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**Published**

2012

**Journal Title**

Australian Family Physician

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# Comprehensive health assessments for adults with intellectual disability living in the community

## Weighing up the costs and benefits

### Background

Health assessments have beneficial effects on health outcomes for people with intellectual disability living in the community. However, the effect on medical costs is unknown.

### Methods

We utilised Medicare Australia data on consultations, procedures and prescription drugs (including vaccinations) from all participants in a randomised control trial during 2002–03 that examined the effectiveness of a health assessment. Government health costs for adults with intellectual disability who did or did not receive an assessment were compared. Bootstrapping statistics (95% confidence interval) were employed to handle the right-skewed cost data.

### Results

Over 12 months, patients receiving health assessments incurred total costs of \$4523 (95% CI: \$3521 to \$5525) similar to those in usual care \$4466 (95% CI: \$3283 to \$5649). Costs were not significantly higher compared with the 12 month pre-intervention period.

### Discussion

Health assessments for adults with intellectual disability living in the community are encouraged as they produce enhanced patient care but do not increase overall consultation or medication costs.

### Keywords

intellectual disability; costs and cost analysis; health expenditures; primary health care; mass screening; health status

People with intellectual disability comprise 2–3% of the Australian population.<sup>1</sup> They are more likely to experience poorer overall health status and a shorter lifespan than the general population.<sup>2–5</sup> There is consistent evidence that general practitioner-delivered health assessments lead to improved health outcomes for people with intellectual disability living in the community.<sup>6–8</sup> Health assessments lead to increased case finding<sup>7–11</sup> and detection of life-threatening conditions,<sup>7,8</sup> mental health issues<sup>7–9,11</sup> and sensory problems.<sup>7–9,11</sup> Health assessments have subsequently led to increased clinical activity,<sup>7–12</sup> improved self-care management education,<sup>9,10</sup> increased health risk identification<sup>7–9, 11</sup> and disease prevention activity.<sup>7,8,10,11</sup>

In 2007, the Commonwealth Government included health assessments for people with intellectual disability as a Medicare Benefits Schedule (MBS) item number. However, despite this, the uptake of health assessments has been low, with less than 1% of Australians with intellectual disability receiving a health assessment in the 2 years between July 2007 and August 2009.<sup>13</sup> To date, only one study has explored the financial implications of health assessments in this population.<sup>14</sup> A study conducted in the United Kingdom concluded the mean costs of healthcare for those receiving assessments were not greater than for those who did not receive a health assessment.<sup>14</sup>

In this study, we assessed the Australian Medicare costs over 12 months for adults with intellectual disability participating in a

health assessment intervention compared with usual care. As the patient benefits of health assessments have been demonstrated, we focus on the resource implications and associated costs. Our objective was to determine if medical care costs differ according to whether or not an individual received a health assessment.

### Methods

Data was derived from a randomised controlled trial undertaken among adults with intellectual disability living in the community in the Greater Brisbane area from August 2002 to August 2003. The trial was designed to examine the utility of two health promotion tools, a one-off health assessment and a health diary designed for ongoing use. Individuals were eligible for inclusion if they had an intellectual disability, were aged 18 years or over and lived in private residences either with family, alone, or with other individuals in a shared arrangement, but did not have 24 hour support. The units of randomisation were clusters of participants who shared a GP clinic.

The health assessment tested was the Comprehensive Health Assessment Programme (CHAP), a one-off health screening tool. Participants had not received a formal health assessment previously. The CHAP is a booklet in which the carer provides a detailed medical history, the GP then reviews the history, performs the health assessment and develops an action plan in consultation with the patient and carer. A detailed description of the CHAP is available elsewhere.<sup>14</sup> There was no strong evidence of interaction between the CHAP and the health diary. Consequently, comparisons are between individuals who were randomised to receive or not receive the CHAP, regardless of whether they also received the diary.

All items claimed on the MBS (ie. consultations, procedures) and the Pharmaceutical Benefits Scheme (PBS) (ie. most medicines, some vaccines), regardless of the setting where the items were claimed, were obtained for all study participants from Medicare Australia over 2 years for the 12 months before receiving the intervention (or the nominated starting date for participants not allocated any intervention), as well as 12 months post-intervention. Non-federal government and patient/carer out-of-pocket medication expenses and dental care services were not captured. MBS and PBS costs were separated to gauge the relative magnitude of each cost component and summed to generate total costs. Baseline demographic data collected included age, gender, level of intellectual disability, current residence and presence of Down syndrome.

Data was summarised using frequency (percentage). To account for the skewed nature of the cost data (with many participants having zero or minimal values in some categories and a small proportion of participants having very high values), mean costs per participant were obtained using bootstrapping statistics. This was achieved by drawing 1000 re-samples from the original skewed distribution with replacement and using the bias-corrected approach.<sup>15,16</sup> The Wald test assessed statistically significant subgroup differences. Subgroups of interest included health assessment (yes/no), age group ( $\leq 33$  years/ $>33$  years) and disability level (mild-moderate/severe-profound/unknown). Tests were two-sided and results were considered statistically significant when  $p < 0.05$ . Costs were in Australian dollars (2011). Data were analysed using Stata/SE V11 (College Station, TX, USA).

This study was approved by the Behavioural and Social Sciences Ethical Review Committee of the University of Queensland.

## Results

In total, 272 GPs (from a possible 140) agreed to participate; GPs had a mode of one participant in the trial (range 1–34). At trial completion medical and cost data was collected from 242 (89%) participants. Baseline characteristics were similar across groups (Table 1). There were no significant differences for costs in the pre-intervention period by health assessment group.

**Table 1. Study participant characteristics at baseline by health assessment status**

	No health assessment (n=119) n (%)	Health assessment (n=123) n (%)
Age (in years; mean)	36 (SD=12)	36 (SD=13)
Male gender	63 (53)	75 (61)
<b>Level of intellectual disability</b>		
• Mild to moderate	57 (52)	59 (50)
• Severe to profound	28 (26)	38 (32)
• Unknown	24 (22)	20 (17)
• Down syndrome	20 (17)	17 (14)
<b>Current residence</b>		
• Private home	72 (62)	64 (55)
• Shared house not with family/hostel	40 (34)	52 (44)
• Other	5 (4)	1 (1)
12 month pre-intervention mean health costs*	\$3831	\$3671
* Bootstrapped mean costs combining MBS and PBS items Some missing data: totals may not add up; SD = standard deviation		

Participants allocated to receive the health assessment received far more sensory testing and provision of health promotion and disease prevention activities. In particular, there was an increase in the number of vision (OR 3.4; 95% CI: 1.4–8.3) and hearing (OR 4.5; 95% CI: 1.9–10.7) tests performed. Immunisation rates increased for hepatitis A (OR 5.4; 95% CI: 1.8–16.3) and pneumococcus (OR 7.4; 95% CI: 1.5–37.1) and there was an increase in weight measurements being recorded (OR 3.1; 95% CI: 1.5–6.4).<sup>11</sup>

A total of 7043 MBS services and 10 440 PBS prescriptions were recorded for the 242 participants collectively over 2 years. Overall mean costs per person combined for MBS and PBS for the 12 months post-intervention period was \$4494 (95% CI: \$3748 to \$5240). This was not statistically significantly different than costs from the pre-intervention period \$3752 (95% CI: \$3114 to \$4392)  $p=0.129$  (Table 2).

In the post-intervention period, participants receiving health assessments incurred total costs of \$4523; similar to costs for nonhealth assessment participants of \$4466. The mean difference between pre- and post-intervention costs for participants receiving health assessments was \$852 (95% CI: \$305 to \$1398) and not statistically significantly different than costs for nonhealth assessment participants of

\$634 (95% CI: \$25 to \$1244). Males incurred higher PBS costs (mean \$4405) than females (mean \$2906),  $p=0.03$ , although this was not influenced by health assessment receipt as PBS costs were similar for males receiving assessments (mean \$4640) and not receiving assessments (mean \$4138)  $p=0.66$ .

## Discussion

This research highlights the financial implications to the federal government of a health assessment intervention used by individuals with intellectual disability who live in the community. The findings show there were no significant differences in government costs for medical and pharmaceutical services between those who did and did not receive a health assessment. This is despite the assessment leading to significantly increased health promotion and case-finding activities. Different types of consultations and medications fluctuated, but overall created a neutral impact on costs while at the same time the assessment encouraged more targeted patient services. The findings here are consistent with those found in Romeo et al,<sup>14</sup> however, their study also included the value of unpaid care. Limiting the study is the age of the data (2002–03), which may influence the mix of MBS items that are used

**Table 2. Government costs over 12 months of pharmaceutical and medical services by subgroups (AUD 2011)**

	n	PBS costs \$		MBS costs \$		Combined costs \$	
		Median*	Mean (95% CI)#	Median*	Mean (95% CI)#	Median*	Mean (95% CI)#
All participants	242	1666	3746 (3010, 4482)	461	706 (596, 816)	2307	4494 (3748, 5240)
<b>Intervention type</b>							
No assessment	119	1602	3640 (2584, 4698)	479	810 (613, 1007)	2160	4466 (3283, 5649)
Assessment	123	1861	3853 (2923, 4783)	376	602 (499, 706)	2555	4523 (3521, 5525)
<b>Age</b>							
<=33 years	121	1081	3519 (2518, 4521)	356	685 (495, 875)	1826	4221 (3126, 5316)
>34 years	121	1873	3978 (2934, 5021)	522	728 (608, 847)	2839	4777 (3716, 5838)
<b>Gender</b>							
Male	138	1989	4405 (3363, 5447)	450	736 (559, 913)	2734	5172 (4009, 6335)
Female	104	1262	2906 (2020, 3792)+	473	667 (540, 794)	2041	3622 (2698, 4547)†
<b>Disability level^</b>							
Mild to moderate	116	1050	3765 (2610, 4920)	455	715 (536, 894)	2075	4514 (3288, 5740)
Severe to profound	66	2449	3890 (2590, 5191)	481	653 (495, 810)	2993	4569 (3225, 5913)
Unknown	44	1425	2974 (1905, 4043)	456	786 (485, 1088)	2159	3843 (2666, 5019)

\* Minimum to maximum values ranged from: PBS \$0–23 917, MBS \$0–8503, combined \$0–30 435  
# Bootstrapped means using the bias-corrected method and 1000 samples  
^ Missing data for disability level = 16  
†  $p < 0.05$  ( $p$  value are from Wald test)

today in adults with intellectual disability and the unknown impact on the generalisability of the findings. The age, gender, level of disability and number of GP visits in the 12 months preceding CHAP receipt for participants in this study were similar to characteristics of people with intellectual disability who reside in 24 hour supported accommodation,<sup>17</sup> suggesting these results may be generalisable to that population.

The adoption of routine health assessments has been recommended to overcome potential communication barriers between patients and clinicians and improve health outcomes.<sup>8,18</sup> How governments allocate resources to improve the health of its citizens will depend on efficiency and fairness considerations, usually believed to be conflicting targets. This has not been the case in our study where health promotion in an underserved group has increased but at no overall additional expense at the time, based on the specific types of costs measured. Further research is required to investigate if the current federal government costs (eg. health assessments, management plans, Team Care Arrangements), state health department costs (eg. potentially fewer emergency and inpatient

hospital services or an increase in conditions identified requiring elective specialist review or operations) and disability support services (potentially more required) are different for these patients. Moreover, this future research would benefit from assessment of patient/carer out-of-pocket expenses (including dental care), state government costs and nongovernment health costs.

The 2009 Medicare review resulted in MBS items dedicated to health assessments for people with disability becoming merged with four time-based items for other disadvantaged groups; limiting the capacity for research to identify the extent to which services are being provided to this strongly disadvantaged group.<sup>19</sup> In the 2008 United Nations Convention on the Rights of Persons with Disability, Article Four mandates governments to take specific action, including promoting research, to gain a better understanding of how disability affects relative access to healthcare and medical outcomes.<sup>20</sup> A case can be made for these dedicated Medicare items to be reinstated which could enable closer monitoring, facilitate essential research and enhanced policy opportunities without undue

burden on a vulnerable group in our community, particularly given the low uptake of health assessments to date.<sup>13</sup>

Health assessments may reduce future health costs through early diagnosis or treatment of conditions. Testing this hypothesis is outside the scope of this study but could be possible with Medicare data collected prospectively on health assessment clients with intellectual disabilities facilitated by a dedicated MBS item number. While government Medicare costs may be of little concern to GPs during their day-to-day practice, changes to Medicare items do impact on service delivery and ultimately patient outcomes and out-of-pocket expenses, an issue which adversely affects access and health behaviours.<sup>21</sup> Large initiatives, such as the National Disability Insurance Scheme, are likely to help alleviate hardship for many people with disabilities,<sup>22</sup> but a dedicated MBS item for health assessments, which is adequately remunerated, is also a simple move forward to improving health services for people with an intellectual disability. Although this alone will be insufficient to improve the uptake of health assessments by GPs, it may contribute

to further understanding of who is receiving the benefits and who is not. We may also learn what supports people with an intellectual disability, and their carers, and what GPs need to improve uptake of health assessments. This is especially relevant since only 1% of patients with an impairment receive health assessments. Other countries, such as the United Kingdom and New Zealand, have already begun monitoring the implementation of health assessments.<sup>8</sup>

## Implication for general practice

Health assessments for adults with intellectual disability are encouraged as they produce improved patient care and do not increase consultation or medication costs to the federal government based on 2002–03 data.

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Conflict of interest: Nick Lennox has received funding from the General Practice Evaluation Program.

### References

1. Australian Institute of Health and Welfare. Disability in Australia: intellectual disability (Bulletin no. 67, cat. no. AUS110). Canberra: AIHW, 2008.
2. Bittles A, Patterson B, Sullivan S, Hussain R, Glasson E, Montgomery P. The influence of intellectual disability on life expectancy. *J Gerontol A Biol Sci Med Sci* 2002;57:M470–2.
3. Emerson E, Hatton C. Poverty, socio-economic position, social capital and the health of children and adolescents with intellectual disabilities in Britain: a replication. *J Intellect Disabil Res* 2007;51:866–74.
4. Krahn G, Hammond L, Turner A. A cascade of disparities: health and health care access for people with intellectual disabilities. *Ment Retard Dev Disabil Res Rev* 2006;12:70–82.
5. Maaskant M. Morbidity in people with intellectual disability. IASSID- Europe Conference, Maastricht. *Journal of Applied Research in Intellectual Disabilities* 2006;226–69.
6. Cooper S-A, Morrison J, Melville C, et al. Improving the health of people with intellectual disabilities: outcomes of a health screening programme after 1 year. *J Intellect Disabil Res* 2006;50:667–77.
7. Lennox N, Ware R, Bain C, Taylor Gomez M, Cooper S-A. Effects of health screening for adults with intellectual disability: a pooled analysis. *Br J Gen Pract* 2011;61:193–6.
8. Robertson J, Roberts H, Emerson E, Turner S, Greig R. The impact of health checks for people with intellectual disabilities: a systematic review of the evidence. *J Intellect Disabil Res* 2011;55:1009–19.
9. Cassidy G, Martin D, Martin G, Roy A. Health checks for people with learning disabilities. *Journal of Learning Disabilities* 2011;6:123–36.
10. Hahn J, Aronow H. A pilot of a gerontology advanced practice nurse preventative intervention. *J Applied Res Intellect Disabil* 2005;18:131–42.
11. Lennox N, Bain C, Rey-Conde T, et al. Cluster randomized-control trial of interventions to improve health for adults with intellectual disability who live in private dwellings. *J Applied Res Intellect Disabil* 2010;23:303–11.
12. Lennox N, Rey-Conde T, Faint SL. A pilot of interventions to improve health care in adolescents with intellectual disability. *J Applied Res Intellect Disabil* 2008;21:484–9.
13. Koritsas S, Iacono T, Davis R. Australian general practitioner uptake of a remunerated Medicare Health Assessment for People with Intellectual Disability. *J Intellect Dev Disabil* 2012;37:151–4.
14. Romeo R, Knapp M, Morrison J, Melville C, Allan L, Finlayson J, et al. Cost-estimation of a health-check intervention for adults with intellectual disabilities in the UK. *J Intellect Disabil Res* 2009;53:426–39.
15. Brouwer W, Rutten F, Koopmanschap M. Costing economic evaluations. In: Drummond M, McGuire A, editors. *Economic Evaluations in Health Care*. Oxford: Oxford University Press, 2001, p. 172–214.
16. Efron B, Tibshirani R. *An introduction to the bootstrap*. Chapman & Hall, 1993.
17. Lennox N, Bain C, Rey-Conde T, Purdie D, Bush R, Pandeya N. Effects of a comprehensive health assessment programme for Australian adults with intellectual disability: a cluster randomized trial. *Int J Epidemiol* 2007;36:139–46.
18. Scheepers M, Kerr M, O'Hara D, et al. Reduced health disparity in people with intellectual disabilities: a report from Health Issues Special Interest Group of the International Association for the Scientific Study of Intellectual Disability. *Journal of Policy and Practice in Intellectual Disabilities* 2005;2:249–55.
19. Brolan C, Ware R, Lennox N, Taylor Gomez M, Kay M, Hill P. Invisible populations: parallels between the health of people with intellectual disability and people of a refugee background. *Aust J Prim Health* 2011;17:210–3.
20. Stein M, Stein P, Weiss D, Lang R. Health care and the UN Disability Rights Convention. *Lancet* 2009;374:1796–7.
21. World Health Organization. *World report on disability*. In: WHO Collaboration with the World Bank, editor. Geneva: WHO, 2011.
22. Jan S, Essue BM, Leeder SR. Falling through the cracks: the hidden economic burden of chronic illness and disability on Australian households. *Med J Aust* 2012;196:29–31.

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