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Evaluation of a Gerontology Nurse Specialist in Primary Health Care:

Case Finding, Care Coordination and
Service Integration for At-Risk Older People

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Service Integration for At-Risk Older People

Workforce New Zealand Innovation Projects Funding
In collaboration with: Waitemata PHO, Waitemata DHB, The University of Auckland

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August 2011

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PARTICIPATING ORGANISATIONS

Waitemata PHO

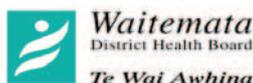
Waitemata PHO, established on 1 July 2011 as an amalgamation of Harbour Health, Waioeroa and Coast to Coast PHO's, is a Primary Health Organisation (PHO) serving an enrolled patient population of approximately 188,000 within the boundary of the WDHB. Waitemata PHO prides itself on its ability to develop quality programmes, and Harbour Health has been a leading innovator within the primary care sector.

Waitemata District Health Board (DHB)

Waitemata District Health Board (DHB) serves the largest DHB population in the country, more than 525,000 people. It is also the second fastest growing of New Zealand's 20 DHBs. It employs around 5,500 people in more than 30 different locations and manages a budget of over a billion dollars a year, serving residents of North Shore City, Waitakere City and the Rodney district. Waitemata DHB operates North Shore Hospital, on the shores of Lake Pupuke in Takapuna, and Waitakere Hospital in west Auckland.

University of Auckland

The University of Auckland is New Zealand's leading university, currently the only New Zealand University in the top 100 in the QS World University Rankings 2011/2012. It is also New Zealand's largest, with over 40,000 students.



PROJECT TEAM

Dr. Michal Boyd was the primary investigator for this study. She is a Senior Lecturer in the Freemasons' Department of Geriatric Medicine, and a Gerontology Nurse Practitioner with Waitemata DHB. She has almost 20 years experience providing, leading, and researching care innovations for older people with increased health risks.

Paul Carver was the project manager for this study. Paul Carver is a registered Health Psychologist and Manager, Psychological Services at Waitemata Primary Health Organisation. He brings over a decade of experience working closely with people in the health sector, community and business.

Elly Dagley was the Gerontology Nurse Specialist working in primary care. She has over 20 years experience in nursing, most of which has been in primary care. Her varied roles have included practice nursing, nurse educator, and PHO nurse leader

Dr. Anna King was the independent evaluator for this study. She is a trained as a Registered Nurse and currently holds a Lecturer position at the School of Nursing, The University of Auckland. She has completed her PhD in the area of older people and home care services.

ABBREVIATIONS

Abbreviation	Meaning
BRIGHT	Brief Risk Identification for Geriatric Health Tool
CAP	Community Assessment Protocol
CSQ-8	Client Satisfaction Questionnaire
GNS	Gerontology Nurse Specialist
GP	General Practitioner
HWFNZ	Health Workforce New Zealand
MDS-HC	Minimum Data Set for Home Care
WDHB	Waitemata District Health Board
PHO	Primary Health Organisation

ACKNOWLEDGEMENTS

Firstly acknowledgments need to go the Governance Steering Group, whose expert guidance made this project a success:

Michal Boyd	Senior Lecturer in the Freemasons' Department of Geriatric Medicine, University of Auckland and Gerontology Nurse Practitioner WDHB
Paul Carver	Manager Psychological Services WPHO
Elly Dagley	Geriatric Nurse Specialist WPHO
Ngairé Kerse	Professor, General Practice and Primary Health Care, School of Population Health, University of Auckland
Lannes Johnson	Clinical Director, Waitemata PHO
Janet Parker	Gerontology Nurse Practitioner WDHB
Gavin Pilkington	Clinical Director, Mental Health Services for Older Adults WDHB
Margaret O'Sullivan	Associate Director of Nursing WDHB
John Scott	Clinical Director, Geriatric Medicine WDHB
Sue Skipper	Operations Manager, Older Adults and Home Health WDHB
Janice Van Mil	General Manager, Clinical Services WPHO

And secondly, thanks to all the participating GP's, nursing and practice staff, whose openness to innovation meant the new role and procedures were quickly adopted.

EXECUTIVE SUMMARY

Older people will account for 87 percent of the growth in the total population between 2005 and 2051 (Statistics New Zealand, 2006). In Waitemata DHB between 2001 to 2006, the number of people over 85 years old grew by 26%, and in the Rodney district this population grew by 44% (Walker, Armstrong, & Martin, 2007). As people age, they can accumulate multiple chronic conditions requiring long-term care coordination that can often span all healthcare settings. It has been estimated that currently 30% of GP consultations are for those over 65 years and older and this is expected to increase to 38% in 2021 (Public Health Association, 2010). While the needs of older people are rising rapidly, the funding and service personnel to meet the demand is not projected to keep pace. Therefore significant innovation is required across the sector in order to provide viable services for older people going forward.

The burgeoning older adult population has prompted a strategic rethink on the part of health care planners on how to manage the care of older people. This new model of care emphasises prevention and early intervention, to facilitate older people remaining in their homes for as long as possible and out of hospital or rest care. Implementation of the PHO Gerontology Nurse Specialist (GNS) in Primary Care Pilot is one such innovative new model.

A collaborative venture between Waitemata PHO (previously Harbour Health PHO), the University of Auckland and Waitemata DHB, with funding from Health Workforce New Zealand Innovations Projects (September 2010 to July 2011), this Pilot is a nurse-led model, based in primary care and working in the community, with a preventative and early intervention focus. This model utilises “case-finding” to target only at-risk older people by means of systematic population screening using the BRIGHT screen. This type of systematic screening capability has been lacking in the older adult population up until now. At risk individuals then undergo a comprehensive geriatric assessment by the PHO GNS at home, and a person-centred care plan is developed that utilises resources in the community and if necessary referral paths across the primary/secondary interface. This type of comprehensive approach to care of the older adult in the community has been shown to reduce hospital bed days; reduce avoidable hospital admissions, and reduce the need for hospital community services by creating a managed clinical care network in the community (Boult & Wieland, 2010; Boyd, Fisher, Davidson, & Neilsen, 1996; Counsell, Callahan, Tu, Stump, & Arling, 2009; Naylor et al., 1999; Sund & Sveningson, 1998). This report describes the results of the implementation and evaluation of this new model of care.

Aim:

The aim of this pilot study is to create a pathway for the development of a PHO Gerontology Nurse Specialist (GNS) role within the primary care setting and the development of an Integrated Health Model.

Objectives:

1. To assess the effectiveness and sustainability of a GNS working in a primary care setting.
2. To describe a GNS led proactive risk screening process, using the Brief Risk Identification for Geriatric Health Tool (BRIGHT) screen, for older people in the community.
3. To describe the impact of a comprehensive gerontology assessment and care planning intervention for older people identified as high risk in the community.
4. To trial the interRAI MDS-HC in primary care.
5. To explore the potential of the GNS role for upskilling the primary care workforce.

Intervention:

The Gerontology Nurse Specialist role within a new Integrated Health Model

The PHO GNS was based in Waitemata PHO, enabling the nurse to serve three primary healthcare practices, utilising the infrastructure and support of the PHO. The GNS coordinated care with various providers working with older adults in the community, as well as with the speciality services at the WDHB. The WDHB GNS and Gerontology Nurse Practitioner from Older Adult services at the WDHB provided mentorship and up-skilled the PHO GNS in this study. The nurse was fully integrated into the gerontology nurse specialist services at the WDHB, facilitating access to older adult specialist services and access to geriatric referral pathways.

BRIGHT screening

The GNS posted the BRIGHT screen to eligible, registered and enrolled people over 75 years of age in a phased manner (based on age) over a seven month timeframe (October 2010 to May 2011) (Appendix 1). Older people who scored three or greater on the BRIGHT screen were identified as at risk (based on previous work by Kerse et. al, 2008) and received a full comprehensive geriatric assessment administered by the GNS in their home at an agreed upon convenient time. GPs also directly referred older people they identified as high risk.

Comprehensive Geriatric Assessment

Participants with high needs were contacted within two weeks of returning their BRIGHT screen so that a home visit could be scheduled in order to complete the full comprehensive geriatric assessment (CGA). The PHO GNS used the same comprehensive geriatric assessment as the WDHB GNS team. The PHO GNS assessment identified current issues for the older person and facilitated the development of a personalised intervention or care plan.

Results:

A mixed methods approach was employed for this study, with both quantitative and qualitative data collected.

Summary of BRIGHT screens

- For all older people who completed BRIGHT screens, 15% scored ≥ 3 and the mean positive BRIGHT screen score was 4. For those identified at risk the most common identified need was help with housework (58%), falls (58%), and feeling down, depressed or hopeless (54%).
- The majority of BRIGHT screens were returned by post (70.4%), and 21.9% were completed via telephone follow up by the PHO GNS. Most positive BRIGHT screens were returned via post (65%), although 35% were completed over the telephone.
- Of those with a positive BRIGHT screen returned via post, a higher percentage were identified as having an informal carer that may or may not be living with them (40%), and living alone (33%), when compared with those completed via telephone (21% informal carer; 13% living alone).

Summary of Comprehensive Geriatric Assessments

- Undoubtedly, the main problem identified from the CGA was health problems (50%), followed by mental health (9%) and continence (9%).
- The most common interventions by the GNS as a result of the CGA were education (30%), followed by GP review (29%), and referral to another health professional (24%).
- The CGA assessment revealed low dependency based on Barthel Index scores (mean 19), depression was indicated in 16% using the BASDEC, and cognitive impairment was indicated in 32% using the ACE-R (cut-off score 82).

Summary of older people satisfaction and GP feedback forms

- The CSQ patient satisfaction tool response rate was 57%, the mean score was 28 where higher scores indicated greater satisfaction (maximum score 30).
- All 8 questions scored highly, with the quality of the service scoring highest.
- A total of two GP feedback forms were returned with a number of positive comments, including the GNS managing complex patients and undertaking excellent assessments.
- Constructive comments from the GPs related to the ongoing role of the GNS, these included basing the GNS within the GP Practice, and the GNS having greater autonomy with enacting recommended interventions.
- The older people made numerous favourable comments in relation to the competent practice and personal attributes of the GNS.

Conclusion:

- The Bright screen was a cost-effective tool for systematic screening of the Older Adult population.
- The GNS role received high levels of patient, practice and stakeholder support, and was an effective way of delivering comprehensive care as well as building gerontology specialist capacity in primary care.
- This integrated health model was effective in leveraging geriatric specialist skills into primary care.
- The model provides a mechanism for the upskilling of the primary care practice workforce in older adult care.

Recommendations:

- The pilot move into the second phase; a health care utilisation and cost effectiveness trial.
- The pilot should be expanded to include rapid response coordination for people newly discharged from hospital and early intervention for dementia care.
- Pathways for the treatment of depression in primary need to be developed.
- Up skilling practices in gerontology assessment and interventions to facilitate PHO GNS patient transfer back to the practice for on-going care.

INTRODUCTION

A Gerontology Nurse Specialist (GNS) in primary health care was piloted with Waitemata PHO (previously Harbour Health PHO) in collaboration with the University of Auckland and Waitemata DHB with funding from Health Workforce New Zealand Innovations Projects funding (September 2010 to July 2011). This model of care focuses interventions on at-risk older people through a proactive “case finding” approach using the BRIGHT screen (Kerse, Boyd, McLean, Koziol-McLain, & Robb, 2008), comprehensive geriatric assessment by the Gerontology Nurse Specialist, person-centred care planning and facilitation of integration across secondary and primary care services. This report describes the results of the implementation evaluation of this new model of care.

Aim:

The aim of this pilot study is to create a pathway for the development of a PHO Gerontology Nurse Specialist (GNS) role within the primary care setting.

Objectives:

To assess the effectiveness and sustainability of a GNS working in a primary care setting.

1. To describe a PHO GNS led proactive risk screening process, using the Brief Risk Identification for Geriatric Health Tool (BRIGHT) screen, for older people in the community.
2. To describe the impact of a comprehensive gerontology assessment and care planning intervention for older people identified as high risk in the community.
3. To trial the interRAI MDS-HC in primary care.
4. To explore the potential of the PHO GNS role for upskilling the primary care workforce.

Background:

The fastest growing segment of the population is those over 65 years of age. By the year 2021 there will be more people over 65 years old than under age 15. Older people will account for 87% of the growth in the total population between 2005 and 2051 (Statistics New Zealand, 2006). In Waitemata DHB between 2001 to 2006, the number of people over 85 years old grew 26% and in the Rodney district this population grew 44% (Walker et al., 2007). As people age, they accumulate multiple chronic conditions requiring long-term care coordination that can span all healthcare settings.

Over the last 20 years the number of people living in residential aged care has remained approximately the same despite the rapidly expanding ageing population, indicating that older people are 'ageing in place' successfully. Consequently older people are living with increased disability in the community longer than ever before (Broad et al., 2011). Additionally in New Zealand, projections indicate that the number of those with cognitive impairment will almost double in the next 15 years from the present 42,000 to 78,000 (Alzheimers New Zealand, 2008).

The majority of older adults report they are in good health and require only an occasional interaction with the health care system, but there is a significant population of older adults that are at high risk for frequent health exacerbations and multiple hospitalisations. Systematic reviews of screening trials of asymptomatic older people show that 50-60% of the population have at least one factor that increases their risk of physical, functional or cognitive decline (Ilfie, Gould, & Wallace, 1999). Major factors that contribute to increased health risk for older adults include the presence of multiple complex conditions, the onset of dementia, functional decline, isolation, depression and the availability of caregiver support. Older adults are more vulnerable to risk factors than other adult cohorts, and despite vigilance by significant others and health care providers, without assessment, problems can be overlooked.

To confront the long-term impact of aging, a fully integrated healthcare service is needed that offers help in multiple dimensions, such as health, emotional, functional, and financial (Jeon, Kraus, Jowsey, & Glasgow, 2010; Lancaster, 1988). Care coordination can influence the impact of these risk factors through the affective, cognitive, and behavioural changes brought about by the development of a strong, trusting nurse-patient intervention that crosses all health care settings (Counsell et al., 2009; Naylor et al., 2009; Schraeder & Britt, 1997; Sund & Sveningson, 1998).

It has been estimated that currently 30% of GP consultations are for those over 65 years and older and this is expected to increase to 38% in 2021 (Public Health Association, 2010). However, the current model of care is often fragmented, ineffective and lacks the components necessary to meet the complex needs of the older population (Boult, Counsell, Leipzig, & Berenson, 2010).

The increasing health needs of this growing older adult population cannot be met with the current primary health care workforce (Public Health Association, 2010). There are a number of regions in New Zealand where access to a General Practitioner (GP) is an issue and this is likely to be more pronounced in the future as GP's retire at a higher rate than new ones come on board. It is imperative that innovative models are developed in primary care to meet the needs of the burgeoning older adult population. And it is vital to create a sustainable environment to enhance career development in this area for primary health care (practice) nurses.

The research trends clearly indicate that an effective primary healthcare system for older people requires the following components:

- A comprehensive assessment of needs focussing on the older persons perceived needs, and that includes medical needs as well as self-care ability, caregiver needs, psychological issues, functional ability and environment safety.
- Development and implementation of a comprehensive, person-centred plan of care.
- Coordination and communication between all those who provide care for the older person, including primary care and secondary care specialists, community and home care providers, especially during the transition from hospital to home.
- Promotion of self-care by the older person and their loved ones providing care, and the provision of on-going support and education to enhance the ability of the older person to maintain independence for as long as possible (Boult & Wieland, 2010).

While the needs of older people are projected to rise rapidly, the funding and service personnel to meet the demand is not projected to keep pace. Therefore significant innovation is required across the sector in order to provide viable services for older people going forward. In addition a strategic change in approach is needed that emphasises a shift to a more preventative, early intervention that can keep older people in their homes for as long as possible and out of hospital or rest care. One way to achieve this is to increase the capacity in primary care by the development of enhanced nursing roles, particularly those who are working with the older adults. The primary healthcare nurse role has been changing over a number of years and this pilot takes it to the next level by developing a clear pathway to specialise in gerontology nursing without the need to be based in a hospital or aged residential facility. This type of comprehensive approach to care of the older adult in the community has been shown to reduce hospital bed days; reduce avoidable hospital admissions, and reduce the need for hospital community services by creating a managed clinical care network in the community (Boult & Wieland, 2010; Boyd et al., 1996; Counsell et al., 2009; Naylor et al., 1999; Sund & Sveningsson, 1998).

METHOD

Study Design:

This evaluation study utilised a one group quasi-experimental design. Quasi-experimental studies are often undertaken when randomised controlled trials pose ethical or impractical obstacles (Grimshaw, Campbell, Eccles, & Steen, 2000). This design has been chosen for practical reasons, as a randomised control trial or matched comparison group was not feasible within the limited 10 month time-frame and resources of this pilot. This project was funded by Health Workforce New Zealand (HWFNZ).

Ethics:

Ethical advice was obtained from Northern X Regional Ethics Committee, 8 November 2010. The committee stated that this study did not meet the necessary threshold required for full ethical approval. The assessment process was explained to all eligible participants; this included the purpose of the BRIGHT screen and the interRAI Minimum Data Set for Home Care (interRAI MDS-HC) assessments, what they entail, how long they were to take, and how many visits were required. All data was collected by Waitemata PHO employees including the PHO GNS. Hard copy questionnaires and participant details are stored in a locked cupboard and on password protected computers. All participants were coded, and data analysed was anonymous with no patient identification data available to researchers.

Sample:

Three primary healthcare practices were recruited to participate in the pilot within the WDHB region, Auckland. All were members of the same PHO. Older people who belonged to one of these practices were eligible for this study if they meet the following criteria:

Inclusion criteria

- (i) Males and females aged 75 years or greater on the day of posting the BRIGHT screening tool.
- (ii) All participants must be English-speaking or provide a family member who can act as an interpreter.

Exclusion criteria

- (i) Those older people that refuse participation in the trial.
- (ii) Older people transferred to residential care or a GP Practice outside of Waitemata PHO.
- (iii) Older people receiving care under the WDHB GNS team.

Participants and setting:

Older people were recruited from three primary healthcare practices, within Waitemata PHO (previously Harbour Health PHO), Auckland. The three practices ranged in size from an urban single GP, single nurse practice with an enrolled population of 1,493, to a larger semi-rural practice with nine doctors, 10 nurses and an enrolled population of 9,321. The total number of GPs within the practices was 17. Of this number, 10 GPs were involved, 3 declined as they didn't feel they currently had capacity to become involved in another pilot project, and four non-partner GPs were not included in the pilot. The decision not to include non-partner GPs was made by the GP practice partners and not by the pilot leadership. All patients 75 years and older in all three practices were identified, and an average of 50 older people per month were posted the screening tool along with a description of the pilot. The total sample population was 416.

Looking at the proportion of older people in the total practice population, over the three practices the total number of people over 65 years of age was 3114, with 1,978 at one practice and the remainder split between the other two practices. The total percentage of those 65 years and over was 16.7%, dropping to 7.6% when looking at those 75 years and over, as a proportion of the total enrolled population of the three practices.

At a practice level, at the first practice (based in an urban setting), adults 65 years and over represented 9.4% of their total enrolled population. This dropped to 3.5% when looking at those 75 years and older. The second urban practice had a smaller total population, but a significantly larger proportion of older people, with 26.8% 65 years and older, and 14.9% 75 years and older. The third practice, the largest of the three, set in a semi-rural area, had 21.2% of their adult enrolled population 65 years and older, and 9.7% 75 years or older.

Intervention:

Gerontology Nurse Specialist role within an Integrated Health Model

The GNS was based in Waitemata PHO, enabling the nurse to serve three primary healthcare practices, utilising the infrastructure and support of the PHO. At the same time the GNS was completely integrated into the secondary care gerontology nurse specialist team, so that the PHO GNS could participate in weekly case conferences and peer clinical education sessions with the WDHB GNS team, and lever specialist geriatric expertise if required. This integration allowed the GNS to access speciality services and referral pathways at the WDHB, as well as coordinating with various providers working with older adults in the community. In addition, the integration applied to the area of patient records, so that the PHO GNS had access to DHB patient information system, as well as GP patient notes. Full remote upload/download capability ensured that the GNS had an up to date patient history prior to commencing a home visit. The WDHB GNS and Gerontology Nurse Practitioner from Older Adult services at WDHB provided mentorship and up-skilled the PHO GNS in this study. The PHO GNS met the required professional proficiency to undertake comprehensive geriatric assessments and care coordination for high risk older people as a result of her clinical training by the WDHB GNS team. The Integrated Health Model facilitated a seamless service across the primary/secondary interface, and was a key factor in the success of the intervention.

BRIGHT screening

The GNS posted the BRIGHT screen to eligible, registered and enrolled people over 75 years of age in a phased manner (based on age) over a seven month timeframe (October 2010 to May 2010) (Appendix 1). Older people who scored three or greater on the BRIGHT screen were identified as high needs (based on previous work by Kerse et. al, 2008) and received a full comprehensive geriatric assessment administered by the GNS in their home at a agreed upon convenient time. GPs also directly referred older people they identified as high risk. The screening tool was posted from the PHO, and a self-addressed paid envelope was provided for return. For older people that did not return the BRIGHT screen, the GNS will followed-up with a telephone call and administered the BRIGHT screen over the phone.

Comprehensive Geriatric Assessment

Participants with high needs were contacted within two weeks of returning their BRIGHT screen so that a home visit could be scheduled in order to complete the full comprehensive geriatric assessment (CGA). The GNS used the same comprehensive geriatric assessment used by the WDHB GNS team. The PHO GNS assessment identified current issues for the older person and facilitated the development of a personalised intervention plan. The following standardised assessment tools were included in the assessment: Barthel's Activity of Daily Living scale (BI), Lawtons' Instrumental Activity of Daily Living scale (IADL), Brief Assessment Schedule Depression Cards (BASDEC), Mini-Mental Status Exam (MMSE), and Addenbrook's Cognitive Examination revised New Zealand Version (ACE-R). In addition nine older people were assessed with the interRAI MDS-HC comprehensive geriatric assessment that is utilised internationally (Landi et al., 2000), including in New Zealand in the community across all DHBs. More details of each standardised assessment instrument are provided below. Mean scores and standard deviations for participants are reported.

Outcome measures:

A mixed methods approach was employed for this study, with both quantitative and qualitative data collected. Relevant data pertaining to the following was also collected:

- Total Sample and Recruitment
- Baseline characteristics of those screened
- BRIGHT screen results

The Barthel Index: Initially, the Barthel Index (BI) was designed as a simple assessment tool to ascertain independence during the rehabilitation of chronically ill patients (Mahoney & Barthel, 1965). At present this tool has extensive use in older adult populations, and is considered a valid and reliable measure for assessing activities of daily living (ADL) for older people (Collin, Wade, Davies, & Horne, 1988; Landi et al., 2000). The BI determines an individual's degree of independence, without any physical or verbal help, when undertaking activities of daily living (ADL). Ten ADL activities are assessed and scores are totalled, with the highest score of 20 indicating the lowest level of dependency and zero indicating the highest level of dependency (Collin et al., 1988; Mahoney & Barthel, 1965).

The Lawton IADL scale: The Lawton Instrumental Activities of Daily Living (IADL) Scale was used to assess functional status and independent living skills which are more complex than basic activities of daily living (Lawton & Brody, 1969). Eight domains of function are measured and the summary score ranges from 0 (low function, dependent) to 8 (high function, independent). Little is known about the reliability and validity of this test, other than what was reported in the original article. However, this scale has been used widely to test functional status for many years (Graf, 2008).

BASDEC: Depression was screened using the BASDEC (Brief Assessment Schedule Depression Cards). The BASDEC includes a pack of 19 cards with statements from the Brief Assessment Schedule in enlarged black print on a white background. The cards are presented one at a time with respondents replying “true”, “false” or “don’t know” based on their current feelings. The maximum score is 21; true responses are summed and “don’t know” responses score half a point (Adshead, Cody, & Pitt, 1992). A score of greater than or equal to seven indicates depression. The score is doubled for two of the cards: “I’ve seriously considered suicide” and “I’ve given up hope”, scoring two points each for a true response and 1 point each for a don’t know response.

The BASDEC has been validated as an appropriate tool for screening depression among older people; scoring high specificity, sensitivity, and positive and negative predictive values (Yohannes, Baldwin, & Connolly, 2000); (Adshead et al., 1992).

MMSE:The mini-mental state examination (MMSE) is a short 30-point questionnaire used to screen for cognitive impairment and estimate severity (Folstein, Folstein, & McHugh, 1975). A total of eight areas are tested including orientation, word recall and language abilities. Total scores range from 0 to 30; 24-30 is considered within normal range; 20-23 indicates mild cognitive impairment; 10-19 moderate impairment and 0-9 severe cognitive impairment. Interpretation of scores may need to take into account the individual’s age, education and/or ethnicity (Crum, Anthony, Bassett, & Folstein, 1993; Escobar et al., 1986). Studies have reported the MMSE has good reliability and validity (Kahle-Wroblewski, Corrada, Li, & Kawas, 2007; Malloy et al., 1997; Tombaugh & McIntyre, 1992) .

ACE-R:The original Addenbrooke’s Cognitive Examination (ACE) (Mathuranath, Nestor, Berrios, Rakowicz, & Hodges, 2000) was developed to provide a concise cognitive screening test which was capable of differentiating types of dementia such as Alzheimers and frontotemporal dementia. Due to particular weaknesses, the ACE was modified into the Addenbrooke’s Cognitive Examination - Revised (ACE-R) (Mioshi, Dawson, Mitchell, Arnold, & Hodges, 2006). The test comprises five cognitive domains; attention/orientation, memory, fluency, language, and visuospatial. Scores for each domain are added to give a maximum total of 100, where higher scores indicate better cognitive function. A cut-off score of 88 provides 94% sensitive and 89% specificity for dementia, a cut-off score of 82 provides 84% sensitivity and 100% specificity for dementia. Excellent sensitivity and specificity has been reported for the ACE-R (Larner, 2007; Mioshi et al., 2006), although one study recommended lowering the cut-off score to improve specificity and positive predictive value (Larner, 2007).

interRAI MDS-HC: As part of the pilot, the GNS was trained in the use of the interRAI MDS-HC (Home Care). The tool has been implemented in all New Zealand DHB's and is used for older people referred for community services. The validity and reliability of the instrument has been established (Landi et al., 2000; Morris et al., 1997). The assessment identifies CAPs (Client Assessment Protocols) which indicate potential problems that require further follow-up. A summary of the CAPs triggered from MDS-HC trial assessments will be described.

Patient Service Satisfaction: Older people's satisfaction with the service was assessed using the Client Satisfaction Questionnaire (CSQ-8). The CSQ-8 (Appendix 2) has been widely used to assess client satisfaction and data has been reported on reliability and validity (Greenfield & Attkisson, 1989). Questionnaires were posted with a stamped self-addressed envelope to all older people that had a BRIGHT screen score of three or greater and underwent a home visit from the GNS. The minimum possible score is 8, the maximum possible score is 32, with higher scores indicating greater satisfaction. In the case of missing item scores, up to a maximum of one item was allowed. Missing scores were replaced by the mean score of the remaining items for the question. Questionnaires with more than one missing item score were excluded from analysis.

GP Feedback Form: In the first instance, a feedback form (Appendix 3) was posted to the practices every three months. Due to low response rates, in April this was changed to monthly with a follow up reminder phone call one week after posting. This form allowed GPs, practice nurses and other staff who had contact with the pilot study to provide anonymous written feedback as the study progressed, so that any unintended outcomes could be highlighted and attended to. This qualitative data was analysed utilising a general inductive approach.

Qualitative Evaluation: Qualitative interviews were conducted to assess the effectiveness of the GNS role from the older people and health professional's perspective. All interviews were undertaken seven months after the trial began, and were semi-structured using an interview guide (Appendix 4). The interviews were conducted with:

- The PHO GNS
 - One WDHB GNS that worked with the PHO GNS
 - Three GPs (from separate practices)
 - One practice nurse
 - Five randomly selected older people who received a comprehensive assessment from the GNS
-

All interviews were audio-recorded and transcribed verbatim into Word for Windows. The qualitative data was analysed using a general inductive approach, where transcripts were systematically read numerous times to aid identification of relevant categories, which were then coded and grouped into main themes (Thomas, 2006).

RESULTS

Recruitment

Practice 1 had two BRIGHT screen postal distributions, on October 8 and November 7, 2010. Practice 2 and 3 had one postal distribution each on October 24 and December 20, 2010 respectively. Table 1 refers to data on older people recruited into the trial via the BRIGHT screening process for the three Practices. This shows that in total, 406 BRIGHT screens were posted with a 92.3% completion rate. Across the three Practices, the majority of BRIGHT screens were returned by post (70.4%) and 21.9% completed via telephone follow up by the GNS. For all three Practices, there was a total of 19 GP referrals. 3 did not meet the inclusion criteria, leaving total of 16 GP referrals. 9 of these were also posted a BRIGHT screen.

Table 1: Recruitment using the BRIGHT screen

	Older people (75+ years)	Posted ¹	Referrals ²	Total ³	Returned ⁴	Phone ⁵	Excluded ⁶	Completed BRIGHT
	n	n, %	n	n	n, %	n, %	n, %	n, %
Practice 1	278	167, 60.1	9	176	129, 31.0	33, 7.9	14, 3.4	162, 38.9
Practice 2	910	166, 18.2	0	166	111, 26.7	44, 10.6	11, 2.6	155, 37.3
Practice 3	223	73, 32.7	1	74	54, 13.0	13, 3.1	7, 1.7	67, 16.1
Total	1411	406, 28.8	10	416	293, 70.4	91, 21.9	32, 7.7	384, 92.3

¹ BRIGHT screens posted to older people (Participants who were also referred by GP: Practice 1 n=8; Practice 2 n=1)

¹ Percentages calculated based on the number of older people 75+years per practice

² Direct referrals made by the GP, and not posted a BRIGHT screen

³ Posted + referrals

⁴ BRIGHT screens returned by post

⁵ Older people who completed BRIGHT via telephone

⁶ Excluded due to meeting exclusion criteria, deceased or unable to contact

Percentages calculated based on the total (postal + referrals)

Table 2 shows the number of participants with positive BRIGHT scores (scoring ≥ 3) and those referred by their GP for the three Practices. In total there were 16 GP referrals, 10 (1 BRIGHT screen was done over the phone) of these also attained a positive BRIGHT score. The results show that in total the refusal rate was low (8.1%), the GNS has not completed visits for 7.9%, while 84% had been assessed by the GNS

Table 2: Recruitment with positive BRIGHT scores

	Positive BRIGHT ¹	Referrals ²	Total ³	GNS visit ⁴ in progress	Refused GNS visit	Received GNS visit
	n, %	n	n	n, %	n, %	n, %
Practice 1	31, 7.6	5	36	3, 4.7	4, 6.3	27, 42.9
Practice 2	15, 3.7	1	16	0, 0	1, 1.6	15, 23.8
Practice 3	11, 2.7	0	11	2, 3.2	0, 0	8, 12.7
Total	57, 14.0	6	63	5, 7.9	5, 7.9	50, 79.4

¹ Participants who were also directly referred from GP: Practice 1 n=9, Practice 3 n=1.

¹ Percentages calculated based on the total number of posted BRIGHT screens (n=406)

² Participants referred by GP who did not achieve a positive BRIGHT

³ Positive BRIGHT + GP referrals

⁴ The GNS had not completed the visit and comprehensive assessment for these older people

Percentages calculated based on the total number of positive BRIGHT screens and referrals

Baseline demographics

Figures 1, 2 and 3 portray baseline characteristics for the total number of older people who were posted BRIGHT screens as well as direct referrals (n=416). The figures show the majority were NZ European (57%), male (52%), and aged between 75-79 years. The mean age was 79.5 years (SD=2.4), one older person was aged 70-74 years (GP referral). Regarding ethnicity, 2 older people were Middle Eastern, 1 a Pacific Islander and 1 did not state his or her ethnicity.

Figure 1: Age distribution for all older people posted a BRIGHT screen

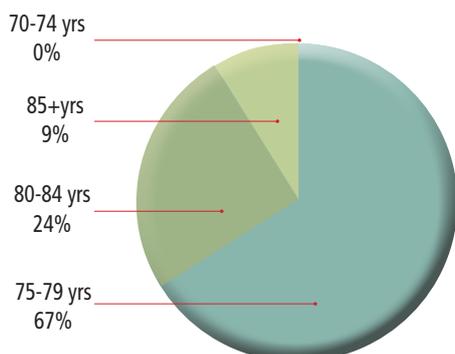


Figure 2: Gender distribution for all older people posted a BRIGHT screen

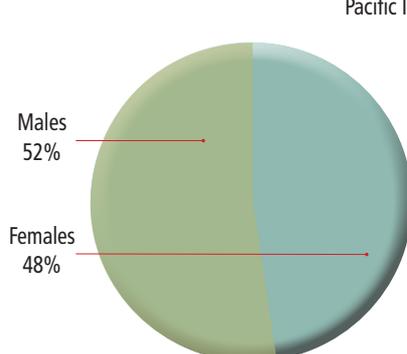
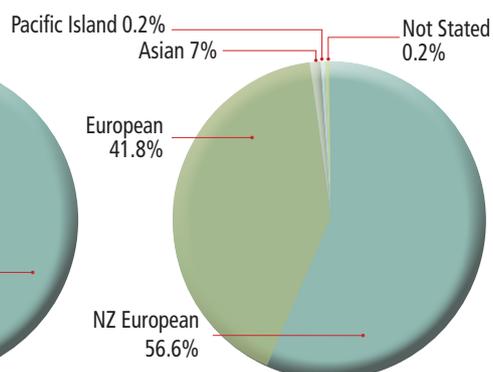


Figure 3: Ethnicity distribution for all older people posted a BRIGHT screen



Age calculated based on the date of GP referral or BRIGHT screen posted

Figures 4, 5 and 6 present the baseline demographics for the older people who received a GNS visit due to a positive BRIGHT screen or GP referral (n=50), revealing the majority were NZ European (68%), female (56%) and aged 75-79 years. The mean age was 89.9 years (SD=4.2).

Figure 4: Age distribution for older people who received a GNS visit

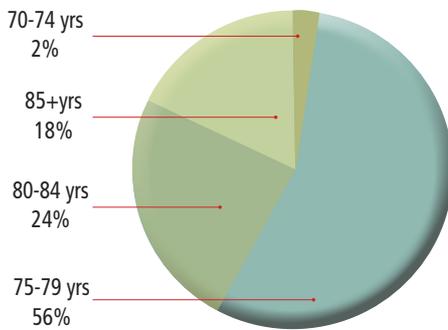


Figure 5: Gender distribution for older people who received a GNS visit

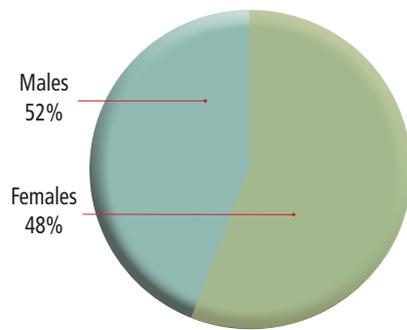
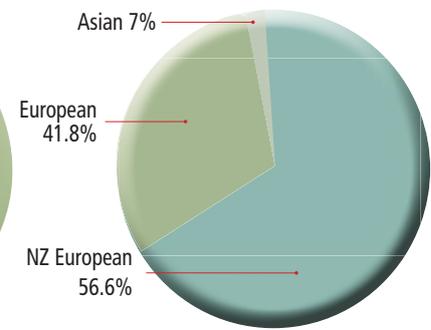


Figure 6: Ethnicity distribution for older people who received a GNS visit

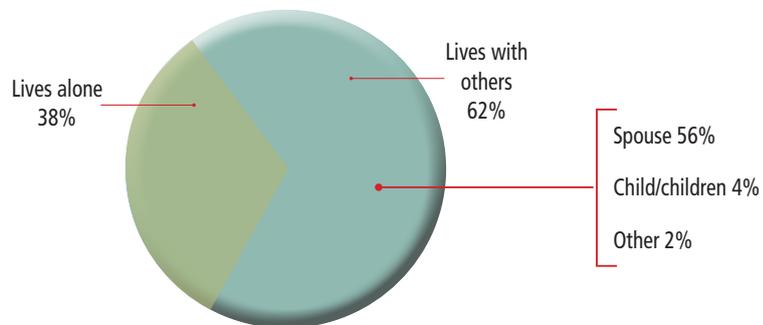


Age calculated based on the date of GP referral or BRIGHT screen posted

Living Arrangements

Figure 7 displays the living arrangements for the older people who received a GNS visit due to a positive BRIGHT screen or GP referral (n=50). A high number of older participants lived alone (38%), more than half lived with their spouse (56%) and 62% were identified as having an informal carer.

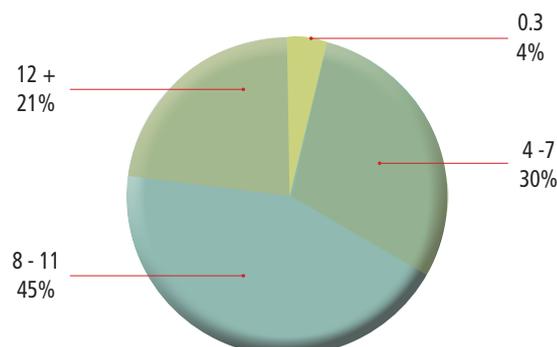
Figure 7: Living arrangement for older people who received a GNS visit



Medication use

Figure 8 reveals the number of medications taken by the older people who received a GNS visit due to a positive BRIGHT screen or GP referral (n=50). The majority (45%) were taking between 8-11 medications and the mean number of medications per person was 8.9 (SD=3.5).

Figure 8: Number of medications for older people who received a GNS visit



Informal Carers

Table 3 portrays data related to informal carers for older people who received a GNS visit due to a positive BRIGHT screen or GP referral (n=50). A total of 31 (62%) informal carers were identified; just over half (52%) were the spouse of the older person, 45% were the child and 18 (58%) of the total lived with the older person.

Table 3: Informal carers

	n	%
Informal carer ¹	31	62.0
Lives with older person ²	18	58.1
Relationship to older person²		
Spouse	16	51.6
Child	14	45.2
Sister	1	3.2

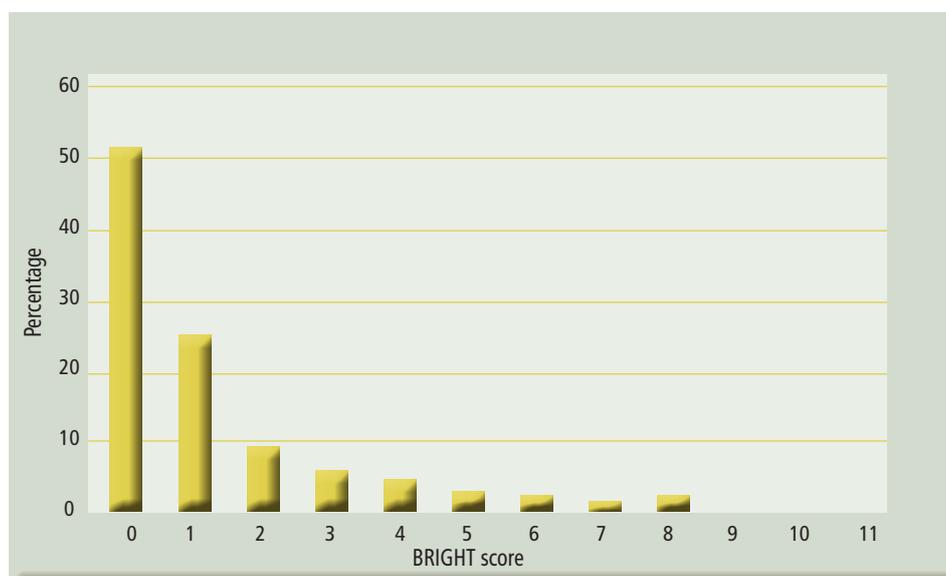
¹Percentage calculated based on the total number of older people who received a GNS visit due to positive BRIGHT screen or GP referral (n=50)

²Percentages calculated based on the total number of informal carers

BRIGHT screens

Figure 9 shows the distribution of BRIGHT screen scores for the total number of older people who completed BRIGHT screens (n=383). The findings show 85% (n=324) scored below 3 and 15% (n=59) achieved a positive score (≥ 3). The total mean score was 1.1, the mean score for positive (≥ 3) BRIGHT screens was 4.4 (SD= 1-5).

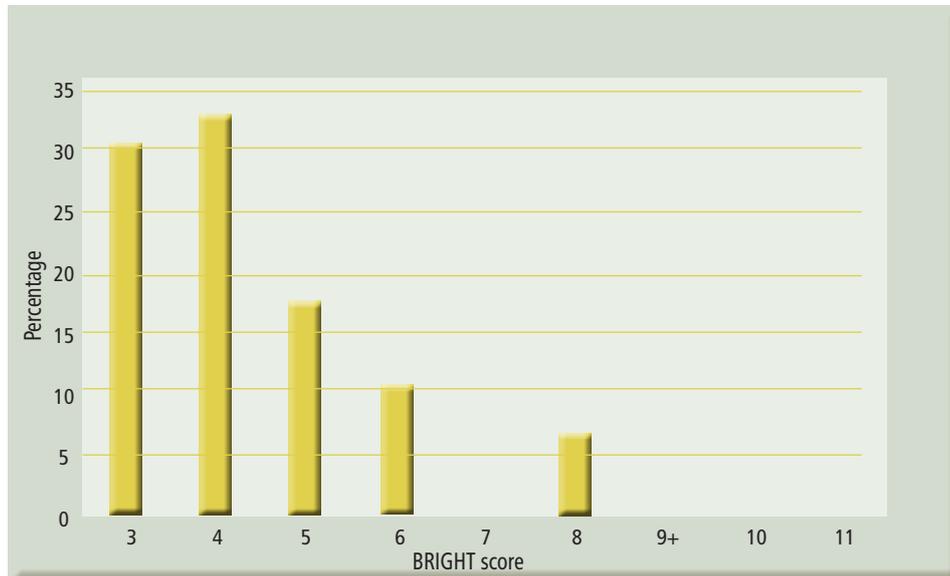
Figure 9: Distribution of BRIGHT screen scores for all older people who completed BRIGHT screens



Notes:
 Percentages calculated based on the total BRIGHT screens completed by all older people (n=383)
 Excluded due to meeting exclusion criteria, deceased or moved to residential aged care: n= 19
 Refused n= 6
 Missing data n= 8

Figure 10 outlines the distribution of positive BRIGHT screen scores for older people who received a GNS visit, positive scores could range from 3 to a maximum of 11. The results demonstrate that the majority of participants scored 4 (33%).

Figure 10: Distribution of positive BRIGHT screen scores for older people who received a GNS visit



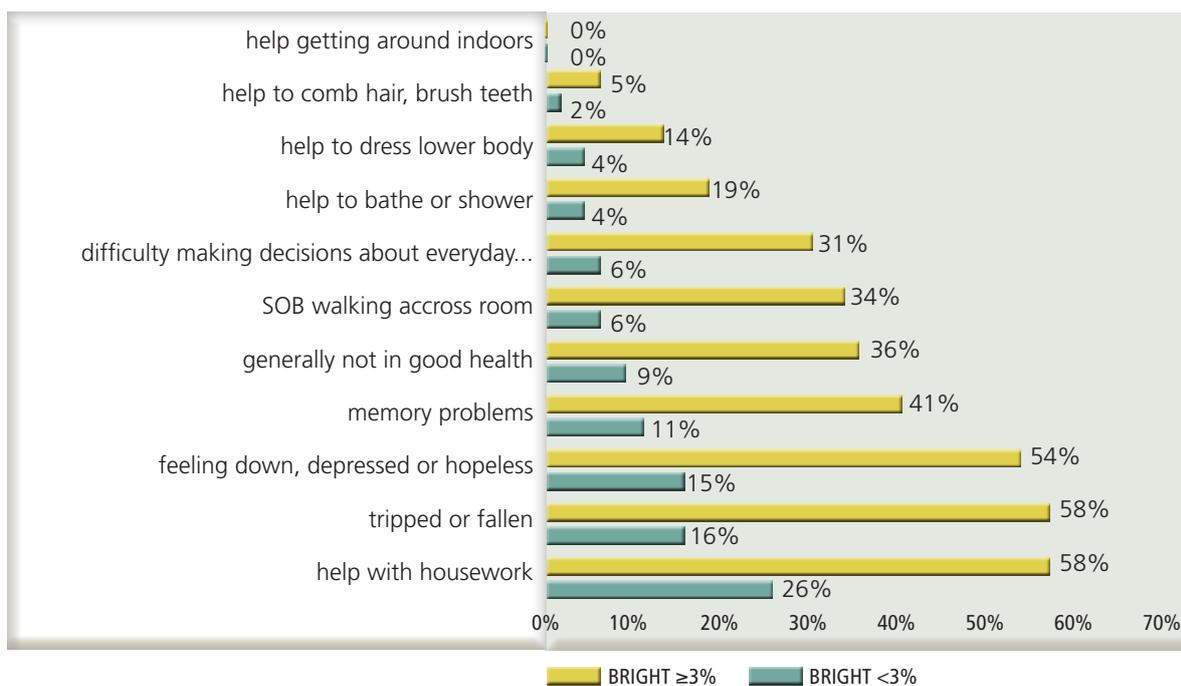
*Notes: Percentage calculated based on the total positive BRIGHT screens who received a GNS visit (n=45)

Older people referred by GP and scored <3 on the BRIGHT screen n=3

Missing data n=2 (referred by GP and did not complete a BRIGHT screen)

Figure 11 compares the responses for each of the eleven BRIGHT screen questions for those who were not at risk (BRIGHT score <3) to those that were (≥3) and who therefore received a GNS visit. The most commonly scored questions for those not at risk were: help with housework (26%), falls (16%), and feeling down, depressed or hopeless (15%). Those that were at risk scored the same questions as follows: help with housework (58%), falls (58%), and feeling down, depressed or hopeless (54%). 48 people received a GNS visit (another two, referred by their GP's) received a home visit but not a BRIGHT screen.

Figure 11: Comparison of BRIGHT screen answer for those with total score of <3 (not at risk) and ≥3 (at risk)



*Notes: SOB = short of breath
< 3 n=324, ≥3 n =59

Table 4 shows that of the completed BRIGHT screens (for older people who received a GNS visit) the majority were returned by post (65%) rather than via telephone (35%). When comparing the BRIGHT screen via post versus telephone for those with a BASDEC score indicating a depressive disorder (score ≥7), percentages were similar. For those who returned the BRIGHT screen via post, a higher percentage were identified as having an informal carer (40%) and living alone (33%) compared with those who completed via telephone (21% informal carer; 13% living alone).

Table 4: Comparison of BRIGHT screen scores for those returned by post and those completed via telephone

	Completed BRIGHT	Lives alone	Informal carer	BASDEC (score ≥7) *
	n, %	n, %	n, %	n, %
Post	32, 65.0	16, 33.3	19, 39.6	5, 10.4
Telephone	16, 35.0	6, 12.5	10, 20.8	3, 6.2
Total, n	48	22	29	8

*Positive Brief Assessment Schedule Depression Cards (BASDEC) score ≥7

Percentages calculated based on the total number of older people who received a GNS visit and completed the BRIGHT screen (n=48)

Missing data: n=2 (referred by GP and did not complete a BRIGHT screen)

Summary of BRIGHT screens

- For all older people who completed BRIGHT screens the mean score was 1. Of all who completed the screen 15% scored ≥ 3 and their mean positive BRIGHT screen score was 4.
- For all those that completed the BRIGHT screens who scored ≥ 3 , the mean score was 4
- For those that scored ≥ 3 (at risk) the highest ranking questions were: falls (58%) help with housework (58%), and feeling down, depressed or hopeless (54%).
- Most positive BRIGHT screens were returned via post (65%), although 35% were completed over the telephone.
- Of those with a positive BRIGHT screen returned via post a higher percentage were identified as having an informal carer (40%) and living alone (33%) when compared with those completed via telephone (21% informal carer; 13% living alone).

Comprehensive Geriatric Assessment and Follow Up

The following tables and figures outline findings in relation to the older people who received GNS assessments (n=50). Table 5 reveals that in total 50 assessments were completed with older people, 41 (82%) received a comprehensive geriatric assessment (CGA) and 9 (18%) received the MDS-HC assessment. For those receiving the MDS-HC assessment, the GNS had to also complete relevant parts of the CGA. A total of 70% of older people received one follow up visit from the GNS (three older people received an additional follow up visit) and 78% were discharged from the GNS service. A small number of older people (n=3, 6%) died or entered residential care post the initial GNS assessment.

	CGA	MDS-HC	Follow up visit ¹	Discharged ²	Residential Care	Deceased
n, %	41, 82.0	9, 18.0	35, 70.0	39, 78.0	2, 4.0	1, 2.0

CGA = Comprehensive Geriatric Assessment

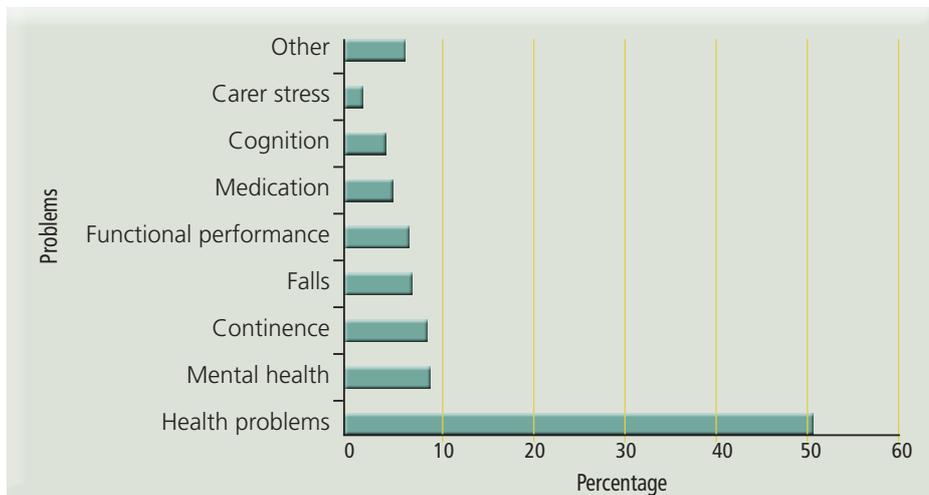
¹ Refused a GNS follow up visit n=2

² Discharged from the GNS service

Percentages calculated based on the total number of older people who received a GNS visit (n=50)

Figure 12 reveals the categorised problems identified by the GNS as a result of the comprehensive assessment. The mean number of problems per older person was 4.4 (SD=2). The highest score was attributed to health problems (50%), followed by mental health (9%), continence (9%), falls (7%) and functional performance (7%).

Figure 12: Older people problems identified by GNS



*Notes: Percentages calculated based on the total number of problems identified (n=218)

Health problems: Included problems such as chronic conditions, nutrition, dehydration, and pain

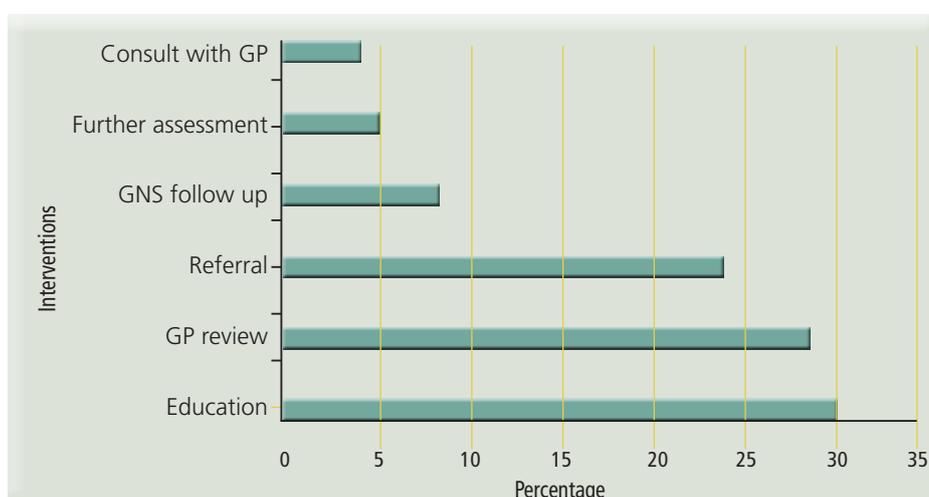
Mental health: Included problems such as anxiety, low mood, depression, hallucinations and social isolation

Continence: Included bladder or bowel problems

Other: Included safety risks (not wearing St John's bracelet), no Enduring Power of Attorney, or transportation issues

Figure 13 refers to the interventions arranged by the GNS, based on the comprehensive assessment and subsequent problems identified. The mean number of interventions per older person was 4.5 (SD=2.1). The most common intervention was education by the GNS (30%), followed by GP review (29%) and referral to another health professional (24%).

Figure 13: Older people interventions identified by the GNS



*Notes: Percentages calculated based on the total number of interventions (n=227)

Further assessment: Included spirometry, electrocardiogram and mid stream urine

Table 6 depicts findings related to the various scale measurements utilised during the GNS comprehensive assessment. The findings show very low dependency with ADL as indicated by the mean BI score of 19. Depression was assessed in 50% of the older people using the BASDEC and of those 16% scored ≥ 7 indicating a depressive disorder. Cognitive impairment was assessed with the ACE-R in 56% of participants and of those 32% scored ≤ 82 indicating cognitive impairment.

Table 6: Scale measurement results for older people

Scale measurement (range)	n, %	Mean (SD)
Barthel Index (0-20)	49, 98.0	19.0 (2.2)
IADL scale (0-8)	49, 98.0	5.5 (2.3)
BASDEC (0-20)	25, 50.0	5.4 (2.6)
BASDEC (score ≥ 7)	8, 16.0	-
ACE-R (0-100)	28, 56.0	78.8 (14.7)
ACE-R (score ≤ 82)	16, 32.0	
ACE-R (score ≤ 88)	22, 44.0	

Percentages calculated based on the total number of older people who received a GNS visit (n=50)

SD= standard deviation

IADL = Lawton Instrumental Activities of Daily Living Scale

BASDEC = Brief Assessment Schedule Depression Cards

ACE-R = Addenbrooke's cognitive examination

Summary of Comprehensive Geriatric Assessments

- Undoubtedly, the main problem identified from the CGA was health problems (50%), followed by mental health (9%) and continence (9%).
- The most common interventions by the GNS as a result of the CGA were education (30%), followed by GP review (29%) and referral to another health professional (24%).
- The CGA assessment revealed low dependency based on Barthel Index scores (mean 19), depression was indicated in 16% using the BASDEC, cognitive impairment was indicated in 32% using the ACE-R (cut-off score 82).

MDS-HC – CAPS

Table 7 outlines the individual CAPs triggered as a result of the MDS-HC assessment. There are 30 CAPs in total, only the ones triggered are presented in Table 7. A total of 78 CAPs were triggered from the nine MDS-HC assessments, the average per person was 8.7. The most common CAPs triggered were IADLs and preventative health care measures (9% each), followed by communication disorders, cognition, falls and pain (8% each).

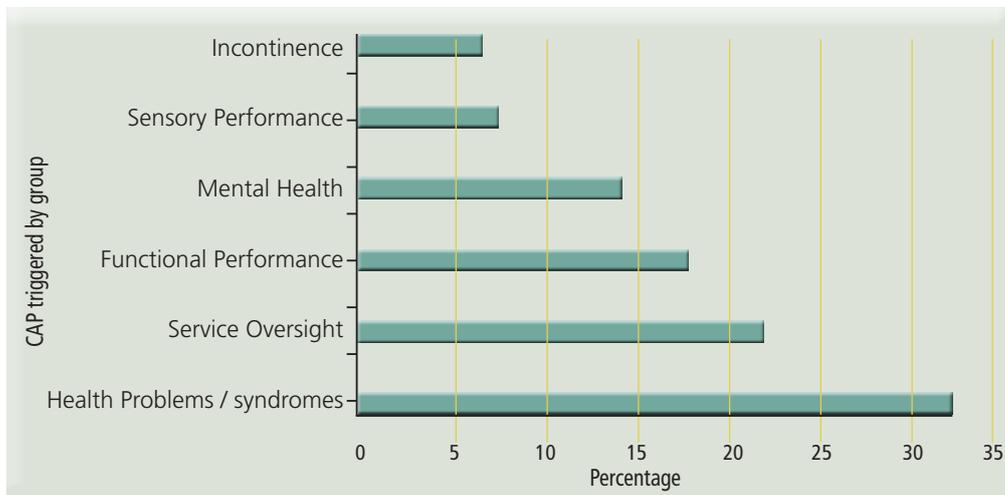
Table 7: MDS-HC individual CAPs triggered

CAP Triggered	n	%
1. ADL/Rehabilitation Potential	2	2.6
2. Instrumental Activities of Daily Living (IADLs)	7	9.0
3. Health Promotion	5	6.4
5. Communication Disorders	6	7.7
8. Cognition	6	7.7
10. Depression and Anxiety	4	5.1
12. Social Function	1	1.3
13. Cardio-Respiratory	4	5.1
14. Dehydration	1	1.3
15. Falls	6	7.7
16. Nutrition	4	5.1
18. Pain	6	7.7
19. Pressure Ulcers	3	3.8
20. Skin and Foot Conditions	1	1.3
21. Adherence	1	1.3
22. Brittle Support System	2	2.6
23. Medication Management	4	5.1
25. Preventative Health Care Measures	7	9.0
26. Psychotropic Drugs	2	2.6
27. Reduction of Formal Services	1	1.3
29. Bowel Management	2	2.6
30. Urinary Incontinence and Indwelling Catheter	3	3.8
TOTAL	78	100

Percentages calculated based on the total number of CAPs triggered (n=78)

Figure 14 reveals CAPs triggered when broadly grouped. The most common group triggered was health problems/syndromes (32.1%), followed by service oversight (21.8%), functional performance (17.9%) and mental health (14.1%).

Figure 14: MDS-HC CAPs triggered by group



Summary of MDS-HC assessments

- In total, nine MDS-HC assessments were completed and the average number of CAPs triggered per person was 9.
- The most common CAP triggered were IADLs (9%) and preventative health care measures (9%); followed by communication disorders, cognition, falls and pain (8% each).
- When CAPs were grouped by category, the most common groups triggered were health problems/syndromes (32%), service oversight (22%), functional performance (18%) and mental health (14%).

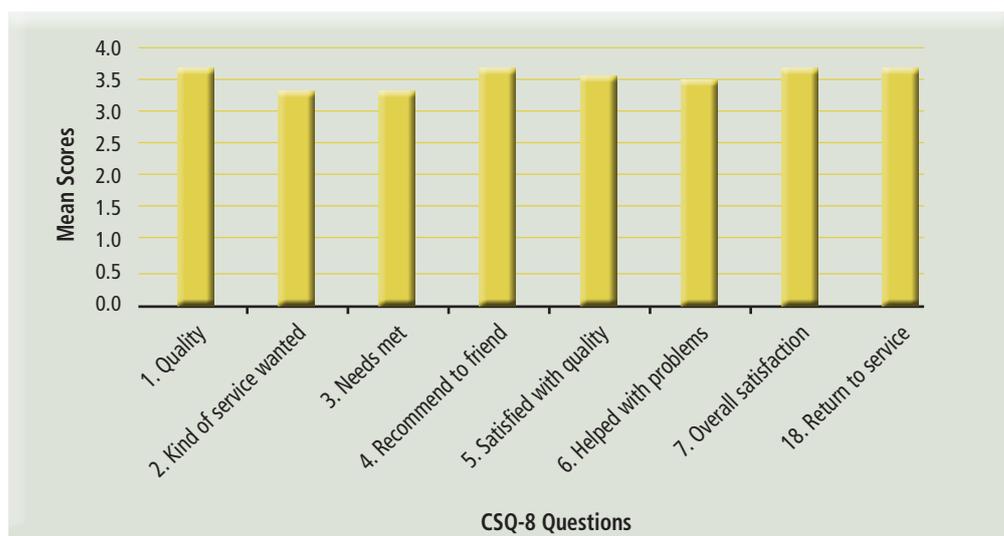
Service Satisfaction (CSQ-8) tier2

This section portrays data related to the CSQ-8 questionnaires which assessed satisfaction with the service delivered by the GNS. Questionnaires were posted to 42 older people and returned by 24 (57% response rate). Of the returned questionnaires, three were missing one score and this was replaced by the mean score of the remaining items for the question. One questionnaire was excluded from analysis as there were more than one missing item scores. Therefore, the total number of questionnaires analysed was 23.

The mean score for the CSQ-8 was 28.4 with a standard deviation of 3 (minimum possible score is 8, maximum possible score is 32; a higher score indicates greater satisfaction).

Figure 15 presents the mean scores per question. Each question was scored on a Likert scale of 1 to 4, where higher numbers indicated greater satisfaction. Overall, the majority of questions were ranked highly, scoring a mean between 3.5 and 4. The graph shows respondents rated the quality of the service (question 1) highest, while the kind of service wanted and the extent to which the service met needs (questions 2 and 3) rated lowest.

Figure 15: CSQ-8 mean scores for individual questions



Notes: The minimum score for individual questions is 1 and the maximum score is 4; higher scores indicate greater satisfaction.

There were few qualitative comments from the questionnaire (6 out of 23). In general, the comments were generic and referred to positive remarks about the GNS being helpful. No constructive feedback about GNS role was provided.

"I found [the GNS] to be a thoroughly professional person... she has helped me a lot... thanks very much for your help."

"Thank you for your help."

GP feedback form

In total, two GP feedback forms were returned in March 2011. All comments are stated below.

What is working well

"Very good overview and thorough review of quite complex patients. Pertinent issues and areas for investigation highlighted." (GP1)

"Assessment excellent.

Efforts by specialist nurse to communicate via pathways also good.

Surveys can be misconstrued by patients.

Best results (we feel) have been where Practice has identified and initiated referral.

This would be intrinsic to our proposed change in system." (GP2)

What could be improved

"If patients need clinical review it can be complex – would benefit from extended appointment time as often multiple issues. How best this could be funded especially if the patients (initial) expectation is that the appointment is "unnecessary" (in their view)." (GP1)

"The structure of the system. We would prefer:

- The nurse to be part of the Practice team!*
- Consult patients onsite at medical centre and do home visits/assessments*
- Be able to liaise day to day with doctors, other members of the team – nurses, reception, pharmacy etc.*
- Be able to enact a lot of her own recommendations regarding patient care plan.*
- Perhaps nurse specialist to be shared with 1-2-3 Practices, dependent on size and need, demographic etc (and willingness of Practice to include a nurse specialist)." (GP2)*

Other comments

"We note [the GNS] is doing an amazing job! Assessments are excellent." (GP2)

Summary of older people satisfaction and GP feedback forms

- The CSQ response rate was 57%, the mean score was 28 where higher scores indicated greater satisfaction (maximum score 30).
- All 8 questions scored highly, with the quality of the service scoring highest.
- A total of two GP feedback forms were returned with a number of positive comments including the GNS managing complex patients and undertaking excellent assessments.
- Constructive comments from the GPs related to the ongoing role of the GNS, these included the GNS to be based within the GP Practice and have greater autonomy with enacting recommended interventions.
- The older people made numerous favourable comments in relation to the competent practice and personal attributes of the GNS.

Qualitative evaluation

Qualitative interviews were conducted to assess the effectiveness of the GNS role from the older people and health professional's perspective. Telephone interviews with health professionals and face-to-face interviews with older people were undertaken. In total, six health professionals (3 GPs, 1 Practice Nurse, 1 WDHB GNS, and the primary healthcare GNS) and five older people were interviewed (3 female, 2 male). Four themes emerged from analysis of the qualitative data: Benefits - health professional perspective; Benefits - older people perspective, Challenges - health professionals perspective and; Physical and psychological impact - older people and health professionals perspective. Within each theme categories were developed, and these are discussed in further detail below. Table 8 shows development of categories and themes.

Table 8: Themes and Categories

Themes	Categories
Benefits – health professionals perspective	Time Savings Competency Consultation at home <i>GNS perspective</i> Integration <i>GNS perspective</i> Value to primary care <i>GNS perspective</i>
Benefits – older people perspective	Competency Attributes
Challenges – health professionals perspective	GNS perspective
Physical and psychological impact - older people and health professionals perspective	Practical assistance Environmental changes Emotional affect <i>GNS perspective</i> <i>Practice advice</i> <i>Environmental changes</i> <i>Prevention and management</i>

Benefits- health professionals perspective

The health professionals commented on various areas where the GNS role was beneficial. The most valuable aspects of the role related to competent practice, time savings for health professionals, consultations at home, integration with the WDHB GNS service, and value added to the primary care setting.

Time savings

One of the benefits mentioned by both GPs and the Practice Nurse was how the GNS role saved them time. This was in regard to the practical tasks (such as making referrals) the GNS was able to undertake as well as the fact she was able to spend a great deal more time with the older people to comprehensively address health issues. In addition, reference was made to the GNS being easy to contact and accessible via cell phone which proved time efficient for the busy health professionals. Time saving for the Practices was not only due to the GNSs access to resources, but also the time she was able to spend with the patients. One GP commented on the benefit of the GNS having more time to spend with the older people to thoroughly assess health problems and subsequently manage these appropriately.

"[The GNS] had the time to explore areas that maybe don't get explored. For one particular [older person] he'd been able to talk more about his urinary problems, whereas often there isn't time to deal with those issues when he sees me" (HP 1- GP)

The Practice Nurse recalled how the GNS saved time as she was able to directly arrange respite care for a reluctant older person, when the health professionals at the practice did not have time to do this.

... there was one particular case where a lady was digging her toes in and there was no way she was going to budge from her own home, but she needed to be in respite care for a week to ten days to sort of out medications and become confident ... [The GNS] just went above and beyond the call of duty to help this lady and that was wonderful... It saved us a lot of time." (HP2-PN)

Competency

Most health professionals commented on how accessible and flexible the GNS was. The Practice Nurse was pleased that when patient's families called needing urgent help for the patient, the GNS had been able to go and help at short notice, which is not possible for Nurses at the Practice. In addition, the practice nurse commented on how obliging the GNS was, and always willing to handle the requests that the practice needed done. The GNS was found to be an important liaison for the health professionals, older people and their families. The GNS was valuable in following up on referrals made to specialists in the public healthcare system. In addition, she was a noteworthy facilitator, particularly in terms of organising services and resources to be put in place for patients recently discharged from hospital.

"I think she was a great facilitator... if patients came home from hospital and things were meant to be in place but they weren't... [The GNS] would follow up saying [equipment] hasn't turned up, or suggest alternative options, or spend time with the family giving them tips to help them along a bit. That's been really helpful." (HP5- GP)

Most health professionals commented on the fact that they had received great feedback about the GNS, and they themselves were very pleased with her work, and considered her to be excellent at her job.

"I've had nothing but good feedback" (HP5- GP)

One health professional emphasised the capability of the GNS and stated they used the GNS as a resource and sought advice about particular patients.

"I've been very happy, very happy... I've used her as a resource and I've used her as a sounding board, saying 'what do you think?' And she's been able to give feedback." (HP5- GP)

Consultation at home

The majority of health professionals commented on the benefit gained from the GNS assessing people in their own home. With remarks made that patients will open up more to the GNS when in their own home, and the advantage of going into patient's homes enables the GNS to assess their living situation, and consider the deeper issues.

"It's been really useful. [The GNS] has been able to look at a person's situation in depth, go and see them in their home and take a pretty detailed in depth overview of their situation which she then fed back to her team and to me" (HP6- GP)

In addition, the home visits were of benefit as older people are not always willing to ask for help, and are more likely to accept help when someone visits them in their own home.

"... she has the time to spend with them in their own homes, so they will chat more to her" (HP2-PN)

GNS perspective

The GNS made numerous comments in relation to the advantages of the consultations at home. The GNS made note of the fact that visiting an older person at home created a different atmosphere from the usual practice consultation, and offered an opportunity to assess their home environment for any safety issues that may impact on the older person.

"I think visiting in the home is another key part of this role because... you get to see aspects of their lives that you wouldn't be aware of if they came and visited you... You actually see their living environment and you see any safety issues... in terms of access, steps, no hand rails, loose rugs, poor lighting or poor heating, dampness..." (HP 3- GNS)

Assessing an older person in their own home often means the primary carer will be present, and therefore the GNS can gain further information about the older person as well as assess for informal carer stress. Dealing with any subsequent concerns can prevent the older person from being prematurely placed in residential care, rather than being supported in their own home.

"Often I will get to see the spouse or perhaps a support person... and they again offer another level of information and insight into what this [older] person's dealing with and what the issues or concerns might be. I also get to see carer stress which doesn't present to the GP as often in a 10 or 15 minute consultation there isn't the time to look at that... in some of these visits [carer stress] has been really significant and the carer is starting to get quite burnt out." (HP 3- GNS)

The GNS remarked on the benefit of having time to undertake the comprehensive assessment (on average this took 1.5 hours). This allowed time for a rapport to be built which resulted in the older person disclosing more to the GNS. In addition, more time allowed the GNS to collaborate with the older person, as well as provide education and support regarding self-management of their chronic conditions.

"[The 1.5 hours] allows time for the patient to feel comfortable, to uncover issues or concerns that they won't raise in the first 15 to 20 minutes." (HP 3- GNS)

Integration

The WDHB GNS commented that the GNS improved liaison and integration between primary and secondary care. In addition, reference was made to the benefits of sound teamwork, communication and attendance at the WDHB GNS teaching sessions twice a week.

"[The GNS] has integrated very well with our team and our service... It's just great to have a good relationship with someone that's in primary care... it's really, really important for us to have a good relationship... She knows our service, she knows how it works and the doors always open if she's got a problem or if she needs some direction within secondary care."

GNS perspective

The GNS spoke of her role and its placement between primary and secondary care, which she viewed as advantageous.

"I am employed by the PHO however because I am integrated in primary and secondary I feel like I sit between the two which I think is a really unique and really good place to be because those relationships are really strong in both directions" (HP3- GNS)

The GNS commented on her involvement with the WDHB GNS service, regarding the supportive orientation they provided and valuable ongoing training.

"I go now as part of the ongoing integration, I attend case presentations... they're really useful in terms of getting that ongoing education and going over and refreshing things that you don't see very often... Just recently I led the sessions and I was teaching on Motor Neuron Disease plus Parkinson's. So not only am I learning from the team I'm contributing as well. [There is] integration in both directions, so that's really really good. There has even been a wider GNS integration at a regional or national level where I've been invited to attend the northern advanced gerontology nurse conference and at the last one I shared about this project" (HP3- GNS)

Value to primary care

The GNS was valuable to the primary care setting as demonstrated in a number of ways. Due to her skill-set and access to resources, the GNS was able to offer valuable guidance to the Practices. The GNS identified older people who were not coping well and was able to implement appropriate interventions.

[The GNS has] "picked up people who have multiple problems and who are struggling in the community and has helped us put those jigsaws together...which are quite complex jigsaws" (HP6- GP)

The WDHB GNS stated the worth of having a GNS based in Practices, and that the future of the GNS role is in primary care. (HP4- WDHB GNS)

I think the future for a gerontology nurse specialist will probably be in primary health and developing a really good rapport and relationship with GPs (HP4- WDHB GNS)

GNS perspective

The GNS talked about the importance of relationship building with the Practices.

'An important [element] that has worked well is involvement... being able to develop that relationship with the Practices so that I can chat with the GPs and nurses. I've had GPs phone me and... they want to discuss the situation and what might help.' (HP 3- GNS)

Benefits – older people perspective

Competency

All older people made positive comments regarding the GNSs competent practice. They remarked on her capability, describing her as very thorough and knowledgeable. One participant was especially pleased about the comprehensive physical examination she received from the GNS. Another commented that the examination involved assessments which had not been performed before.

"...she knew her subjects and knew what she could recommend as good for you. She put me on to several [other people] that were able to help me. I was thoroughly satisfied, I'd be quite happy if she came back" (OP5- Female)

The older people found the GNS accessible and flexible. One participant described how the GNS invited family members to participate in discussion during the assessment, which was valuable.

Several of the older people commented that the GNS acted as a Liaison for them. For example, one older person explained how the GNS resolved issues the participant was having with her Practice in relation to regularly receiving a nutritional supplement.

Attributes

All older people made affirming comments regarding the personal attributes of the GNS, and how the visits were a positive experience for them.

"...I've got nothing but praise for her...she has been worthwhile; I really can't speak highly enough of her" (OP1-Male)

"She had a lovely personality" (OP4-Female)

Challenges - health professionals perspective

No older people reported any problems in relation to the GNS role. Very few health professionals made comments concerning challenges of the GNS role. The main issue stated by health professionals involved the reports generated by the GNS. One health professional commented that the reports were at times hard to access by computer, emphasising that this was a technical issue rather than due to the GNS. Another felt the reports would be more beneficial if they included a one page summary to aid the GP with prioritising. Of note is that the first half page of the GNS report comprised a bullet point list of A) concerns/issues B) suggested interventions/management. Due to the additional time taken reading the reports, one health professional commented the GNS role has been more time consuming, however, this may free up time in the long term. One GP was concerned that there was a potential for

the GNS role to overlap with other services, especially the local WDHB GNS service.

“I guess the only thing that would concern me...would be if the service were to begin to overlap with other services, then there might be duplication. And whether ultimately a role like that should just be expanded out from existing roles or whether it should take over some territory from other roles that already exist or something like that... there would be significant potential overlap if there were a lot of people out there doing the same sort of thing all the time...” (HP1- GP)

GNS perspective

The GNS commented on challenging areas in relation to her role. These were largely related to problems with the assessment tools and information technology difficulties.

The GNS described how originally she was using the assessment tool utilised by the WDHB GNS team. The GNS trialled the InterRAI MDS-HC assessment on nine older people, and commented that this assessment didn't capture all data that were needed for a comprehensive GNS assessment. Therefore, the GNS would also need to undertake parts of the original WDHB GNS physical assessment. Consequently, these assessments would take a considerable length of time.

“When I added the interRAI it meant that the assessment would take two or sometimes up to 2 ½ hours which was too long... I think it [interRAI] collected some information that although really interesting, wasn't quite relevant to the GNS role... developing a tool that integrated [the two assessments] and was more specific to the GNS role... would remove the duplication and make it a really useful tool... In its current form it [interRAI] isn't useful to the GNS I don't think. It just made the appointment times unwieldy, gathered information I didn't need and then I needed to use the supplemental form to gather information that I did need.” (HP3- GNS)

Additionally, the GNS stated the interRAI assessment caused information technology problems. Primarily, the interRAI assessment was not in a user friendly format and it was not integrated with other database systems used by the GP Practice or WDHB. These compounding factors resulted in excessive time taken to complete the necessary reporting and documentation associated with the interRAI assessment.

“It [InterRAI] needs to be a common database which is able to speak to the DHB database and primary care which it doesn't at the moment, its completely separate... there's that risk if you enter one digit or letter wrong in the NHI or the spelling of the name or the date of birth all of a sudden you've generated a new patient that doesn't match with what you've got on another database. It [interRAI] needs to be integrated so that those patient identification fields are automatically populated to reduce that risk.” (HP3- GNS)

Physical and psychological impact – older people and health professionals perspective

All participants made comments about the positive physical and psychological impact the GNS role had on the older people. These comments related to practical assistance, environmental changes and the emotional effect as a result of the GNS input.

Practical assistance

A number of health professionals made reference to practical assistance the GNS provided for older people. This included making sure appropriate support services were in place, offering education, and ensuring caregivers and extended families were performing their tasks.

"... we had one very older gentleman with a younger wife, and she [the GNS] was able to be very supportive to that family and educate them... she [the GNS] realised that because of their educational level they weren't understanding what was happening. They got lost on terms and phrases, like what was the difference between a bladder and a gall bladder." (HP1- GP)

Older people also remarked on the practical support and education the GNS provided. For example, the GNS became aware of one participant's insufficient fluid intake, and the education provided had a very positive impact on this older person.

"She [the GNS] picked very quickly that one of my main problems was that I wasn't drinking enough. With the medication I was taking I was getting very dry in the mouth so she said look you've got to drink at least two pints of water a day. And, since then I've followed that pretty carefully and I've benefited from that." (OP1-Male)

Environmental changes

One older person provided detailed statements in regard to environmental changes the GNS had put in place. These alterations included arranging a physiotherapist visit for the participant as well as various pieces of equipment (such as a toilet seat and a shower step) to help the participant with his long-term hip difficulties. Additionally, the GNS provided exercises for the participant, arranged home help services, and organised for their name to be added to the waiting list for a hip replacement operation.

"She also arranged for those various pieces of equipment... I thought I don't really need those, but they have proved to be very, very useful" (OP1-Male)

Emotional affect

The psychological impact was apparent in the comments by older participants that explained how the GNS visit affected them on an emotional level. One participant described how the comprehensive assessment by the GNS made him feel like people knew he was there, and that he was being well cared for. The same participant when asked what he felt was good about the GNS visit responded:

"Reassurance, friendship, lack of judgement, just that she was there to help. And just a sort of general feeling that somebody cared, which is nice" (OP3- Male)

One older person was pleased that someone had come and taken an interest, while another found that the GNS provided 'peace of mind.' A different older person described how she felt that often she did not get time to explain things adequately to her GP as he was too busy. Therefore, having the GNS for an extended period made her feel like someone was actually listening to her, and gave her more confidence

GNS perspective

The GNS offered numerous examples of the positive physical and psychological impact she provided the older people. These related to the areas of practical advice, environmental changes as well as prevention and screening.

Practical advice

The GNS described many specific examples of the practical advice she provided to older people. For example, the GNS advised one patient to drink more water to help with constipation, describing this as a simple piece of advice which made a dramatic difference to the patient.

The GNS found teaching pelvic floor exercises, to help with urinary incontinence and urinary frequency helped a number of patients. These types of small changes made a vast difference when patients were up several times at night because of urinary frequency or in one case unable to travel more than half an hour because of needing to make toilet stops.

Environmental changes

The GNS spoke of environmental changes she put in place, often these involved referrals to interdisciplinary team members. For example, the GNS made referrals to the occupational therapist to help one patient by installing safety features such as hand rails. Additionally, she made referrals to a physiotherapist to provide exercises for balance, strength, and mobility.

Screening and management

The GNS viewed screening with the BRIGHT tool as essential for recognising and treating older people's chronic health problems, and emphasised the importance of addressing issues early to slow disease progression and save costs.

"...I think that the screening is vital because it's identifying these people at an earlier stage so that interventions to prevent progression or even development of issues can be put in place early... there's a lot of data out there that shows early intervention saves a lot of money down stream... And being able to intervene early and prevent ...or slow down the progression of conditions or situations...really makes a huge difference for them." (HP3-GNS)

In addition, the GNS believed patient education was an integral part of her role. This was important for the older person's quality of life as well as managing multiple chronic conditions.

The importance of the GNS's role regarding screening and management of multiple chronic conditions was highlighted by one older person who had recently been discharged from hospital and was confused about his prescribed medications. Consequently, he was taking incorrect doses and completely omitting some medications.

"He was confused about the doses, he was confused about the reasons...he thought he didn't need to take these... His medication [administration] was so off what had been prescribed it was quite concerning. I visited him, got him to agree to using blister packs, phoned the pharmacist, I phoned the GP and got an updated script faxed to the pharmacist, got the pharmacist to blister pack them and he was on the right medication

by the end of that day. I felt it was so important to get that right quickly... The potential consequences could have been really expensive in terms of personal health and wellbeing and also the cost to the hospital and things like that.” (GP3- GNS)

Summary of the qualitative evaluation

- A total of four themes were identified and related to the benefits of the GNS role from the health professional and older person’s perspective, challenges from the health professional’s perspective and the physical and psychological impact of the GNS role.
- Health professionals reported a number of ways in which the GNS was of benefit, these included:
 - o The competent practice of the GNS,
 - o Health professionals saved time due to the GNS role
 - o Constructive consultations at home,
 - o Valuable integration with the WDHB GNS service
 - o The GNS role added value to the primary care setting
- Older people did not report any issues in relation to the GNS role and few health professionals made remarks.
- The GNS raised a number of issues in relation to her role. These were largely regarding IT difficulties and the excessive time taken when using the MDS-HC assessment.
- Health professionals and older people made comments regarding the beneficial physical and psychological impact on the older people. Remarks largely related to the practical assistance provided, environmental changes and the emotional effect.
- The GNS reported similar areas of positive physical and psychological impact, including practice advice, environmental changes and prevention and screening.

DISCUSSION

This main objective of this pilot project was to develop a working model of Gerontology Nurse Specialist integrating within the primary healthcare team across three primary health care practices in one PHO. The initial set up phase commenced 1 September 2010 and the intervention began 1 October 2010 to 30 June 2011. The project was a pragmatic pilot study and provides information about the feasibility and acceptability of the GNS case-finding, comprehensive geriatric assessment and care coordination model in primary care. This evaluation includes a quantitative analysis of the BRIGHT case-finding process, demographics of the population screened and their comprehensive geriatric assessment identified needs. The evaluation describes the GNS interventions and integration of the role across primary and secondary care. The results of qualitative interviews provide the GPs and the primary care team perspective of the usefulness of the model, as well as patient perspectives and satisfaction.

The BRIGHT screen Results

The majority of older people living in the community are healthy and do not require additional services. The advantage of the tool is that it was designed to be posted and self-administered or can be administered by a caregiver with very little instruction. The purpose of the BRIGHT case-finding tool is to narrow down the targeted older population by ruling out those that do not need intensive geriatrics intervention and focus scarce resources on those that are at increased risk of physical, psychological or functional decline (M. Boyd et al., 2008; Kerse et al., 2008). The BRIGHT tool has a negative predictive value (90%) and specificity (87%). However, the tool's sensitivity (40%) or positive predictive value (32%) is much lower indicating that it is not as good at identifying those that will actually suffer health decline (Kerse et al., 2011). The very high specificity and low sensitivity will result in a higher rate of false positives with more people identified as at risk when they actually are not.

The return rate of the posted BRIGHT screen has been consistently high. In this study it was 70% and in other studies it has been even higher providing an efficient means of screening a large primary health care population (Kerse et al., 2008). Those that do not send the questionnaire back may actually be at higher risk because of increased disability compared to others. To address this the PHO GNS followed up with all those did not return the BRIGHT by phone. With phone follow up, a 92% BRIGHT completion rate was accomplished for those that were initially posted the BRIGHT screen. In this evaluation 15% of the older people had a BRIGHT screen score of 3 or greater, identifying them at increased risk and therefore requiring a full comprehensive geriatric assessment. This is similar to early results of 16% found in a large randomised/controlled trial of the BRIGHT (Kerse et al., 2011).

Caution is needed in the use of this tool. The BRIGHT tool is only one means of identifying those at risk. It is important that other sources of referral to GNS are incorporated into any model using proactive case finding, for instance from GPs, primary care nurses and families. Most importantly

this type of systematic population screening requires a dedicated resource for comprehensive follow up and care coordination (Rubenstein et al., 2007). It would be unethical to identify needs without providing an intervention to ameliorate risk, which requires increased resources to improve access to needed interventions and services.

The most frequent BRIGHT positive answer was “do you need help with housework” (73% of respondents), the next most frequent was “have you tripped or fallen in the last three months” (70%) followed by “do you feel down, depressed or hopeless” (68%). The high rate of positive responses to the question of whether housework help is needed is interesting. Currently, in WDHB with over a third of people over 85 years old receiving home based support of some description, and they could fear their services would be reduced if they stated they did not need home help and therefore this question may not accurately reflect true need (NDSA, 2009)

It has been estimated that approximately 30% of older people experience a fall in the previous year. Falls in the last three months reported on the BRGHT were double for those “at risk” (≥ 3 on the BRIGHT) than those “not at risk” (< 3 on the BRIGHT). Falling in older people is correlated with increased mortality, morbidity and admission to residential aged care (Tinetti & Williams, 1997). Falls have been classified as a “geriatric syndrome” because there are multiple factors associated with them, such as chronic illness, disability and acute events. The strongest predisposing factor for future falls are previous falls, gait and balance impairment and specific medications (Tinetti & Kumar, 2010). A comprehensive geriatric assessment following the BRIGHT screen positive results is an important component to developing an action plan to address individual geriatric risk factors which may contribute to falls.

The rate of depression for community dwelling older people has been reported between 8% and 16% (Blazer, 2003) and was 15% for those “not at risk” (< 3 on the BRIGHT) in this pilot. However, for those that “at risk” (≥ 3 on the BRIGHT) 54% reported feeling down, depressed or hopeless. The high level of reported dysthymia is quite concerning. Late life depression has been correlated with increased health costs, and may be a preclinical sign of dementia (Blazer, 2003). There are few intervention resources currently in primary care for mild to moderate depression. Isolation creates enormous risk for depression and functional decline in older people. Interventions that promote integration with the community may be helpful. In one study, those that had home visits and comprehensive geriatric assessment were more likely to use services that promoted socialisation (Stuck et al., 1995). Intervention for those with depression may also reduce health care costs. In a similar study to the above, increased life satisfaction and increased self-perceived health scores were found in the trial group, and in addition hospital and long-term care length of stay was reduced (Nikolaus, Specht-Leible, Bach, Oster, & Schlierf, 1999). The PHO GNS intervention could potentially identify isolated elders and refer to appropriate resources (Frederick et al., 2007).

Gerontology Nurse Specialist Intervention:

The support of the GPs was essential in developing effective integration and coordination of care. Introductory letters from the PHO and GP increased patients’ interest in participating. Following the pilot, most GPs expressed enthusiasm for the PHO GNS role and a strong desire to work with a GNS in the future. They stated that the PHO GNS had improved the care of their high needs patients’, making an important contribution in communication, coordination among providers and support and education.

Qualitative feedback from the healthcare team and from the older adults receiving the PHO GNS intervention indicated that the use of the BRIGHT screen and follow up home visits by the PHO GNS was an effective way to provide targeted early intervention. In 2002, Stuck and colleagues published a meta-analysis of studies of preventive home visits similar to the process used in this pilot. The results found that home visits appear to be effective, but only if they are combined with comprehensive assessment and include multiple home visits. It was found that early intervention was essential for maximal effect, with increased positive effect for those at lower risk of death (Stuck, Beck, & Egger, 2004; Stuck, Egger, Hammer, Minder, & Beck, 2002).

This evaluation did not include healthcare utilisation or a cost/benefit analysis. The project was started in September 2010 and finished 10 months later in June 2011. The team experienced expected implementation challenges, particularly in the area of integration across the primary/secondary interface. Any cost/benefit analyses undertaken at this first phase of the project would not have been meaningful, as insufficient time was available to execute it in the appropriate way. A similar care coordination study found that cost savings were not achieved until the third year of the programme (Counsell et al., 2009). A phase two is currently in development which will evaluate healthcare utilisation and programme costs.

There is mounting international evidence that providing comprehensive assessment, care planning and on-going care coordination not only improves overall quality of care for high needs older adults, but is also cost effective by maintaining wellness at home and decreasing hospital utilisation. By identifying and targeting interventions at high risk older adults it is possible to perhaps prevent critical incidents and thus decrease readmissions (Hayes, 2000; Rowland, Maitra, Richardson, Hudson, & Woodhouse, 1990; Runciman, Currie, Nicol, Green, & McKay, 1996). Caplan, Williams, Daly and Abraham (2004) conducted a randomised controlled trial of comprehensive geriatric assessment and multidisciplinary intervention following discharge of elderly from the Emergency Department. They concluded that a comprehensive geriatric assessment along with a multidisciplinary team care plan leads to improved function and better health outcomes for elderly patients who are discharged from the emergency department (Caplan, Williams, Daly, & Abraham, 2004). Stuck et al. (1995) implemented a trial using comprehensive geriatric assessment to detect older people at risk and used follow up home visits to provide targeted interventions. The results showed that those in the intervention group had 85% fewer Nursing Home days/100 persons/year. The GRACE model utilised a nurse practitioner and social worker to care for high needs older people and found significant decrease in acute hospitalisations but only for those at high risk (Counsell et al., 2009).

Care coordination is most effective when a whole system approach is taken that spans the boundaries between primary and secondary care (Brooten et al., 2002). The Integrated Gerontology Health Model was an important achievement, as it integrated the two services in a broad systemic way that has substantially improved care coordination. Brooten and Naylor (2002) found that there is dose effect with the intensity of the intervention. For instance, adding home visits reduced rehospitalisation in a comprehensive discharge planning intervention.

The PHO GNS model in this pilot included features that had been shown to have had success in prior care coordination programmes or studies. A comprehensive literature review commissioned by the NHS Modernisation Agency summarised several important factors for care coordination effectiveness that were also integral to the PHO GNS pilot:

- Long-term conditions management can be significantly enhanced with nursing interventions. In this pilot, GPs reported that the PHO GNS provided increased resources and time for the care of high-needs older people.
- Peer support has been shown to improve health outcomes. This pilot was designed to provide WDHB GNS team peer support and mentoring to the PHO GNS.
- Advanced clinical knowledge is needed for specific disease interventions, and upskilling nurses is a feasible way to improve the chronic condition care. This pilot demonstrated a feasible way to leverage specialist training and skills into primary care, with the training and ongoing support of the PHO GNS.
- The best case management systems take a “whole systems” approach that includes collaboration between health and social services. This pilot demonstrated an effective method of integrating primary and secondary care for older people.
- Assessment and identification of individuals with high needs is essential for effective care coordination interventions. This pilot demonstrated the feasibility of a proactive case-finding approach using the BRIGHT screen to efficiently identify those at risk in the population that would benefit from a full assessment (Singh, 2005).

Lessons Learned:

Several lessons were learned from this pilot study that and may be useful to others designing interventions to comprehensively screen for older adults with high needs.

- 1. The BRIGHT tool was an efficient mechanism of ruling out those that did not require a full comprehensive geriatric assessment.** The proactive population approach taken was found to be feasible and assisted in targeting resources where they were needed most.
- 2. The PHO GNS was seen as help and facilitated comprehensive care for high needs older people.**

GPs and practice nurses valued the expertise and extra time the PHO GNS was able to devote to the care of older people with complex needs. The PHO GNS role, working with a group of GP practices, has successfully built gerontology nurse specialist capacity within primary care, such that the assessment and intervention at high risk older people can be undertaken in the community.

- 3. The importance of Integration of GNS into Primary Health Care Practices and DHB GNS team within the Integrated Health Model:**

The creation of the model required several months of development and problem-solving, but was extremely valuable to the entire project. The PHO GNS was upskilled by secondary care specialists, and integration into the secondary care team meant that specialist care could be leveraged into primary care. This integration is rare in the current healthcare system but is crucial to decreasing fragmentation and duplication.

- 4. This model provides an effective mechanism to upskill and support primary health care nurses.** Although there is a shortage of hospital nurses in the U.S., the supply of nurses interested in community-based positions may be sufficient for the care of older people

if appropriately trained. Integrated practice models across practice settings are thought to be a key strategy. This GNS role provides a robust mechanism for upskilling practices and building capacity in primary care; by means of the GNS upskilling practice staff in the care of their old people (see Recommendations).

5. Implementation of the InterRAI MDS-HC in Primary Care was difficult.

The pilot trialled the InterRAI MDS-HC in the comprehensive geriatric assessment of nine patients. Its use in this regard proved to be logistically very difficult and time consuming. First, the incompatibility of the current interRAI IT system into the existing primary health care MedTech system was problematic because there was no easy way to transfer the assessment information into the GP Patient Management System (PMS), therefore rendering it essentially unusable in everyday practice. Secondly, the reports generated by the interRAI MDS-HC system were not presented in a user friendly format for GPs and primary health care nurses not familiar with the interRAI system. The assessment itself proved to be a generalist assessment and did not have the depth of specialist gerontology assessment needed by the PHO GNS.

There are several issues that need to be addressed before the interRAI system can be incorporated into primary care. Firstly, there needs to be compatibility with current MedTech or other PMS systems. Secondly, the interRAI reports need to be more user friendly so that any health care professional could understand the results. Thirdly, the interRAI MDS-HC may not be appropriate for use by PHO GNS because it is a generalist assessment not a specialist assessment.

6. Falls in Older Adults need a specific intervention in Primary Care: When older people fall the cause is often multi-factorial and can indicate that there are several acute and chronic gerontology issues that need to be attended to. The CGA is one intervention that may help by identifying factors that put the older person at risk. There is also a need for falls prevention interventions. Unfortunately, with the discontinuation of the Otago Exercise Programme, there are currently few options for a dedicated falls prevention programme.

7. Mild and Moderate Depression and Dysthymia need available interventions in Primary Care: Those that scored three or greater on the BRIGHT screen were found to have a higher rates of self-reported low mood and depression indicated by the BASDEC than expected. However, there are few interventions available to treat mild to moderate depression in primary care. There are several promising interventions for mild to moderate depression for older people in the community, including case management (Frederick et al., 2007)

Limitations:

The purpose of this pilot was to develop a model of care that was feasible and acceptable for primary care in New Zealand. There are several limitations to this pilot project. First, the timeframe for the development of the model of care and implementation was restricted to 10 months. This pilot only utilised one GNS which reduced the sample size that could be studied. The short pilot also impacted the amount of time available for GNS follow up of older people with a care plan. In addition this demonstrated the feasibility of the intervention, but was unable to determine the impact on healthcare utilisation.

RECOMMENDATIONS:

1. Continue the Gerontology in Primary Care Model into Phase II

Phase I has been successfully completed. A nurse-led Integrated Gerontology Model is in place in primary care with a high level of practice support and stakeholder satisfaction. Phase II would be a cost-evaluation phase, in which the intervention would be evaluated in terms of healthcare utilisation costs (hospital bed days, emergency admissions, pharmacy utilisation, and any professional healthcare provider utilisation). Economic viability is an important aspect of a delivering a sustainable service. There are strong indications that the model proposed here could be very cost-effective. Recent studies such as the National Evaluation of Partnerships for Older People Projects, POPPs (Personal Social Services Research Unit for Department of Health, 2010), which evaluated the cost effectiveness of 29 different projects in primary care targeting older adults in the UK, noted that for every £ spent on POPPs services, there was an additional £1.20 saved on emergency bed days. Proactive care coordination was a project that was cost effective. Other studies demonstrating cost effectiveness of this type of model have already been mentioned.

2. Expand the scope of the Model to include hospital discharge planning and dementia care.

Readmission for patients recently discharged from hospital are a major concern, and Waitemata DBH is embarking on a project to facilitate transfer to the community to decrease readmissions. Senior nurse facilitated transfer of care from hospital to primary care has been shown to reduce rehospitalisation (Coleman & Berenson, 2004). The vast majority of patients in question are in the older adult category. Interventions that have involved a GNS home assessment as part of discharge planning have been successful in reducing admissions (Stuck, 2002) The integration of this program with new discharge or transfer of charge protocols targeted at readmission reduction is an important new development in WDHB strategy, and discussions are currently underway in order to determine what role this new model could have in the transfer of care from hospital to primary care.

In addition there is a good case to be made for the early diagnosis of dementia (England, 2010). Patients and carers want to understand the illness and be given an early diagnosis so they can make informed decisions. Access to support services can promote independence, delay the onset of functional decline, delay admission to an institution, and prevent the “crises” of care that can occur when formal support is lacking. In addition, identifying patients with early dementia in primary care is crucial to delivering current and future treatments. Involving primary care is an important next step in the effective management of dementia, and the GNS working with GP practices could play a vital role in the care of those with dementia and their caregivers.

3. Develop a Pathway for the treatment of Depression in Primary Care.

54% of those receiving a GNS home visit had depression in this Pilot. Depression is a possible clinical indicator of dementias, including being a risk factor for the accelerated decline of Alzheimer's disease. In addition it is associated with functional decline. The early treatment of depression in older adults in primary care could have an impact on the management of dementia, and slow the rate of functional in older people, with possible economic savings.

4. Extending the GNS follow up and building Gerontology Capacity in the Primary Care workforce.

Brooten and Naylor (2002) found that there is dose effect with the intensity of a nursing intervention. For instance, adding home visits reduced rehospitalisation in a comprehensive discharge planning intervention. An expanded follow-up needs to be developed, with efficient transfer of care back to the GP and primary healthcare nurse. The transfer process could be an ideal mechanism for the PHO GNS to upskill and train GP nursing staff in geriatric care, thus building the necessary capacity for the future workforce.

5. Develop the interRAI MDS-HC

In order for the tool to be useful in primary care it needs to interface with GP PMS systems, and with hospital database IT systems. The incompatibility and inefficiency of transferring information over to these systems makes it currently not viable. In addition the outcome reports need to be in a clinically useful report that can be understood by those not familiar with the interRAI system. Further development also needs to be undertaken to integrate the generalist assessment content of the interRAI MDS-HC, and the specialist GNS assessment content. Waitemata PHO has the software expertise to develop the tool at a fraction of the cost of commercial developers. However this may be best tackled as a separate project, as it would delay the implementation of Phase II.

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Appendix 1: The BRIGHT screen

BRIGHT SCREEN

(Brief Risk Identification for Geriatric Health Tool)

Please circle your response to the questions below and return the completed questionnaire in the envelope provided.

Thinking of how you have been in the last 3 months

1. Do you usually need any help with ordinary housework?	Yes	No
2. Do you need someone to help you get around indoors?	Yes	No
3. Have you tripped or fallen at all?	Yes	No
4. Do you get short of breath walking across the room?	Yes	No
5. Do you usually need someone to help you bathe or shower?	Yes	No
6. Do you usually need someone to help you comb your hair, brush your teeth, shave, apply makeup, or wash/dry your face and hands?	Yes	No
7. Do you usually need someone to help you dress your lower body?	Yes	No
8. Have you been bothered by feeling down, depressed or hopeless?	Yes	No
9. Do you have any difficulties making decisions about everyday activities?	Yes	No
10. Do you have memory problems that make everyday activities difficult?	Yes	No
11. In general do you have good health?	Yes	No

Did you fill in this questionnaire by yourself?	Yes	No
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Please fill in the information requested on the back of this form

Thank you for filling it in.

Appendix 2: MDS-HC CAPs

FUNCTIONAL PERFORMANCE ADL/Rehabilitation Potential Instrumental Activities of Daily Living (IADLs) Health Promotion Institutional Risk
SENSORY PERFORMANCE Communication Disorders Visual Function
MENTAL HEALTH Alcohol Abuse & Hazardous Drinking Cognition Behaviour Depression and Anxiety Elder Abuse Social Function
HEALTH PROBLEMS/SYNDROMES Cardio-Respiratory Dehydration Falls Nutrition Oral Health Pain Pressure Ulcers Skin and Foot Conditions
SERVICE OVERSIGHT Adherence Brittle Support System Medication Management Palliative Care Preventive Health Measures: Immunization and Screening
Psychotropic Drugs Reduction of Formal Services Environmental Assessment
CONTINENCE Bowel Management Urinary Incontinence and Indwelling Catheter

Appendix 3: The Barthel Index

Activities	Scoring
1 Bowels (preceding week)	Incontinent (or needs to be given enema) = 0 Occasional accident (once/week) = 1 Continent (for over seven days) = 2
2 Bladder (Preceding week)	Incontinent, or catheterised and unable to manage alone = 0 Occasional accident (max. once per 24hours) = 1 Continent (for over seven days) = 2 <i>Occasionally=less than once a day. A catheterised patient who can completely manage a catheter alone is registered as 'continent.'</i>
3 Grooming (Preceding 24-48hrs)	Needs help with personal care = 0 Independent face/hair/teeth/shaving (implements provided) = 1 <i>Refers to personal hygiene: doing teeth, fitting dentures, doing hair, shaving, washing face. Implements can be provided by helper.</i>
4 Toilet use	Dependent = 0 Needs some help, but can do something alone = 1 Independent (on and off, dressing, wiping). Should be able to reach toilet/commode, undress sufficiently, clean self, dress & leave = 2 <i>With help = can wipe self, and do some other of above</i>
5 Feeding	Unable = 0 Needs help cutting, spreading butter, etc = 1 Independent (food provided in reach). Able to eat any normal food (not only soft food). Food cooked & served by others, but not cut up = 2 <i>Help = food cut up, patient feeds self</i>
6 Transfers (Bed to chair and back)	Unable, no sitting balance = 0 Major help (one or two people, physical), can sit = 1 Minor help (verbal or physical) = 2

Independent = 3

Dependent = no sitting balance (unable to sit); two people to lift

Major help = one strong/skilled, or two normal people. Can sit up

Minor help = one person easily, OR needs any supervision for safety

7 Mobility
(On level
surfaces)

Immobile or < 50 yards = 0

Wheelchair independent, including corners, > 50 yards = 1

Walks with help of one person (verbal or physical) > 50 yards = 2

Independent (but may use any aid; e.g., stick) > 50 yards.

Refers to mobility about the house or ward, indoors. May use aid. If in wheelchair, must negotiate corners/doors unaided = 3

Help = by on, untrained person including supervision/moral support

Appendix 4: CSQ-8

Client Satisfaction Questionnaire (CSQ-8 UK English)

Please help us improve our service by answering some questions about the help that you have received. We are interested in your honest opinions, whether they are positive or negative. Please answer all of the questions. We also welcome your comments and suggestions. Thank you very much. We appreciate your help.

Please circle your answers

1. How would you rate the quality of service you received?			
4 Excellent	3 Good	2 Fair	1 Poor
2. Did you get the kind of service you wanted?			
1 No, definitely not	2 No, not really	3 Yes, generally	4 Yes, definitely
3. To what extent has our service met your needs?			
4 Almost all of my needs have been met	3 Most of my needs have been met	2 Only a few of my needs have been met	1 None of my needs have been met
4. If a friend were in need of similar help, would you recommend our service to him or her?			
1 No, definitely not	2 No, I don't think so	3 Yes, I think so	4 Yes, definitely
5. How satisfied are you with the amount of help you received?			
1 Quite satisfied	2 Indifferent or mildly satisfied	3 Mostly satisfied	4 Very satisfied
6. Have the services you received helped you to deal more effectively with your problems?			
4 Yes, they helped a great deal	3 Yes, they helped somewhat	2 No, they really didn't help	1. No, they seemed to make things worse
7. In an overall, general sense, how satisfied are you with the service you received?			
4 Very satisfied	3 Mostly satisfied	2 Indifferent or mildly dissatisfied	1 Quite dissatisfied
8. If you were to seek help again, would you come back to our service?			
1 No, definitely not	2 No, I don't think so	3 Yes, I think so	4 Yes, definitely

Appendix 5: GP feedback form

Your comments and feedback on the process so far would be appreciated.

Themes to consider:

Assessment letter and report format

Assessment letter and report content - usefulness and accessibility of report information/content

Communication pathways (EDI, cell, landline, email)

Ease/accessibility of communication

Patient response to posted questionnaire

Patient response to home assessment

DATE:

What is working:

.....
.....
.....

What could be improved:

.....
.....
.....

Other suggestions and comments:

.....
.....
.....

NAME: (OPTIONAL)

Appendix 6: Interview guides

Questions for health professionals (GPs, practice nurse)

1. Describe your thoughts on the GNS role in relation to older people?
In what way has it helped?
Give some examples?
2. Describe how the GNS role has impacted on your time?
More vs. Less time?
If more, was this worthwhile?
3. Describe the parts of the GNS role that have worked well.
What were the enablers?
4. Describe the parts of the GNS role that have not worked well.
What were the barriers?
How could this model be improved?
Do you think we should continue with this model with other GPs clinics?

Questions for Older people

1. Tell me about your experience of having Elly come to visit you?
What is good/bad?
What do you like/dislike?
2. Tell me about what (specifically) Elly has done to help you?
i.e. referrals made, relieved stress/worries
Tell me what you liked about Elly coming to visit you?
Did you enjoy the social contact
Was the interview too long etc.
3. Did the home visit make a difference to you?
Has Elly visiting you impacted on your health?
Has it impacted on your daily life?
Health: Physical, mental/emotional, and social.
4. If we continued using Elly, tell me what you would like to change in relation to her visits?
Was there anything you didn't like about your contact with Elly

Questions for WDHB GNS

1. Describe your thoughts on the GNS role?
2. Describe how the GNS role has been integrated into your service?
i.e. primary & secondary care integration
3. Describe the parts of the GNS role that have worked well.
What were the enablers?
4. Describe the parts of the GNS role that have not worked well.
What were the barriers?
How could this model be improved?
Do you think we should continue with this model with other GPs clinics?

Questions for the PHO GNS

1. Describe your thoughts on your GNS role in relation to older people?
In what way has it helped?
Give some examples?
2. Describe how your role has been integrated into the WDHB GNS service?
I.e. primary & secondary care integration
How do you access secondary care?
3. Describe the parts of the GNS role that have worked well.
What were the enablers?
4. Describe the parts of the GNS role that have not worked well.
What were the barriers?
What would you like to see different in the future?

