3.4.2 Projections

The following health expenditure projections were estimated by:

- applying a health inflation rate of 3.4% per annum, based on historical trend health inflation over the past decade from 1997-98 to 2007-08 (AIHW, 2009); and
- applying projected population growth rates between 2010 and 2020 in each age and gender category.

Table 3.10 presents total health system costs by component in 2010 and 2020, as well as the share each component contributes to total costs. Overall, health system costs are estimated to rise to \$450 million.

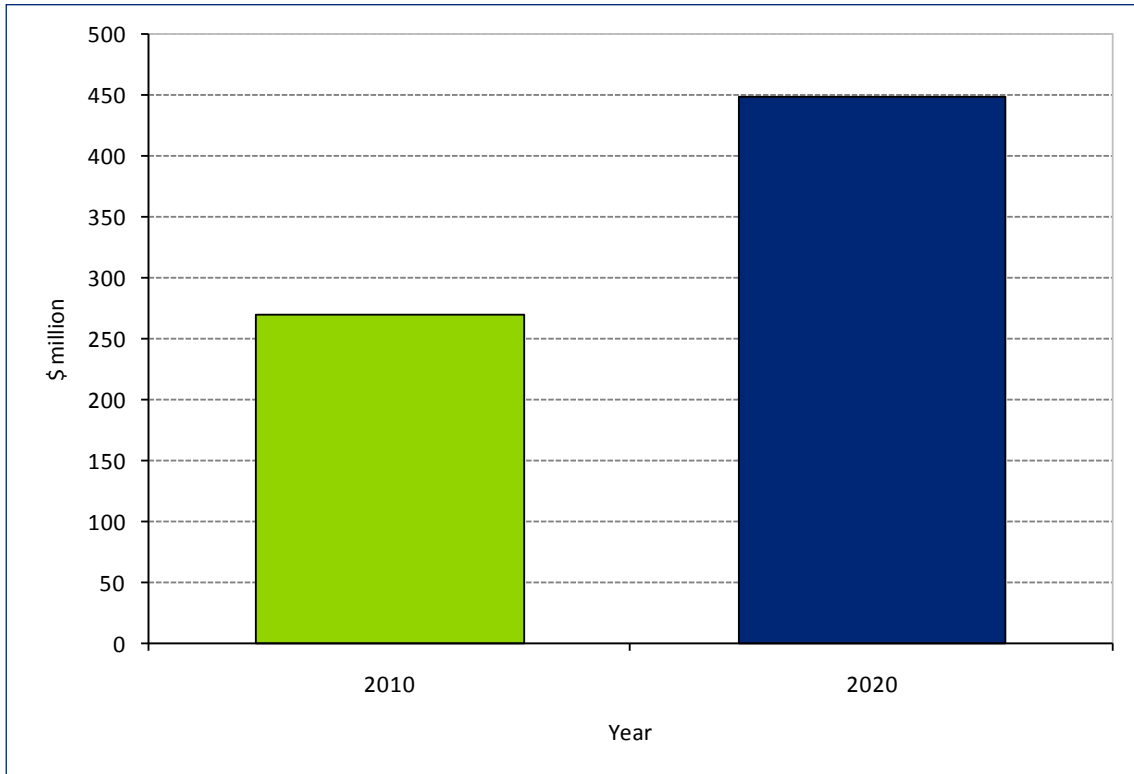
Table 3.10: Health system costs - projections to 2020

Cost component	2010 total costs (\$m)	2020 total costs (\$m)	Share of health costs
Hospital	170.5	283.4	63%
Specialist	17.9	29.8	7%
Pharmaceuticals	42.7	71.0	16%
Allied health	11.3	18.9	4%
GP	14.6	24.2	5%
Pathology	3.2	5.4	1%
Medical imaging	5.2	8.6	2%
Research	5.3	8.8	2%
Total	271	450	100%

Source: Secondary analysis of data (April 2005 – March 2009) from the Bettering the Evaluation and Care of Health (BEACH) program, a continuous national study of general practice activity, supplied by the Australian GP Statistics and Classification Centre, University of Sydney, DoHA (2010a, b), ABS (2008), ANF (2009).

Chart 3.3 further illustrates the projected increase in health system costs between 2010 and 2020.

Chart 3.3: Incontinence health system costs, 2010 and 2020



Source: Secondary analysis of data (April 2005 – March 2009) from the Bettering the Evaluation and Care of Health (BEACH) program, a continuous national study of general practice activity, supplied by the Australian GP Statistics and Classification Centre, University of Sydney, DoHA (2010a, b), ABS (2008), ANF (2009), PC (2010), special request from Department of Health and Ageing, Ageing and aged care data warehouse, Hawthorne (2006), AEDEM.

4 Other financial costs

4.1 Productivity losses

In this report, productivity losses owing to lower than average employment rates for those living with incontinence have been estimated. Illness and disease more generally may lead to productivity losses where they result in higher than average absenteeism, and lower than average productivity at work ('presenteeism costs'). These elements of potential productivity losses are typically difficult to measure and Australian studies with comparative data were not available for this report.

4.1.1 Employment participation

Incontinence can affect a person's ability to gain employment. Due to lower than average employment rates for people with incontinence, this loss in productivity represents a real cost to the economy, through a loss in earnings (and consequently, taxation revenue earned).

Avery et al (2004) found those with a lower income were more likely to experience incontinence than those with a higher income. Fultz et al (2005) found 88% of employed women with severe urinary incontinence reported at least some negative impact on concentration, performance of physical activities, self-confidence or the ability to complete tasks without interruption.

To derive productivity losses from lower employment, the difference was estimated between the employment rates of people with a disability who experience incontinence and those with a disability who do not, as outlined in the SDAC for 2003 (AIHW 2006, Table 4.1). This difference in employment participation was applied to estimates of the 2010 community population with incontinence in each age group and multiplied by the latest age-specific average weekly earnings (AWE) data (ABS 2010b) from 2009. AWE data from 2009 (latest available) was inflated to 2010 dollars, using the labour price index between March 2009 and March 2010 (ABS 2010c). AWE estimates for all workers (full-time and part-time) are presented in Table 4.2.

The employment rates described above are the best data available. A literature search was performed (Appendix A, Table A.1), but no usable subsequent parameters were retrieved.

- Undertaking comparisons between two disabled populations (one with incontinence and one without) to some extent controls for the impact of comorbidities although conditions such as irritable bowel syndrome which are more likely to occur in the incontinent population may affect the employment rate and mean differences in employment rates are not completely due to the impact of incontinence.
- Furthermore these rates were originally reported by need for assistance (AIHW 2006) and have here been linked to community prevalence rates (Hawthorne 2006) which are reported by disease severity. For example, the employment rate for individuals always needing assistance with incontinence has been applied to the community population with severe incontinence.

There is thus some uncertainty around these employment estimates.

Table 4.1: Employment rate of people with a disability who experience incontinence and difference with general, disabled population, 2003

	Severe (a)	Moderate	Slight
Employment rate of people with a disability who have incontinence	0%	34%	36%
Difference between employment rates of people with a disability who have incontinence and all people with a disability	-50%	-16%	-13%

(a) always, sometimes, does not need assistance and/or uses continence aids (as reported in AIHW 2006) assumed to reflect severe, moderate, and slight incontinence (as reported by Hawthorne 2006). Source: AIHW (2006), ABS (2003).

These rates indicate those with severe, moderate, and slight incontinence are 50%, 16%, and 13% less likely to be employed than those in the general population with a disability aged 15 to 64 years.

Table 4.2: AWE for full-time and part-time employed in 2010

Age group	Male AWE (\$)	Female AWE (\$)	Overall AWE (\$)
15-19	328	241	285
20-24	732	587	661
25-29	1,091	873	990
30-34	1,239	950	1,112
35-39	1,402	908	1,182
40-44	1,430	867	1,163
45-49	1,502	867	1,179
50-54	1,526	910	1,209
55-59	1,372	889	1,144
60-64	1,309	737	1,054

Source: Access Economics calculations using ABS (2010 a, b, c).

Productivity losses reflecting the impact of incontinence on the likelihood of employment compared with the general population with a disability in 2010 are detailed in Table 4.3.

Table 4.3: Productivity loss due to lower employment, 2010

Severity	Productivity loss (\$ billion)	
	urinary	faecal
Severe	1.7	1.3
Moderate	7.7	1.7
Slight	26.3	3.9
Total	35.8	6.9

Source: Access Economics calculations using ABS (2010a, b, c), Hawthorne (2006) and AEDM population estimates.

To account for individuals who experience both urinary and faecal incontinence the difference between the sum of the number of people with urinary or faecal incontinence (Table 2.4) (5.5 million) and those who have urinary, faecal or both (4.6 million) was calculated. This value (0.9 million) was divided by the number of individuals who have any symptoms (4.6 million) to calculate the proportion of individuals who have both symptoms of urinary and faecal incontinence out of those who have any symptoms, equalling 20%. The sum of urinary and faecal productivity losses described in Table 4.3 (\$42.7 billion) was therefore multiplied by 80% to account for individuals who experience symptoms of both urinary and faecal incontinence bringing the total productivity losses to \$34.1 billion in 2010.

Different productivity loss components were imposed on different sections of society, with employees bearing most of the burden through lost lifetime earnings totalling \$23.5 billion (Table 4.4).

Reduced earnings from lower employment participation results in reduced taxation revenue collected by the Government. As well as forgone income (personal) taxation, there is also a fall in indirect (consumption) tax, as those with lower incomes spend less on the consumption of goods and services. Lost taxation revenue to the Government was estimated by applying an average personal income tax rate and average indirect taxation rate to lost earnings. Rates in 2009-10 were 19.2% and 11.7%, respectively (taken from Access Economics' Macroeconomic Model, AEM). Lost taxation revenue from incontinence in 2010 was approximately \$10.6 billion. The distribution of estimated productivity losses by age group is provided in Table 4.4.

Table 4.4: Distribution of productivity losses, 2010 (\$40.6 billion (a))

Age group	Incurred by employee	Incurred by government
15-19	0.2	0.1
20-24	1.3	0.6
25-29	2.0	0.9
30-34	3.4	1.5
35-39	3.6	1.6
40-44	3.3	1.5
45-49	3.5	1.6
50-54	5.7	2.6
55-59	4.3	1.9
60-64	2.1	0.9
Total, accounting for individuals with both urinary and faecal incontinence	23.5	10.6

(a) estimates have been rounded, components may not sum to totals. Source: Access Economics calculations.

4.2 Informal care costs

Informal carers are people who provide care to others in need of assistance or support on an unpaid basis. Most informal carers are family or friends of the person receiving care. Carers may take time off work to accompany people with incontinence to medical appointments, or

care for them at home. Carers may also take time off work to undertake many of the unpaid tasks that the person with incontinence would do if they did not have incontinence and were able to do these tasks.

Informal care is distinguished from services provided by people employed in the health and community sectors (formal care) because the care is generally provided free of charge to the recipient and is not regulated by the government. While informal care is provided free of charge, it is not free in an economic sense, as time spent caring is time that cannot be directed to other activities such as paid work, unpaid work (such as housework or yard work) or leisure. As such, informal care is a use of economic resources.

4.2.1 Methodology

There are three potential methodologies that can be used to place a dollar value on the informal care provided:

- **The opportunity cost method** values earnings foregone by the carer, in caring for the person with incontinence.
- **The replacement valuation method** estimates the cost of buying a similar amount of services from the formal care sector.
- **The self valuation method** sums the costs of what carers themselves feel they should be paid for the care provided to the person with incontinence.

Deloitte Access Economics has adopted the opportunity cost method in this report. The need for assistance with incontinence as recorded in the SDAC is detailed in AIHW (2006). Of those in the community with incontinence, 25% needed assistance and the remainder did not. Informal care was used by 77% of individuals needing assistance to manage incontinence with the frequency of care episodes ranging between less than once a week to six or more times a day. Following discussions with a nurse continence advisor (personal communication 26 July 2010) it has been assumed each care episodes take 15 minutes so on average 3.7 hours of care per week is needed by individuals in the community with urinary or faecal incontinence. Individuals with comorbidities such as a physical disability are likely to need a longer period of care per episode.

Applying the age-gender structure of the population of informal carers in 2003 from the SDAC (ABS 2004), and employment rates and AWE by age and gender in 2010 (ABS 2010a, b, c) to approximate carer hours in 2003, it was estimated that lost earnings of carers in 2010 total \$2.7 billion. This is equivalent to approximately \$580 per person (in the community aged 15 years and over) with incontinence in 2010.

4.3 Community care costs

There are several Government funded, community aged care services which can be accessed by individuals who need assistance:

- **Community Aged Care Packages (CACPs)** funded by the Australian Government provide low level aged care in the home for people needing personal care, domestic assistance and similar services.
- **Extended Aged Care at Home Packages (EACH)** funded by the Australian Government provide high-level care to people who need more help than a Community Aged Care

Package can provide. Specialist care for people with behavioural and psychological symptoms associated with dementia also available under the EACHD scheme.

- **Home and Community Care (HACC)** Program is jointly funded by the Australian, State and Territory Governments.

Some individuals access multiple types of care. For instance, in 2002, almost 5,000 recipients of the CACP program also received help via the HACC scheme (AIHW 2004a).

According to AIHW (2004a), CACP recipients received on average 6.1 hours of assistance per week (for all services). At June 30 2009 the average cost of this care was \$225.48 (DoHA 2009), or \$36.96 per hour. EACH recipients averaged 17.5 hrs per week overall (AIHW 2004) costing \$735.55 (DoHA 2009) at June 2009, or \$42.03 per hour. HACC hourly fees vary considerably — for this report fees were estimated from the Victorian 2010 HACC Fee Schedule²⁰.

A small proportion of care recipients (2.1% and 1.6%) also received continence aids through the CACP and HACC schemes.²¹

To estimate the amount spent on community care for incontinence, the number of clients receiving care specifically for incontinence was estimated using census data (AIHW 2004a) and the HACC Annual Bulletin (DoHA 2009a), multiplied by the hours of *personal care assistance* (which includes help with incontinence) received, along with the hourly rate mentioned above. This is reported in Table 4.5.

Table 4.5: Proportion of package recipients needing help with incontinence and associated cost

Care package	Proportion of recipients needing assistance with incontinence	Number of clients 2010 (d)	Average personal care assistance needed per week (hours)	Cost per hour (\$)	Total cost (\$)
CACP	18%	43,290	2.3	36.96	662,399
EACH	87.2%	8,384 (b)	9.3 (without dementia)	42.03	307,295
HACC	11% (a)	894,631	1	32.50 (c)	3,198,306
Total					4,168,000

(a) personal care which includes help with bathing, toilet use, eating, dressing and personal grooming (b) includes EACH-D (c) full fee reported in January 2010 Victorian fee schedule (d) the number of 2010 clients was estimated by applying the client increase between 2008 and 2009 to the number of clients at June 2009 (DoHA 2009d).

Source: AIHW (2004b) DoHA (2009a).

In total, community care costs for incontinence are estimated to be approximately \$4.2 million in 2010. This overstates expenditure as cost is based on personal care hours which can be

²⁰ http://www.health.vic.gov.au/hacc/downloads/pdf/hacc_2010_schedule_fees.pdf

²¹ If people are receiving an Extended Aged Care at Home (EACH) or an Extended Aged Care at Home Dementia (EACHD) package with continence products included in their care plan they are not eligible for assistance under the CAAS or the CAPS. <http://www.bladderbowel.gov.au/doc/CAASApplicationForm.pdf>

attributed to other functions in addition to incontinence such as assistance with bathing, eating and grooming.

4.4 Residential aged care

Older people with urinary incontinence are more likely to be living in Residential Aged Care (RAC) high care homes than in low care homes or in the community (DoHA 2003). A research project funded under the Commonwealth Government's National Continence Management Strategy (DoHA 2003) found incontinence alone seldom precipitates admission to residential care although 87% of surveyed Aged Care Assessment Team members rated incontinence as a *significant* or *very significant* factor in their decision to approve or recommend residential care. Incontinence was listed the third (behind dementia/cognitive function and mobility) most *critical factor* identified to move someone receiving community-based care into residential care. Morrison and Levy (2006) found the proportion of nursing home admissions in the US which would be attributed to urinary incontinence was 0.10 (95% confidence interval (CI) 0.08–0.13) for men and 0.06 (95% CI 0.05–0.09) for women. If the US fractions are applicable to Australia, 5,345 males and 7,665 females would be living in Australian RAC facilities due to urinary incontinence.

AIHW (2006) used Resident Classification Scale data to conclude \$1.27 billion in aged care funding in 2003 could be attributed to bladder and bowel management, and assistance with toileting in RAC. This equated to 32% of the total basic RAC subsidy in 2003. Inflated to 2010 dollars (without adjusting for changes in the RAC population) this amount is \$1.54 billion.

In comparison, Ouslander and Kane (1984) found only between 3 and 8% of US nursing home costs could be attributed to urinary incontinence. Different funding structures between Australia and the US may partly explain the disparity between this and the AIHW figure – i.e. the RAC subsidy is just the public funding component, while the US proportion includes private sector costs in the denominator

A local study (DoHA 2004) collected average daily staff and consumable costs attributable to managing incontinent residents at hostels and nursing homes in NSW in 2001 (Table 4.6). The total daily cost per incontinent resident was averaged across sites and inflated to 2010 dollars using the health inflation rate between 2001 and 2010 (ABS 2010). Daily cost estimates amounted to \$22.97 per person with urinary incontinence, \$3.04 for faecal incontinence, and \$7.38 for individuals experiencing both urinary and faecal incontinence.

Table 4.6: Direct costs of continence care, selected nursing homes and hostels, 2001 and 2010

Site	Total average daily cost per incontinent resident, (\$) 2001 (a)				Total average daily cost per incontinent resident, (\$) 2010			
	all	urinary	faecal	both	all	urinary	faecal	both
John Paul Hostel	5.56	4.03	0.18	0.85	8.72	6.32	0.28	1.33
Thomas Holt Hostel	25.98	19.91	1.27	5.81	40.77	31.24	1.99	9.12
John Paul Nursing Home	23.21	16.70	1.24	3.25	36.42	26.20	1.95	5.10
Thomas Holt Nursing Home	34.36	17.92	5.07	8.90	53.91	28.12	7.96	13.97
Average					34.96	22.97	3.04	7.38

(a) components are averages and may not sum to total (all). Source: DoHA (2004) Table 13 (amended), ABS (2010).

These average cost of all incontinence management (\$34.96) was applied to the RAC population aged 60 years and over with urinary or faecal incontinence or both to estimate the total expenditure in RAC on incontinence management at \$1.6 billion in 2010. This figure exceeds the AIHW (2006) estimate and has been used in this report as it is based on the current RAC population.

4.5 Continence management products, including laundry costs

The cost of continence products can be determined using the Dowell Bryant Incontinence Cost Index (DBICI). Dowell et al (1999) developed the DBICI to measure the economic costs incurred by the patient. Using a detailed questionnaire of community-dwelling women, the study measured all direct personal costs of managing incontinence over the preceding week (including pads, linen, costs of washing soiled clothes, dry cleaning costs etc), as well as the costs of medical treatment over the previous 12 months (including consultations, tests and treatments). The 100 women surveyed were patients undergoing conservative therapy for urinary incontinence so were not a random sample, however, they represented a wide spectrum of age and severity of leakage (Dowell et al, 1999). A DoHA analysis of incontinence cost evaluation methods found that the DBICI offered “very precise measures of the costs of incontinence” (DoHA 2004: vii). The DBICI ‘personal’ subset provides four different categories concerning an individual’s expenses (Dowell et al, 1999):

- pads – measured by the previous seven days of pad usage/purchase, with costs compiled using patient’s expenditure and costs from an author compiled list of retailer prices;
- other protection – included unorthodox items such as bath towels (used as pads/bed protectors) and garbage bags (to cover car seats/chairs/mattresses). Prices of commercial bed protectors were also costed in this category;
- laundry – a seven day incontinence laundry cost was calculated using metropolitan water and electricity costs, and detergent costs from a consumer magazine;

- miscellaneous costs – included dry cleaning, replacement of urine-soaked carpets and clothes worn out by excessive laundering, travel costs for sudden journeys home to change clothes after heavy urine loss, and purchase of new clothes when far from home.

Using the DBICI, Dowell et al (1999) found that continence pads were the largest single item of personal expenditure at 70% of the total ‘personal’ subset costs. Laundry costs were a small but important component of personal expense (17%). Other protection costs and miscellaneous items were found to be negligible (6% and 7% of the subset) (Dowell et al, 1999). Table 4.7 displays a breakdown of personal costs by age group.

Table 4.7: Median direct cost of urinary incontinence in women per week, Au\$^(a)

Age group	Pads	Protection	Laundry	Miscellaneous	Total personal cost 2010
24 - 39	1.24	0.00	0.40	0.00	1.94
40 – 64	4.02	0.00	0.30	0.00	5.46
65 - 88	7.99	0.00	0.61	0.00	10.88

(a) Dowell et al 1999 costs multiplied by health inflation 3.4% per annum (AIHW, 2009). Source: Dowell et al, (1999); AIHW (2009).

The AIHW estimated that expenditure on aids or products used to help with incontinence for 2003 was \$101 million (urinary incontinence only). This figure does not capture other personal costs such as laundry, nor does it incorporate government expenditure on incontinence assistance programs (AIHW, 2006). To estimate the total personal costs, inclusive of laundry, we used the 17% figure as suggested by Dowell et al (1999) above. In total, personal expenditure on continence management products, including laundry is estimated to have been \$118.17 in 2003. The 2003 estimate was converted to 2010 dollars by applying a health inflation rate of 3.4% per annum, based on historical trends in health inflation (AIHW, 2009). This figure was then increased to reflect the population growth rate between 2003 and 2010 (1.12%). As a result the 2010 expenditure on urinary incontinence management products and laundry costs is estimated to be \$191.2 million.

An American study found that over one-half of the cost of incontinence is attributed to routine care, including absorbent pads, protection and laundry (Subak et al, 2007). This population based survey asked 528 women to describe their continence management product use each week (Subak et al, 2007). The women were predominantly Anglo-Saxon with urinary incontinence reported as leaking urine, even a small amount, once a week or more (Subak et al, 2007).

Products included panty liners, pads, incontinence pads and diapers. The survey results showed the number of continence products used per week multiplied by the US\$ cost of the products. By replacing the US\$ cost of products with current Australian product costs we estimated the price of incontinence products in 2010 in Australia. Table 4.8 displays number of continence products used per week and the calculated costs in 2010 A\$.

Table 4.8: Average cost per week for incontinence products (AU\$)

Item	No. used per week	Price ^(a)	Cost per week
Liners	10.2	0.27	2.754
Pads (menstrual)	11.4	0.43	4.902
Incontinence Pad	13.3	0.71	9.443
Diapers/protective underwear	18.8	1.45	27.26

(a) Average prices of two commonly used Australian bladder weakness management brands, per pad etc.
 Source: Subak et al, 2007; Pharmacy Direct <http://www.pharmacydirect.com.au>. Pharmacy Direct is an online direct-order company. Use of Pharmacy Direct price is the preferred method of economic evaluation proposed by the Department of Health and Ageing's 'Manual of resource items and their associated cost', 2009 <http://www.health.gov.au/internet/main/publishing.nsf/Content/health-pbs-general-pubs-manual-index-dec-09~resource-items-chapter-4#over>, accessed 10 June 2010.

Subak et al (2007) calculated the annual cost of incontinence products as US\$186 (mean) and \$32 (median) in 2005. These results were near the lower estimates of the range of observations in other economic studies that reported a mean of US\$90 to \$650 and median US dollar amount of \$230 (Anger et al, 2006; Hu et al, 2004; Samuelsson et al, 2001; Doran 2001; Wilson et al, 2001; Dowell et al, 1999). Disparity in results could be caused by differences in cohort characteristics such as socioeconomic status, incontinence severity, racial diversity and variation between calculated costs and participants' estimation of total costs (Subak, 2007).

It should be noted that while the Dowell et al (1999) and Subak (2007) studies provide useful information regarding the personal incontinence product costs, they only capture a sample of community-dwelling women agreeing to be part of the research. Neither study is a random sample of all incontinent women, and neither study captures costs to men, to people in institutions, or to those with faecal incontinence. Indeed much of the incontinence cost literature focuses on community-dwelling women with urinary incontinence, as this group represents the majority of the incontinent population (Anger et al, 2006; Hu et al, 2004; Doran 2001; Dowell et al, 1999).

One study, by Morris et al (2005), estimated the costs of the management of both faecal and urinary incontinence in females and males. However, this study was undertaken within a geriatric rehabilitation and sub-acute neurological care unit, a sample not representative of the wider community. While valuable insights into the costs of incontinence for men are provided it must be noted that these figures do not reflect the costs to the broader Australian population.

4.6 Government assistance for continence management products

The Commonwealth, state and territory governments provide funding to assist with the purchase of continence aids and equipment. All levels of government provide programs that either distribute continence products or offer an allowance to purchase these products. Access to all programs requires a clinical assessment and each initiative has its own eligibility criteria. Some eligible recipients can receive assistance from more than one program.

4.6.1 Contenance Aids Payment Scheme (CAPS)

The CAPS is funded by DoHA and subsidises eligible people who have permanent and severe incontinence for the costs of some continence products. Applicants for the CAPS are required to obtain an assessment from a health professional. People qualify for the CAPS if they are five years of age or older and meet either of the following requirements (DoHA, 2010):

- the applicant has permanent and severe loss of bladder and/or bowel function (incontinence) due directly to *an eligible neurological condition*; or
- the applicant has permanent and severe loss of bladder and/or bowel function (incontinence) caused by *an eligible other condition*, provided the applicant has a Centrelink Pensioner Concession Card entitlement.

The CAPS provides a yearly payment of \$497.79 which is indexed annually (DoHA, 2010). The CAPS replaced the Contenance Aids Assistance Scheme (CAAS) from 1 July 2010. The CAAS offered a similar dollar value of assistance with the same eligibility criteria as the CAPS. The former scheme differed in that clients were only able to purchase their continence products through the Government's contracted provider, Intouch. The new CAPS allows recipients to purchase continence products from the supplier of their choice.

Financial information for the CAPS is currently unavailable given the scheme's recent inception. For this report CAAS details are provided. In 2008-09 the CAAS assisted 64,201 people, with total DoHA expenditure of \$31.6 million for that financial year (SCRGSP, 2010). Increasing the expenditure figure by the 3.4% per annum health inflation rate (AIHW, 2009) total expenditure for 2010 is estimated to be \$32.7 million.

4.6.2 Stoma Appliance Scheme (SAS)

The SAS, also funded by DoHA, provides stoma related products free of charge to ostomates. Ostomates are people who have a temporary or permanent surgically created body opening. This artificial opening allows the removal of body waste when a person has lost normal bowel or bladder function as a result of disease, injury, birth defects or other causes (DoHA, 2005).

In 2008-09 there were approximately 37,000 ostomates nationally who received products under the SAS (Australian Council of Stoma Association (ACSA), 2009). To be eligible for SAS products, an ostomate must become a member of a stoma association. The volunteer stoma associations purchase stoma related products from suppliers and distribute to their members as required. Total DoHA expenditure on the SAS was \$67 million in 2008-09 (ACSA, 2009). Again, using the health inflation rate of 3.4%, total expenditure for 2010 is estimate to be \$69.3 million.

4.6.3 Rehabilitation Appliances Program (RAP)

The RAP, administered by the Department of Veterans' Affairs, supplies aids and appliances to entitled veterans, war widows and widowers and dependants. Appliances are available to gold card holders and white card holders with a clinically assessed need. Gold card holders are entitled to treatment for all medical conditions, while white card holders are entitled to treatment for specific conditions. RAP recipients are not eligible for assistance from the CAAS/Contenance Aids Payment Scheme.

Aids and appliances are provided based on a referral from a local medical officer or health professional such as an occupational therapist. There are six basic product groups through which RAP provides a range of appliances. Expenditure on the continence product group amounted to \$18.1million in 2009-10 (Department of Veterans' Affairs, personal communication, 13 July 2010).

4.6.4 State and Territory assistance

All State and Territory governments assist people with a disability (including people with incontinence) to access aids and equipment (including continence management products). Continence management products are generally only one component of these schemes which encompass a broad range of equipment. A summary of the State and Territory support programs that also offer continence management assistance is in Table 4.9 below.

We sought estimates of expenditure on continence management products alone via annual reports, Treasury and Finance budget portfolio statements, general Google searches and telephone requests to relevant government representatives. However, estimates were not available from any governments other than Victoria. Governments advised that this reflected that expenditure is not separately itemised according to the type of aids equipment or the nature of the client's disability, or else concerns about privacy. The Victorian Government was able to provide estimates of expenditure on continence management products because of the recent redevelopment of their Aids and Equipment Program (A&EP). Indicative expenditure on all aids and equipment programs, including the Victorian A&EP for 2009-10 was \$34.5 million. Indicative funding for the specific continence aids component of the A&EP for 2009-10 was \$2.9 million (Personal communication, Department of Human Services, Victoria, 23 June 2010).

Further, the Victorian Department of Human Services provide the Continence Support Service that aims to promote, restore and maintain continence in children and young people (aged 5-15) with a disability. The service provides clinical assessment, intervention planning and management support in relation to continence issues. The service also provides a subsidy for continence products. Indicative expenditure on the Continence Support Service was \$1,209,366 for continence products only and \$1,503,063 for therapy (Personal communication, Department of Human Services, 23 June 2010). The combined total for expenditure for the Victorian Continence Support Service was \$2.7 million in 2010.

Table 4.9: Summary of State and Territory support programs also providing continence management assistance

Jurisdiction	Support services	Eligibility	Service / product provided	Entitlement / subsidy	Process
New South Wales	<p>Program of Appliances for Disabled People (PADP)</p> <p>http://www.health.nsw.gov.au/policies/pd/2005/PD2005_563.html</p>	<p>To be eligible for the PADP, applicants must meet all of the following criteria:</p> <ul style="list-style-type: none"> • have a permanent or indefinite disability; • live in the community; • hold a Health Care Card, Health Care Interim Voucher or Pensioner Concession Card; • ineligible for assistance from other programs; • have not received compensation in respect of their injuries or disability, including not being on a Commonwealth Rehabilitation Program or being supplied with aids and appliances under the Motor Accidents Act. 	<p>Disposable and reusable continence aids including pads, washable bed-sheets, catheters, sterilising and cleaning equipment.</p>	<p>Clients are limited to 90 continence pads per month or 18 reusable pads per year, 1 reusable or 30 disposable catheters per month (see website for further details). No client copayment is required.</p>	<p>Individuals must be assessed by GP to obtain a prescription for the appropriate continence aids, and can then apply to a regional Lodgement Centres in the client's Area Health Service.</p>
Victoria	<p>Aids and Equipment Program (A&EP)</p> <p>http://www.dhs.vic.gov.au/disability/supports_for_people/living_in_my_home/aids_and_equipment_program</p>	<p>To be eligible, applicants must:</p> <ul style="list-style-type: none"> • be a permanent resident of Victoria aged over 5 years; • have a permanent or long term disability and/or be frail aged; • not be eligible for funding from other government-funded aids and equipment programs, or any compensation relating to their disability (inc. DVA Gold Card, Transport Accident Commission, Victorian Workcover Authority); • not claim the cost of the aid/equipment through a private health insurance policy; • not be a hospital inpatient, or been discharged within the past 30 days, where the provision of aids or equipment is be related to the hospital admission. 	<p>Continence aids including anal plugs, catheters, connectors, drainage bags and bottles, intra-vaginal bladder supports, washable incontinence pads/pants, tubes, waterproof covers. Excluded items include: disposable continence pants, disposable continence pads, drip collectors, colostomy appliances, and urinals.</p>	<p>The maximum subsidy for continence aids is \$1,200 per year per client.</p>	<p>All clients must be assessed by a prescribing therapist, usually an allied health or health professional, to determine the most appropriate and cost effective aid or piece of equipment.</p>

<p>Victoria</p>	<p>Continence Support Service Program – flexible funding for aids and intervention http://www.dhs.vic.gov.au/disability/supports_for_people/living_in_my_home/aids_and_equipment_program/useful-links/continence-support-service</p>	<p>Children aged 5-15 years with a disability who are eligible for services under the <i>Disability Services Act (DSA) 1991</i> or the <i>Intellectually Disabled Persons Services Act (IDPSA) 1986</i> and who are incontinent. Children or young people who are entitled to any form of compensation relating to their disability are ineligible to receive assistance through this program.</p>	<p>Disposable continence aids, continence assessments and prescribed interventions.</p>	<p>The continence clinic will prescribe a continence aids subsidy of up to \$450 per child or young person per annum, which is administered by the Disability service providers in most regions.</p>	<p>Access to the service is through self referral, GPs, Community Nurses or other health professionals.</p>
<p>Queensland</p>	<p>Medical Aids Subsidy Scheme (MASS) http://www.health.qld.gov.au/mass/</p>	<p>To be eligible, applicants must: be a Queensland resident, aged over 5 years, with a permanent and stabilised condition, OR disability AND</p> <ul style="list-style-type: none"> • hold a Pensioner Concession Card (issued by CentreLink or DVA), a Health Care Card or Health Care Interim Voucher, or a Queensland Government Seniors Card; • not be in receipt of assistance from other Government programs such as Work Cover or the DVA Rehabilitation Appliances Program; • has not received compensation or damages in respect of their disability. Clients may receive assistance from MASS even where assistance is granted under CAAS or the Commonwealth Rehabilitation Scheme, as these programs emphasise workplace assistance. 	<p>Aids provided are primarily for use in the home – they will not be provided when the main intent for use is to access the community, including school or work. Aids are subsidised and supplied either on a permanent loan basis or through the purchase of consumables.</p>	<p>Supplies based on packaging and individual management method, not amount of funding per client.</p>	<p>All clients must be clinically assessed.</p>

<p>South Australia</p>	<p>Department for Families and Communities Equipment Program</p> <p>Disability SA http://www.sa.gov.au/subject/Community+Support/Disability/Corporate+and+business+information/Disability+SA</p> <p>Domiciliary Care http://www.domcare.sa.gov.au/</p>	<p>Applicants are asked to phone the following numbers for information regarding eligibility requirements:</p> <ul style="list-style-type: none"> • Disability SA Intake on 1300 786 117 for people under 65 years of age; and • Domiciliary Care SA on 1300 295 673 for people over 65 years of age. 	<p>Disability SA provides continence products including leg bags, tubing, uridomes, night bags and catheters.</p> <p>Domiciliary Care can provide bed pans, Kylies and Macintoshes, (absorbent sheets) and male urinals.</p>	<p>Applicants for Disability SA and Domiciliary Care SA Clients are to contact a service coordinator (case manager) regarding continence assistance.</p> <p>Applicants must use their CAPS allocation first.</p>	<p>Applicants for Disability SA and Domiciliary Care SA are asked to contact the relevant service for referral and assessment advice.</p>
<p>South Australia</p>	<p>Novita Children's Services Continence Assistance Program</p> <p>http://www.novita.org.au/default.aspx?p=1</p>	<p>To be eligible, applicants must be:</p> <ul style="list-style-type: none"> • children 4-5yrs, or children over 5yrs and under 16yrs who are not eligible for CAPS with permanent incontinence. 	<p>A range of continence products are provided.</p>	<p>\$497.79 per financial year.</p>	<p>Applicants are asked to phone the Novita Central Intake Team on 1800 337 443. A health report is required.</p>
<p>South Australia</p>	<p>Country ILEP (Independent Living Equipment Program) Department of Health</p> <p>http://www.sa.gov.au/subject/Community+Support/Disability/Adults+with+disability/Equipment+and+home+modifications</p>	<p>To be eligible, applicants must be:</p> <ul style="list-style-type: none"> •HACC eligible e.g. over 65 years of age, (and some younger people with disability); • permanently disabled or have an aged related condition; • living in a regional area; and • must not be Disability SA or Domiciliary Care SA clients, nor be eligible for CAPS. 	<p>Urinary catheters, urinary drainage bags, uridomes, connectors and hangers.</p>	<p>\$500 per year.</p>	<p>Continence assessment by Continence nurse advisor, contact through regional health service.</p>

<p>Tasmania</p>	<p>Community Equipment Scheme (CES)</p> <p>http://www.dhhs.tas.gov.au/service_information/hacc/community_equipment_scheme</p>	<p>To be eligible for the loan scheme, applicants must meet four of the following criteria:</p> <ul style="list-style-type: none"> • hold one of the following benefits cards: a Health Care Card, Pensioner Concession Card, Health Benefit Card or Interim Concession Card Entitlement; • be a permanent Tasmanian Resident; • be living in the community; • not be eligible for equipment through any other Government funded bodies. <p>The hire scheme is open to everyone in the community.</p>	<p>Large range of continence aids available.</p>	<p>Continence supplies of up to \$1000 per year are available for prescribed clients who pay half the costs of supplies received.</p>	<p>All clients are clinically assessed by a Continence Nurse Advisor or allied health professional.</p>
<p>Northern Territory</p>	<p>Territory Independence and Mobility Equipment (TIMES) Scheme</p> <p>http://www.health.nt.gov.au/Aged_and_Disability/Subsidies/TIME_Scheme/index.aspx</p>	<p>To be eligible, applicants must:</p> <ul style="list-style-type: none"> • have a disability of long term duration; • be a resident of the Northern Territory; • live in or are returning to the community; • require items of approved TIME Scheme equipment on a permanent or long term basis; • not be eligible to receive the equipment under any other Program/Fund; • be a beneficiary of a Centrelink Pension, Allowance or Payment Centrelink Disability Support Pension; or are a child in the care of the Minister; or have been approved as eligible on the basis of Financial Hardship; and • not be a high care resident of a RAC Facility. 	<p>Equipment for use at home, in a residential place (not nursing homes) or in the work place, but not in the educational setting.</p>	<p>Up to \$1,500 worth of continence aids, both disposable and reusable, per eligible person. There is no requirement for a client co-payment.</p>	<p>All clients must be clinically assessed.</p>

<p>ACT</p>	<p>Australian Capital Territory Equipment Scheme (ACTES)</p> <p>http://www.health.act.gov.au/c/health?a=sp&pid=1059610195</p>	<p>To be eligible, applicants must:</p> <ul style="list-style-type: none"> • reside in the ACT; • be aged over 16 years; • have a permanent disability of at least 2 years duration; • be in receipt of a Centrelink benefit, or holds a Health Care Card, Pensioner Concession Card, or Health Benefit Card; have a Child Disability allowance; or can prove financial hardship; • be ineligible to receive assistance from other Government-funded schemes, private health funds or compensation schemes. <p>The scheme includes people who live in high care residential or aged care facilities, and hostel residents. Assistance is generally limited to people receiving assistance from Centrelink.</p>	<p>Commonly used disposable and reusable continence aids.</p>	<p>Generally, clients can order a 3-month supply of continence aids. For adults with a benefit card, client contributions are \$20 for each 3 month supply of disposable reusable aids (limited to a value of \$90 per 3 months). For parents/guardians receiving Child Disability Allowance, ACTES contributes 20% of the cost of equipment needed. When financial hardship can be demonstrated, assistance is available to a maximum of 80% of this cost.</p>	<p>All clients must be clinically assessed.</p>
<p>Western Australia</p>	<p>Continence Management Advice Scheme (CMAS)</p> <p>http://www.disability.wa.gov.au/forindividuals/disabilityservices/continencemanagement.html</p>	<p>To be eligible, applicants must:</p> <ul style="list-style-type: none"> • be aged 16 years and over; • hold a pensioner concession card or a health care card; • have a chronic or intractable continence condition for more than 6 months; and • be a permanent resident of WA. 	<p>Covers approved aids, including for continence management, primarily for use in the home, rather than for community access (work or school).</p>	<p>The service provides an annual consultation with a continence nurse advisor and access to a subsidy of up to \$480 a year for pads and/or products, if required.</p>	<p>A professional continence advisor will clinically assess each client.</p>

Note: Not all disability support services listed are specifically for continence management. This is not a full list of disability support services in Australia. Source: Deloitte Access Economics with Continence Foundation Australia and Rosalie Donhardt, Continence Nurse Advisor, Continence Resource Centre, Department for Families and Communities.

4.6.5 Summary of government spending on assistance for management of incontinence

Table 4.10 provides of summary of the above mentioned Government expenditure on assistance for continence management products. Total Government assistance for management of incontinence was \$125.7 million in 2010. Please note that this figure underestimates the total because only the Victorian continence management expenditure is included.

Table 4.10: Government assistance for continence management products 2010

Type of assistance	Expenditure (\$ million)(a)
Australian Government	
Continence Aids Payment Scheme(b)	32.7
Stoma Appliances Scheme	69.3
Rehabilitation Appliances Program	18.1
State and Territory Government(c)	
Victorian Department of Human Services	
Aids and equipment program: spending for specific continence aids component	2.9
Continence Support Service:	2.7
Total	125.7^(b)

Note: (a) These figures are spending for the 2009-2010 financial year. (b) This figure uses the former CAAS as financial information for the CAPS is not currently available (see section 4.6.1 Continence Aids Payment Scheme) (c) This figure underestimates total Government spending as not all State and Territory spending is included. Source: ACSA (2009), SCRGSP (2010), personal communication with Department of Veterans Affairs (2010), personal communication Department of Human Services 2010.

4.7 Welfare payments

Welfare payments may be received by those with incontinence and/or their carers.

- **The Disability Support Pension (DSP)** provides income support for those with a physical or mental disability and is designed for those who are unable to work at least 15 hours per week, at or above the relevant minimum wage, independent of a program or support.
- **Carer Payment** is an income support payment for people unable to support themselves through participation in the workforce, while caring for someone with a disability, severe medical condition or who is aged.
- **Carer Allowance** is a supplementary payment for carers who provide daily care and attention at home for a person with a disability, severe medical condition, or who is aged. This may be paid in addition to income support payments.

Individuals eligible to receive such payments are very likely to suffer from other health conditions aside from incontinence. Centrelink was unable to provide estimates of the total amount spent on welfare payments specifically attributable to people with incontinence.

4.8 Deadweight losses from transfers

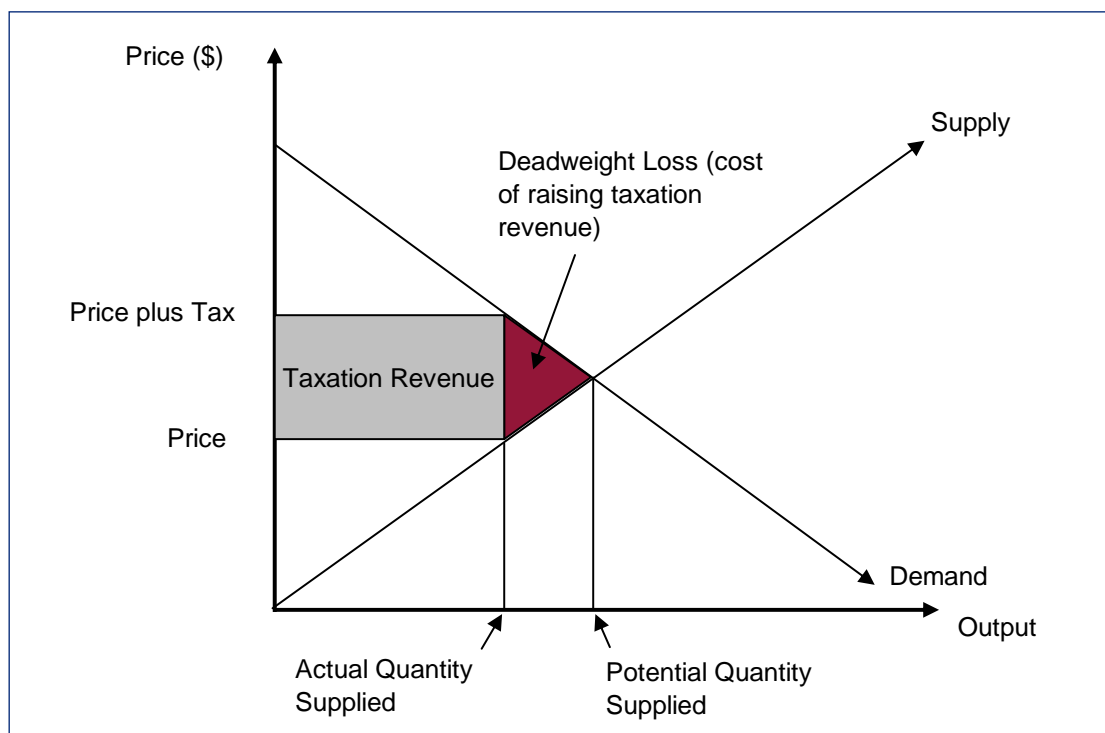
The welfare payments calculated immediately above are, like taxation revenue losses, not themselves economic costs but rather a financial transfer from taxpayers to the income support recipients. The real resource cost of these transfer payments is only the associated deadweight loss (DWL).

DWLs refer to the costs of administering welfare pensions and raising additional taxation revenues. Although invalid and sickness benefits and forgone taxation are transfers, not real costs (so should not be included in the estimation of total costs), it is still worthwhile estimating them as that helps us understand how the total costs of incontinence are shared between the taxpayer, the individual and other financiers.

Transfer payments (government payments/services and taxes) are not a net cost to society as they represent a shift of consumption power from one group of individuals to another in society. If the act of taxation did not create distortions and inefficiencies in the economy, then transfers could be made without a net cost to society. However, through these distortions, taxation does impose a DWL on the economy.

DWL is the loss of consumer and producer surplus, as a result of the imposition of a distortion to the equilibrium (society preferred) level of output and prices. Taxes alter the price and quantity of goods sold compared to what they would be if the market were not distorted, and thus lead to some diminution in the value of trade between buyers and sellers that would otherwise be enjoyed (Figure 4.1).

Figure 4.1: DWL of taxation



Source: Access Economics (2010).

The rate of DWL used in this report is 27.5 cents per dollar of tax revenue raised plus 1.25 cents per dollar of tax revenue raised for Australian Taxation Office administration, based on Productivity Commission estimates (2003), in turn derived from Lattimore (1997). This is a rate of 28.75% overall. The total extra tax dollars required to be collected include (figures have been rounded):

- Lost taxation revenue as a result of incontinence, including \$10.6 billion for persons with incontinence (Section 4.1) and \$0.8 billion for carers (Section 4.2);
- The value of government payments towards continence management products (Section 4.6) and formal community care (Section 4.3), estimated at \$130 million; and
- The government funded component of health system and aged care costs, estimated to be approximately \$1.8 billion (Section 3.3.8 and Section 4.4).

Summing these components and applying the DWL rate of 28.75% results in a DWL estimate of approximately \$3.8 billion in 2010, associated with incontinence.

4.9 Summary of other financial costs

Other financial costs associated with incontinence were estimated to be approximately \$42.3 billion in 2010, with the breakdown presented in Table 4.11.

Table 4.11: Summary of other financial costs associated with incontinence in 2010

Cost type	Total cost (\$m) (a)
Productivity losses	34,114
Carer opportunity costs	2,685
Formal community care	4
Residential aged care	1,639
Aids	126(b)
DWL	3,832
Total	42,274

(a) Estimates have been rounded, components may not sum exactly to total. (b) Note that this understates total government spending on continence management aids because it only includes Victoria (see section 4.6.4).

Source: Access Economics calculations (2010).

5 Burden of disease

5.1 Methodology

Deloitte Access Economics has adopted ‘burden of disease’ methodology in order to quantify the impact of incontinence on wellbeing. The approach is non-financial, where pain, suffering and premature mortality are measured in terms of Disability Adjusted Life Years (DALYs), with 0 representing a year of perfect health and 1 representing death.

5.1.1 Value of a statistical life year

The burden of disease as measured in DALYs can be converted into a dollar figure using an estimate of the **Value of a ‘Statistical’ Life** (VSL). As the name suggests, the VSL is an estimate of the value society places on an anonymous life. Since Schelling’s (1968) discussion of the economics of life saving, the economic literature has focused on **willingness to pay** (WTP) – or, conversely, willingness to accept – measures of mortality and morbidity, in order to develop estimates of the VSL.

Estimates may be derived from observing people’s choices in situations where they rank or trade off various states of wellbeing (loss or gain) either against each other or for dollar amounts e.g. stated choice models of people’s WTP for interventions that enhance health or willingness to accept poorer health outcomes or the risk of such states. Alternatively, risk studies use evidence of market trade-offs between risk and money, including numerous labour market and other studies (such as installing smoke detectors, wearing seatbelts or bike helmets and so on).

The extensive literature in this field mostly uses econometric analysis to value mortality risk and the ‘hedonic wage’ by estimating compensating differentials for on-the-job risk exposure in labour markets; in other words, determining what dollar amount would be accepted by an individual to induce him/her to increase the probability of death or morbidity by a particular percentage. Viscusi and Aldy (2002), in a summary of mortality studies, found the VSL ranged between US\$4 million and US\$9 million with a median of US\$7 million (in year 2000 US dollars), similar but marginally higher than the VSL derived from studies of US product and housing markets. They also reviewed a parallel literature on the implicit value of the risk of non-fatal injuries.

Weaknesses in the WTP approach, as with human capital approaches to valuing life and wellbeing, are that there can be substantial variation between individuals. Extraneous influences in labour markets such as imperfect information, income/wealth or power asymmetries can cause difficulty in correctly perceiving the risk or in negotiating an acceptably higher wage in wage-risk trade off studies, for example.

As DALYs are enumerated in years of life rather than in whole lives it is necessary to calculate the **Value of a 'Statistical' Life Year (VSLY)** based on the VSL. This is done using the formula:²²

$$\text{VSLY} = \text{VSL} / \sum_{i=0, \dots, n-1} (1+r)^i$$

Where: n = years of remaining life, and
 r = discount rate

Clearly there is a need to know n (the years of remaining life), and to determine an appropriate value for r (the discount rate). There is a substantial body of literature, which often provides conflicting advice, on the appropriate mechanism by which costs should be discounted over time, properly taking into account risks, inflation, positive time preference and expected productivity gains.

Access Economics (2008) recommended an average VSL of \$6.0 million in 2006 Australian dollars (\$3.7 million to \$8.1 million). This equates to an average VSLY in 2006 of \$252,014 (\$155,409 to \$340,219), using a discount rate of 3% over an estimated 40 years remaining life expectancy. However, from this gross value, Deloitte Access Economics deducts all costs borne by the individual, reflecting the source study VSL estimates, to avoid double counting. This provides a different net VSLY for different conditions (and for different age-gender groups).

Since Access Economics (2008) was published, the Department of Finance and Deregulation (2009) have also provided an estimate of the VSLY, which appears to represent a fixed estimate of the net VSLY. This estimate was \$151,000 in 2006, which inflates to \$169,935 in 2010 dollars. This is very similar to the average net VSLY estimated using the Access Economics (2008) meta-analysis, and is used for calculations in modelling here.

5.2 Burden of disease due to incontinence

Disability weights were drawn from AIHW (2006) and applied to the estimated number of people living in the community with incontinence in 2010 by severity of disease (Hawthorne 2006, Appendix B, Table B.1, Table B.2). The AIHW estimated disability weights separately for people in the community and for those in residential aged care. Their disability weights were developed using utility scores from quality of life studies adjusted for comorbidities (AIHW 2006).

²² The formula is derived from the definition:

$$\text{VSL} = \sum \text{VSLY}_i / (1+r)^i \text{ where } i=0,1,2,\dots,n$$

where VSLY is assumed to be constant (ie. no variation with age).

Table 5.1: DALYs lost due to incontinence by disease severity in the community, 2010

Type of incontinence	Disability weight	YLD /DALYs prevalence
Very severe UI	0.31	15,485
Severe UI	0.24	39,334
Moderate UI	0.02	47,221
Slight UI	0.00	0
Very severe FI (a)	0.20	16,859
Severe FI	0.06	3,938
Total, accounting for individuals with both urinary and faecal incontinence (20%)		98,270

(a) Disability weights for 'very frequent faecal incontinence' used for 'very severe faecal incontinence' and weights for 'frequent faecal incontinence' used for 'severe faecal incontinence'. UI – urinary incontinence FI – faecal incontinence. Source: AIHW (2006, Table 6.9), Hawthorne (2006).

AIHW (2006) disability weights for the RAC population with urinary incontinence, faecal incontinence or both were applied the estimated number of people living in RAC needing assistance with incontinence (Table 2.4). The population rated D by the ACFI was assigned the disability weight for 'profound problems with bladder/bowel control', C with 'severe problems' and B with the 'difficulty' weight (Table 5.2).

Table 5.2: Disability weights for urinary and faecal incontinence in the RAC population and DALYs lost by disease severity, 2010

	Disability weight	YLD/DALYs prevalence
Profound problems with bladder/bowel control	0.35	37,213
Severe problems with bladder/bowel control	0.25	3,267
Difficulty with bladder/bowel control	0.15	1,358
Total		41,838

Source: AIHW (2006), Mathers et al (1999).

Multiplying the total number of DALYs by the VSLY in 2010 (\$169,935) provides an estimate of the dollar value loss of wellbeing from incontinence.

The monetary value of the disease burden from incontinence is \$16.7 billion in 2010 for community dwelling individuals and \$7.1 billion for residents in aged care facilities.

6 The total cost of incontinence in Australia

6.1 Cost summary

In 2010, the total financial cost of incontinence is estimated to be \$42.9 billion, or \$9,014 per person with incontinence. Of this total:

- \$270.8 million was estimated health system costs;
- \$34.1 billion was estimated productivity losses;
- \$1.6 billion was estimated residential aged care costs;
- \$2.7 billion was estimated informal carer (opportunity) costs.
- \$321 million was estimated other indirect costs (aids, formal carer expenses); and
- \$3.8 billion was estimated deadweight losses from transfers and lost taxation.

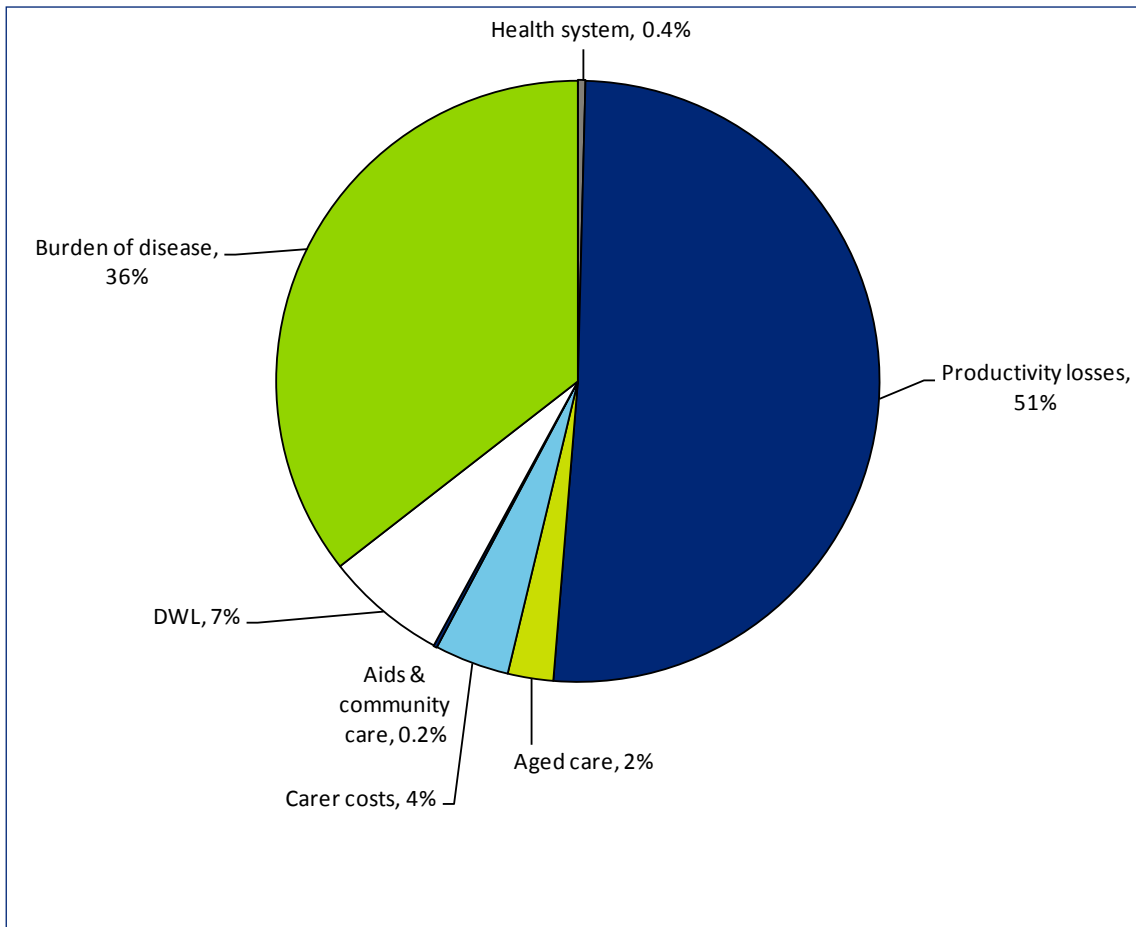
The value of the burden of disease, from incontinence is estimated to be \$23.8 billion in 2010. Adding this to total financial costs produces an estimate of \$66.7 billion as the costs of incontinence in 2010. A cost breakdown is provided in Table 6.1 and Chart 6.1.

Table 6.1: Summary of total cost of incontinence in 2010 by cost type

Cost type	Total cost (\$m)
Health system costs (a)	271
Productivity losses	34,114
Aged care	1,639
Carer opportunity costs	2,685
Other indirect (aids/other carer)	321
DWL	3,832
Total other financial costs (b)	42,591
Total financial costs (a) + (b)	42,862
Burden of disease (c)	23,809
Total economic cost (a) + (b) + (c)	66,671

Source: Access Economics calculations.

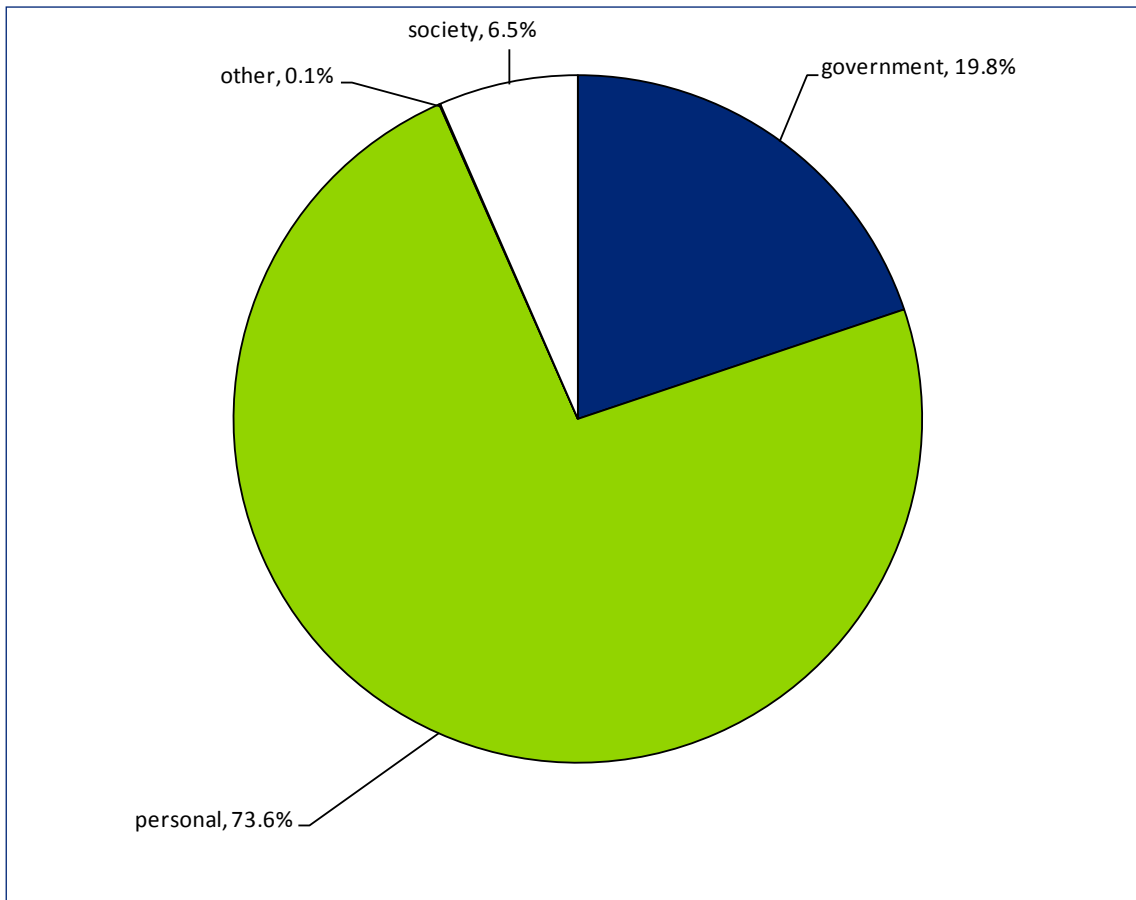
Chart 6.1: Components of total economic cost of incontinence in 2010 (total \$66.7 billion)



Source: Access Economics calculations (2010).

The economic cost of incontinence in 2010 is estimated to be approximately \$66.7 billion, or \$14,021 per person with incontinence.

Chart 6.2: Total cost of incontinence by bearer, 2010



Source : Access Economics calculations (2010).

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Appendix A: Literature searches

Table A.1: Literature searches conducted for this report

Terms	Date	Database	Potentially relevant articles
prevalence and incontinence and australia	27 May 2010	NLM Gateway	63 (2006 to 2010)
prevalence and continence and australia	27 May 2010	NLM Gateway	13
anal incontinence and prevalence	27 May 2010	NLM Gateway	158
urinary incontinence and australia	27 May 2010	NLM Gateway	148
faecal incontinence and australia	27 May 2010	NLM Gateway	56
fecal incontinence and australia	27 May 2010	NLM Gateway	56
faecal incontinence and prevalence and validated	27 May 2010	NLM Gateway	37
urin* incontinence and prevalence and validated	27 May 2010	NLM Gateway	93
non admitted and incontinence	27 May 2010	NLM Gateway	27
urolog* and incontinence and australia	27 May 2010	NLM Gateway	24
service* and incontinence and australia	27 May 2010	NLM Gateway	11
medical and incontinence and australia	27 May 2010	NLM Gateway	29
treat* and incontinence and australia	27 May 2010	NLM Gateway	93
outpatient and incontinence and australia	27 May 2010	NLM Gateway	5
outpatient and incontinence	27 May 2010	NLM Gateway	172
specialist and incontinence and cost	27 May 2010	NLM Gateway	7
system and incontinence and cost	27 May 2010	NLM Gateway	31
co-morbid* and incontinence	27 May 2010	NLM Gateway	36
mortality rate* and incontinence	27 May 2010	NLM Gateway	116
death and incontinence	27 May 2010	NLM Gateway	92
Incontinence and employment	21 June 2010	NLM Gateway	31
incontinence and work	21 June 2010	NLM Gateway	92

Appendix B: Prevalence of incontinence by severity of disease

Table B.1: Prevalence of urinary incontinence by age, gender, and severity of disease

Age	Very severe		Severe		Moderate		Slight	
	M	F	M	F	M	F	M	F
15-19	0%	0%	0%	0%	0%	0%	2%	11%
20-24	0%	0%	0%	1%	0%	3%	5%	14%
25-29	0%	0%	0%	1%	0%	3%	5%	14%
30-34	0%	0%	0%	1%	0%	6%	3%	32%
35-39	0%	0%	0%	1%	0%	6%	3%	32%
40-44	0%	1%	0%	0%	1%	9%	5%	34%
45-49	0%	1%	0%	0%	1%	9%	5%	34%
50-54	0%	1%	1%	3%	4%	1%	12%	40%
55-59	0%	1%	1%	3%	4%	1%	12%	40%
60-64	0%	1%	0%	3%	2%	14%	12%	30%
65-69	0%	1%	0%	3%	2%	14%	12%	30%
70-74	0%	1%	1%	4%	5%	11%	21%	24%
75-79	0%	1%	1%	4%	5%	11%	21%	24%
80+	0%	0%	0%	0%	0%	0%	2%	11%

M – males, F – females. Source: Hawthorne (2006).

Table B.2: Prevalence of faecal incontinence by age, gender, and severity of disease

Age	Very severe		Severe		Moderate		Slight	
	M	F	M	F	M	F	M	F
15-19	0%	0%	0%	0%	0%	0%	2%	6%
20-24	0%	0%	0%	1%	0%	1%	5%	3%
25-29	0%	0%	0%	1%	0%	1%	5%	3%
30-34	0%	0%	1%	0%	0%	2%	5%	5%
35-39	0%	0%	1%	0%	0%	2%	5%	5%
40-44	0%	1%	0%	1%	0%	0%	2%	6%
45-49	0%	1%	0%	1%	0%	0%	2%	6%
50-54	1%	0%	0%	0%	1%	5%	6%	10%
55-59	1%	0%	0%	0%	1%	5%	6%	10%
60-64	1%	3%	0%	1%	1%	2%	6%	6%
65-69	1%	3%	0%	1%	1%	2%	6%	6%
70-74	0%	2%	0%	1%	5%	4%	11%	10%
75-79	0%	2%	0%	1%	5%	4%	11%	10%
80+	0%	4%	0%	3%	1%	5%	5%	5%

M – males, F – females. Source: Hawthorne (2006).

Limitation of our work

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