Towards a measure of function for home and community care services in Australia: Part 1 - Development of a standard national approach

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Publication Details  
This article was originally published as Eagar, K, Owen, A, Marosszeky, N and Poulos, R, Towards a measure of function for home and community care services in Australia: Part 1 - Development of a standard national approach, Australian Journal of Primary Health, 12(1), 2006, 73-81.
Towards a Measure of Function for Home and Community Care Services in Australia: Part 1 – Development of a Standard National Approach

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The aim of the project was to recommend, for national use, validated and reliable instruments for measuring the dependency of people eligible for Australian Home and Community Care (HACC) services. The project was split into two stages. Stage 1—reported here—reviewed the suitability of existing instruments and scales to measure levels of dependency within the target group and made recommendations on a set of measures for national field testing in Stage 2. The review covered four domains of function (domestic or instrumental, self-care, challenging behaviour, and cognitive) and recommended an instrument for each domain. A two-tier assessment system was developed. The first tier consists of a simple nine-item functional screen. It consists of seven items from the OAIS instrument (Fillenbaum & Smyer, 1981) and two additional items to cover cognitive and behavioural functioning. The second tier consists of five functional assessment instruments, used only with those triggered for an assessment from the first tier assessment. The five instruments are the Barthel Index (Collin, Wade, Davies, & Horne, 1988) or the Functional Independence Measure (FIM, Granger et al., 1993) to assess self-care; the Lawton’s Instrumental Activities of Daily Living (IADL) Scale, with modifications to make it suitable for the HACC program, to assess domestic functioning; the Australian Resident Classification Scale (RCS), with modifications to make it suitable for the HACC program, to assess behaviour; and the Folstein Mini-Mental State Examination (MMSE [30-point]) to assess cognition. The selected instruments were, on the weight of the available evidence, those that best met our criteria in terms of validity, reliability and acceptability. The performance of the instruments with a representative sample of HACC clients and services forms Stage 2 of the research; this empirical evidence is reported elsewhere in this journal.

Key words: Assessment, Community care, Functional dependency, Activities of daily living

Policy and implementation issues surrounding community assessment models have been receiving increasing attention during the past decade. The initial impetus for reform was the policy review after a decade of the Home and Community Care (HACC) program—the Home But Not Alone (House of Representatives Standing Committee on Community Affairs, 1994) report. This was supported by the administrative reform agenda embodied in the national report on the Efficiency and Effectiveness Review of the Home and Community Care Program (Commonwealth Department of Human Services and Health, 1995).

In a Commonwealth-commissioned review of evidence, Fine and Thomson examined the factors influencing the effectiveness of community care programs, with lessons from the international literature (Fine & Thomson, 1995). One important finding was the value of periodic re-assessment, both as a program planning tool and as a clinical tool for capturing data on outcomes and for changing service and care plans as clients’ needs change.

Gradually the momentum for change moved from policy to management issues, with increased attention on management decision support tools. This was when the lessons from acute-care casemix were useful, and standard measures of client need were being explored as the first building blocks for a client classification system for community care (Lewin & Eagar, 1996; Hindle, 1998; Eagar & Owen, 1999).

Discussion of the structural and system design implications of these micro-level reforms increased with the release of the National Framework for Comprehensive Assessment of the HACC Program (Lincoln Gerontology Centre, 1998). A New South Wales paper, Community Care Assessment in NSW: A Framework for the Future – A Discussion Paper (NSW Ageing and Disability Department, 1998), illustrated how a common policy and a
commitment to the national approach can help develop services and be a tool for improving integration. This was followed by the release in 1999 of Targeting in the HACC Program (Howe & Gray, 1999), which proposed the introduction of three tiers within the HACC program. Different types of assessment would be required before a client could progress to a higher service tier.

The practice of client assessment in the community is developing quickly, driven by the rapid expansion in automated and electronic communication systems through call centres, improved methods for handling client data and reporting program performance, and by the requirement to share information across different programs. While these improvements represent solutions to well-understood problems for consumers—in particular the inconvenience of multiple assessments—for providers the challenge is in efficiently sharing information for planning care, especially for people with complex needs. These solutions also lead to a duplication and confusion of functions in the assessment effort and a proliferation of largely similar but not always “inter-operable” systems.

Tools in current use vary by the purpose and scope of what they seek to measure. These include client registration and eligibility, screening for service needs, screening and assessment of client needs, client classification, care and service planning and resource allocation. They also vary greatly by state and territory, region and geography; program funding source; client type (including diagnosis) and problem (risk) profile; service type; and the setting of care. Standardisation across comparable data sets in the key domains of function is a useful place to start, because this is the best predictor of need for community care (Eagar, 1999).

The purpose of current reforms is to improve communication, help create a common language around the concepts of dependency, and to help care planning, reporting and service development. The focus of reform is about replacing current work practices based on informal (subjective) assessments with a system of formal (less subjective) assessments. In the ideal situation, standardised, valid and reliable approaches to measurement can serve a number of different functions at the same time. For example, data on client characteristics can be used to measure client need, establish the goal of care, indicate required services, establish priority for services, measure client outcomes and be useful in agency, regional and state comparisons.

The collection of dependency data is only useful if it informs decision-making at a number of levels. An Australian standard instrument needs to be appropriate for use in a variety of different settings, for consumers with diverse needs, and by providers who have different training and skills. In addition, it needs to be able to yield information that is useful on several levels. First, it must assist consumers in receiving services that are appropriate to their needs. Second, it must assist providers in systematically assessing the needs of individual consumers and in providing services appropriate to those needs. If providers do not find the information useful for making referrals and planning further assessments and interventions to improve client care, its collection will become a burden and the subsequent data quality will be poor. Finally, it needs to be able to yield information that can be aggregated so it is useful at a planning level—if funding bodies and managers do not find the information useful, there will be little ongoing commitment to resources to support its collection or to improving it over time.

This paper details the first stage in the process of determining a national measure of function for use in services funded by the HACC program in Australia. It covers the establishment of the Steering Group, the criteria for instrument selection, the review process and the final selection of instruments for testing.

Method

A Joint HACC/Aged Care Assessment Program Assessment Working Group was established to act as a Steering Group for the project. This Steering Group was comprised of representatives of the departments of Health and Aged Care, Veterans’ Affairs, and Family and Community Services, the Australian Institute of Health and Welfare, the Australian Council of Community Nursing Services and a representative from each jurisdiction. Its role was to agree on the criteria for the selection of measures and, using those criteria, consider the evidence produced by the research team. The role of the Steering Group was critical in that it was the forum to clarify research questions with decision-makers, ensure that the research timing
fitted the policy timetable, disseminate the results and promote an understanding of the research findings. This method is consistent with the evidence on how best to translate research findings into practice (Walshe & Rundall, 2001; Davis & Howden-Chapman, 1996; Elliott & Popay, 2000).

**Functional dependency**

A review of international literature and a national current practice review were undertaken to identify possible tools that could be suitable for use in the HACC program. A measure of functional dependency was defined as a tool that identifies key areas in which a person requires assistance with daily living and quantifies the extent to which the person has to rely on someone else to help them carry out normal activities of living in their own home and in the community. Functional measures that capture factors in the external environment such as accessibility to transport and the layout of the home were also included.

The review was concerned solely with functional screening and assessment and not with comprehensive assessment. It was recognised that HACC or other aged care agencies routinely collect and use other important information such as diagnoses, use of medications, carer availability, risk of falls, abuse, and so on. These domains were outside the scope of the current project.

The desired data elements were the ones that could capture functional ability, whether the person is capable of performing the task, and the degree of functional burden that arises because of the person's functional limitations and circumstances. Four domains of function were included—domestic (instrumental), self-care, challenging behaviour and cognition. The goal was to identify data elements that capture whether or not a person can do a particular function, regardless of whether they in fact do it. Additional information on, for example, the need for and availability of a carer would be required to form a clear picture of the services that may be required.

**A two-tiered approach to assessment**

A two-tiered problem identification and assessment model was agreed with the Steering Committee. In practice most jurisdictions in Australia either have plans for, or have already begun implementing, such two-tiered systems.

The results of an initial functional screen would trigger a more comprehensive—second tier—assessment for those who require it. The second tier assessment would not be provided to all clients but only to those with identified needs and functional limitations (see Table 1).

It was agreed that the screening tool needs to be capable of being used as a filtering system and be suitable for use in all jurisdictions, irrespective of the approach taken to implement assessment procedures. It therefore has to be able to be incorporated into IT systems through data-sharing

**Table 1: A two-tiered model that separates screening and assessment**

<table>
<thead>
<tr>
<th>Purpose: Determine whether client is eligible to receive services</th>
<th>To classify each person as low, medium or high need with respect to their functional ability. Only people screened as being of high need (or perhaps also medium need) would receive a more thorough functional assessment.</th>
<th>To assess in detail the functional needs of consumers assessed as being in high need (or perhaps also medium need).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performed on: All those presenting or referred for service</td>
<td>All those accepted as clients</td>
<td>All clients with problems as identified through problem screen</td>
</tr>
<tr>
<td>Performed by: Referring agency or HACC agency</td>
<td>Any service provider</td>
<td>Designated assessor</td>
</tr>
<tr>
<td>Performed when: Prior to being accepted for service</td>
<td>When referred to service</td>
<td>At least yearly or when there is a significant change in the person's functional needs (i.e., significant enough to necessitate a new package of community care services)</td>
</tr>
<tr>
<td>Methods: Telephone or face-to-face interview</td>
<td>Functional problems identified and high (and medium) need clients referred for more detailed assessment. Low need clients may be referred directly for services or rejected</td>
<td>In-depth interview or examination, generally including home visit</td>
</tr>
<tr>
<td>Result: Accepted or rejected for service</td>
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</tbody>
</table>

*Australian Journal of Primary Health — Vol. 12, No. 1, 2006*
protocols. The initial screen should also be useful for direct referrals by and between HACC agencies. The screening tool has to be simple (10–15 items maximum), taking 10 minutes or less to complete, and able to be administered on everyone. Finally, the screening tool had to be suitable for administration either face-to-face or over a telephone.

**Criteria for including assessment instruments for review**

The clients of HACC services are typically people living in the community who require some level of care and support in performing basic self-care or other daily tasks. The majority of clients are elderly, although the program also provides care for a significant number of young people with disabilities.

In light of this client profile and large number of potential scales for this target group, the review had to focus on instruments designed to measure two specific aspects of dependency. The first was physical impairment, disability and handicap, as indicated by limitations in activities of daily living. These map broadly to the activities and participation domains in the International Classification of Impairments, Disabilities and Handicaps (World Health Organisation [WHO], 1999). The second was mental status, as indicated by cognitive impairment and/or behavioural symptoms.

Within these two topic areas there are many scales, especially in the area of measuring physical disability and handicap (McDowell & Newell, 1996). Three criteria were thus used to select potential instruments and tools for review. First, the tool would be applicable to the majority of HACC clients, including younger people with disabilities and their carers. Second, the tool is in the public domain and could be accessed at no cost. Third, the tool was supported by published evidence confirming that it possessed good psychometric properties (i.e., reliability and validity). The Steering Group endorsed these three criteria for instrument selection.

Instruments were therefore excluded if they had not been demonstrated to work for people living in the community, or were designed to capture very specific forms of impairment or disability, such as severity indices for different conditions (e.g., incontinence) or were designed for specific population groups such as children.

Using these criteria, many instruments were excluded. Tools in common usage, such as the Australian Veterans Home Care Assessment Instrument, were described as being in draft form and had no published data to support their use (Department of Veterans' Affairs, 2001). Tools used in the disability sector, such as the Vermont Tool for Support Needs Assessment, are service-specific with multiple uses that compound domains of need with recommended service responses (Vermont, 1998). Some tools reported in the international literature, such as the home care version of the United States' nursing home MDS system (InterRai / MDS-HC), were medically focused and had a majority of items that were not validated in community settings (Morris et al., 1997).

In total, over 100 instruments were then reviewed. These included instruments that had originally been designed for use on elderly clients provided there was no reason to believe that the instrument would not be appropriate for clients of all ages or the instrument captured information of great importance for the care of the elderly. This applied especially to instruments measuring mental status. It was assumed that such instruments would be used by people trained in their use and in appropriate circumstances.

Almost all scales reviewed had been developed and tested in the health sector (as opposed to the community sector), either in Australia or elsewhere. As such, the review assessed whether it would be necessary to modify the language (e.g., the term "patient" was frequently used) and took account of cultural issues (e.g., suitability for Aboriginal and Torres Strait Islander communities).

The review was undertaken using the Citations in Nursing and Allied Health (CINAHL), the Psychology Literature (PsycLIT) and the Medical Data Base (MEDLINE). Use was also made of several review books, notably, McDowell and Newell (1996) and Bowling (1991).

A standard framework was followed in reviewing each assessment instrument. Following accepted procedures (Bowling, 1991), it included reviewing the psychometric properties of the instrument, the settings in which the instrument could be used, the population for which the instrument was appropriate and acceptable, and how the instrument could be administered. The same framework was used for instruments measuring physical dependency and those.
### Table 2: An example of the framework used for reviewing screening tools

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Screen for identifying elderly community residents with impaired function (OARS) (Fillenbaum, 1986)</th>
<th>Screen for selecting people for comprehensive geriatric assessment (Maly, Hirsh, &amp; Reuben, 1997)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Usage</td>
<td>To provide a brief screen based on IADL performance to identify elderly community residents with impaired function to better target services.</td>
<td>To detect geriatric syndromes in community dwelling older people who would benefit from outpatient comprehensive geriatric assessment.</td>
</tr>
<tr>
<td>Application</td>
<td>Screen appears to be brief (&lt;5 minutes). Claimed to be easy to administer but no indication of training/kills needed. The complete OARS questionnaire is administered by trained interviewer, but the items can also be self-administered.</td>
<td>Questionnaire completed by participant. 16 screening questions completed in 5 minutes. Complete questionnaire, including another 19 questions on demographics, took on average 11 minutes to complete.</td>
</tr>
<tr>
<td>Items</td>
<td>5 items for IADL: transportation, shopping, meal preparation, housework, and managing finances.</td>
<td>16 screening questions. 3 items on ADL, 6 items on IADL 3 on social activities and questions for depression, falls and urinary incontinence. ADL, IADL and social activity items taken from the Functional Status Questionnaire (Jette et al., 1986).</td>
</tr>
<tr>
<td>Scoring/interpretation</td>
<td>Subjects rated as either having or not requiring help. Summing the number of activities that can be performed unaided produces a Guttmann 6-point scale.</td>
<td>ADL, IADL and social activity items scored on a 5-point scale, and combined to give a score indicating functional impairment. Cut-offs indicating impairment defined by an expert clinical panel: 89 for ADL, 72 for IADL and 78 for social activities. Items on depression, falls and incontinence (2-item screen) scored either yes or no.</td>
</tr>
<tr>
<td>Reliability</td>
<td>Reliability of items tested in complete OARS. Test-retest reliability for IADL sub-scale reported as 0.71 (Fillenbaum &amp; Smyer, 1981). Inter-rater and intra-rater reliability of various sub-scales ranged from 0.67-0.71 (Fillenbaum &amp; Smyer).</td>
<td>Reliability was not assessed by Maly et al. (1997) Internal consistency (Cronbach's alpha) for the ADL, IADL and social activities sub-scales reported as 0.77, 0.87 and 0.75 (Einarsson &amp; Grimby, 1990).</td>
</tr>
<tr>
<td>Validity</td>
<td>Individual items taken from OARS IADL scale which has been extensively validated. Scale correlated to social and physical health respectively 0.54 and 0.55 for people aged 65 plus. Also reported as having predictive validity for survival 1 year later.</td>
<td>Using comprehensive assessment outcome as the standard, sensitivity and specificity for depression screen were 93% and 66%; for urinary incontinence were 66% and 97%, for falls were 86% and 66% and for functional impairment was 90% and 53%. (Maly et al., 1997).</td>
</tr>
<tr>
<td>Comments</td>
<td>Fillenbaum notes the potential for a screen based on IADL items to be culturally sensitive which suggests that the items chosen are culturally fair.</td>
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</table>

### Table 3: An example of the item content analysis undertaken for the ADL instruments

<table>
<thead>
<tr>
<th>Item</th>
<th>Scale</th>
<th>BI*</th>
<th>Kenny</th>
<th>Katz#</th>
<th>FIM</th>
<th>PSMS#</th>
<th>River</th>
<th>FSR</th>
<th>Notting</th>
<th>HAQ</th>
<th>North</th>
<th>PULSES#</th>
<th>OARS</th>
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</thead>
<tbody>
<tr>
<td>Bowel*</td>
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<td>Bladder*</td>
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<td>Grooming</td>
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<td>Toilet</td>
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<td>Feeding</td>
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<td>Transfer</td>
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<tr>
<td>Mobility</td>
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<tr>
<td>Dresing</td>
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<td>Stairs</td>
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<tr>
<td>Bathing</td>
<td>+</td>
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<td>+</td>
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<tr>
<td>Additional</td>
<td></td>
<td>Communi-cation</td>
<td>Cognition</td>
<td>Household activities eg hot drink, money housework</td>
<td>Communi-cation</td>
<td>Psychocial adjustment</td>
<td>Cognitive function</td>
<td>Make hot drink</td>
<td>Grip-door</td>
<td>Grip latch</td>
<td>Shopping Car</td>
<td>Housework</td>
<td>Make cup of tea Use taps cooking</td>
</tr>
</tbody>
</table>

* Bowel and bladder refers to continence # Some ADL functions are combined in this scale

Nottingham - Nottingham Ten-Point ADL Index (Ebrahim, Nouri & Barer, 1985)
HAQ - Health Assessment Questionnaire (Fries et al., 1980)
North - The Northwick Park Index of Independence in ADL (Smith, Goldberg & Ashburn, 1981)
PULSES - The PULSES Profile (Granger & Greer, 1979)
OARS - OARS Multidimensional Profile (Duke University Center for the Study of Ageing and Human Development, 2000)
measuring mental status. The framework is discussed in detail in Eagar, Owen, Cromwell, Poulos, and Adamson (2001).

An example is given in Table 2 to summarise the approach employed. Similar tables on other instruments reviewed are included in Eagar et al. (2001). Also provided in Table 3 is an example of the item content analysis undertaken for each set of instruments, using the summary for ADL instruments produced in Eagar et al. (2001).

Results

The first-tier screen
A screen instrument was developed for subsequent field-testing. The individual items in the first section of the screen were selected from the OARS Multidimensional Functional Assessment. The IADL items from the OARS have three levels (versus 4 and 5 in the Lawton's), as do the ADL items (versus only 2 for "bathing" in the Barthel). They therefore appear to be the most suitable for telephone administration. Other work has shown that a three-level distinction is the maximum that respondents can make reliably (Fillenbaum, 1985). Further, these items can be administered by an untrained interviewer, with at least high school education. They are also suitable for self-administration (Fillenbaum).

The first section consists of a total of seven items (5 IADL and 2 ADL) selected using the evidence from the studies reviewed. The first three items are early loss instrumental activities. The next two items were selected from the complex self-management tasks proposed by Thomas et al. (1998) and act as markers of cognitive impairment. The final two items are late loss ADL items.

The wording of the individual items has been widely tested. The full IADL and ADL scales from the OARS instrument have been subjected to tests of reliability and validity, with good results (McDowell & Newell, 1996). However, since the items in the proposed screen have been abstracted from the longer scale, as a set, they cannot be assumed to have the validity and reliability of that scale (G. Fillenbaum, personal communication, February 15, 2001).

The second section consists of two additional questions that cover cognitive and behavioural problems. These were added to improve the effectiveness of the screen at detecting behavioural and cognitive problems. The answers to these two questions are obtained only if a carer, friend or other person contacts the service on behalf of the client. They are not suitable for direct administration with the client.

The second-tier assessment
It was concluded that different approaches need to be adopted for each of the four domains. For a detailed discussion of the key issues in the literature review on screening instruments and questions see Eagar et al. (2001).

Self-care domain
Two self-care assessment instruments were selected for field testing—the 20-point Collin et al., 1998 scoring version of the Barthel Index (Mahoney & Barthel, 1965; Wade & Collin, 1988) and the Functional Independence Measure (FIM, Granger et al., 1993). The tool preferred for the sector was the Barthel Index. However, since the FIM was already being collected in some jurisdictions, its use could be continued, as the FIM data can be mapped to the Barthel Index for reporting purposes (Eagar et al., 1997).

Instrumental domain
The Lawton's IADL measure (Lawton & Brody, 1969) was modified for field-testing. The reasons for modification were to incorporate changes in technology since the scale was developed, to remove gender differences originally built into the scale, to address items which are culturally inappropriate and to address "floor" effects in some items for the HACC population.

Cognitive domain
The selected cognitive assessment instrument was the Mini-Mental State Examination (MMSE, Folstein, Folstein, & McHugh, 1975). While the scale can be administered by a non-clinician, guidelines for its use are recommended. These included the administration of the test to be undertaken by trained community nurses and that staff in other HACC services who suspect a client of cognitive impairment (e.g., due to poor performance on many IADLs) should refer the client to a community nurse for assessment.

Behaviour domain
There are two major groups of instruments that measure aspects of mental status not linked to
cognitive function. The first are those that aim to screen for depression and the second are instruments that aim to measure challenging behaviour and other behavioural disturbances. While depression is not a functional domain, depression was included in the literature review as it is an important cause of functional dependency in the elderly population.

The review failed to identify any locally and widely used scale that also had strong evidence of reliability and validity. The two scales identified which seemed most appropriate—the Ryden Aggression Scale (Ryden, 1988) and the Dysfunctional Behaviour Rating Instrument (Molloy, Mellroy, Guyatt, & Lever, 1991)—were not judged to be suitable because of their length (both have 25 items), limited reliability, and uncertainty about how easily they could be transferred to use in the community (Eagar et al., 2001).

This lack of success is perhaps understandable; there appears to be no gold standard for measuring challenging behaviour at present. One reason is that the low prevalence of challenging behaviour among elderly clients affects its effective measurement. It was decided, however, that a modified version of the behaviour questions of the Residential Classification Scale (RCS) be tested as the measure of behaviour.

A summary of the recommended measures for the second-tier assessment is provided in Table 4.

**Table 4: Summary of the recommended measures for the second-tier assessment**

<table>
<thead>
<tr>
<th>Domain</th>
<th>Recommended Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Care</td>
<td>The Barthel Index using Collin et al. 1988 scoring (Mahoney &amp; Barthel, 1965; Wade &amp; Collin, 1988) or the Functional Independence Measure (FIM) (Granger et al., 1993)</td>
</tr>
<tr>
<td>Instrumental</td>
<td>Modified version of the Lawton’s IADL measure (Lawton &amp; Brody, 1969)</td>
</tr>
<tr>
<td>Cognitive</td>
<td>Mini-Mental State Examination (MMSE, Folstein et al., 1975)</td>
</tr>
<tr>
<td>Behaviour</td>
<td>Modified version of the Behaviour Questions of the Residential Classification Scale (RCS)</td>
</tr>
</tbody>
</table>

**Conclusion**

Stage 1 of the Project concluded that functional dependency items be developed on the assumption of a two-tiered assessment process—the first tier consisting of a simple functional screening, and the second of a more comprehensive functional assessment for those who require it.

Stage 2 of the Project involves field-testing the instruments to ensure their suitability across the spectrum of HACC services, an assessment of the performance of the measures, refinement of the above instruments where necessary and the identification of implementation issues.

**Acknowledgements**

This study was funded by the Commonwealth Department of Health and Ageing, and approved by the University of Wollongong Ethics Committee. The authors acknowledge the contribution of Dr David Cromwell and Ms Linda Adamson to this study.

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