

- **The effectiveness of interventions in supporting self-management of informal caregivers of people with dementia: A systematic meta review.**

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BMC Geriatrics 2015 15:147; DOI: 10.1186/s12877-015-0145-6

Background: Informal caregivers of people with dementia are challenged in managing the consequences of dementia in daily life. The objective of this meta-review was to synthesize evidence from previous systematic reviews about professional self-management support interventions for this group.

Methods: In March 2014, searches were conducted in PubMed, CINAHL, Cochrane Library, Embase and PsycINFO. The PRISMA Statement was followed. Interventions were grouped using Martin's targets of self-management, covering 5 targets: *relationship with family, maintaining an active lifestyle, psychological wellbeing, techniques to cope with memory changes and information about dementia*. Using an evidence synthesis, the outcomes from the included interventions were synthesized and conclusions were drawn about the level of evidence for the effectiveness of interventions within each target.

Results: Ten high-quality systematic reviews were selected. Evidence exists for the effectiveness of professional self-management support interventions targeting *psychological wellbeing* on stress and social outcomes of informal caregivers. In addition, evidence exists for the effectiveness of interventions targeting *information* on ability/knowledge. Limited evidence was found for the effectiveness of interventions targeting *techniques to cope with memory change* on coping skills and mood, and for interventions targeting *information* on the outcomes sense of competence and decision-making confidence of informal caregivers.

Conclusions: Scientific evidence exists for the effectiveness of a number of professional self-management support interventions targeting *psychological wellbeing* and *information*. Health care professionals could take account of the fact that psycho-education was integrated in most of the self-management support interventions that were

found to be effective in this meta-review. Furthermore, longer and more intensive interventions were associated with greater effects.

Keywords: Dementia Self-management support Informal caregivers Systematic review

Living at the farm: Innovative nursing home care for people with dementia – study protocol of an observational longitudinal study

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BMC Geriatrics 2015 15:144; DOI: 10.1186/s12877-015-0141-x

Background: In nursing home care, new care environments directed towards small-scale and homelike environments are developing. The green care farm, which provides 24-h nursing home care for people with dementia, is one such new care environment. Knowledge is needed on the relation between environmental features of green care farms such as nature, domesticity and offering care in small groups and the influence on the daily lives of residents. The aim of this study is to explore (1) the daily lives of residents, (2) the quality of care and (3) the experiences of caregivers on green care farms compared with other nursing home care environments.

Methods/Design: An observational longitudinal study including a baseline and a six-month follow-up measurement is carried out. Four types of nursing home care environments are included: (1) large scale nursing home ward, (2) small scale living facility on the terrain of a larger nursing home (3) stand-alone small scale living facility and (4) green care farm. Quality of care is examined through structure, process and outcome indicators. The primary outcome measure is the daily life of residents, assessed by ecological momentary assessments. Aspects of daily life include (1) activity (activity performed by the resident, the engagement in this activity and the degree of physical effort); (2) physical environment (the location of the resident and the interaction with the physical environment); (3) social environment (the level and type of social interaction, and with whom this social interaction took place) and (4) psychological well-being (mood

and agitation). In addition, social engagement, quality of life, behavioral symptoms and agitation are evaluated through questionnaires. Furthermore, demographics, cognitive impairment, functional dependence and the severity of dementia are assessed. Semi-structured interviews are performed with caregivers regarding their experiences with the different nursing home care environments.

Discussion: This is the first study investigating green care farms providing 24-h nursing home care for people with dementia. The study provides valuable insight into the daily lives of residents, the quality of care, and the experiences of caregivers at green care farms in comparison with other nursing home care environments including small-scale care environments and large scale nursing home wards.

Keywords: Activities Daily life Dementia Green care farms Institutional long-term care Nursing home care environments Quality of care Quality of life Social engagement

- **Quality of care in European home care programs using the second generation interRAI Home Care Quality Indicators (HCQIs)**

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BMC Geriatrics 2015 15:148; DOI: 10.1186/s12877-015-0146-5

Background: Evaluating the quality of care provided to older individuals is a key step to ensure that needs are being met and to target interventions to improve care. To this aim, interRAI's second-generation home care quality indicators (HCQIs) were developed in 2013. This study assesses the quality of home care services in six European countries using these HCQIs as well as the two derived summary scales.

Methods: Data for this study were derived from the Aged in Home Care (AdHOC) study - a cohort study that examined different models of community care in European countries. The current study selected a sub-sample of the AdHOC cohort from six countries whose follow-up data were complete (Czech Republic, Denmark, Finland, Germany, Italy and the Netherlands). Data were collected from the interRAI Home Care instrument (RAI-HC) between 2000 and 2002. The 23 HCQIs of

interest were determined according to previously established methodology, including risk adjustment. Two summary measures, the Clinical Balance Scale and Independence Quality Scale were also determined using established methodology.

Results: A total of 1,354 individuals from the AdHOC study were included in these analyses. Of the 23 HCQIs that were measured, the highest proportion of individuals experienced declines in Instrumental Activities of Daily Living (IADLs) (48.4%). Of the clinical quality indicators, mood decline was the most prevalent (30.0%), while no flu vaccination and being alone and distressed were the most prevalent procedural and social quality indicators, respectively (33.4 and 12.8%). Scores on the two summary scales varied by country, but were concentrated around the median mark.

Conclusions: The interRAI HCQIs can be used to determine the quality of home care services in Europe and identify areas for improvement. Our results suggest functional declines may prove the most beneficial targets for interventions.

Keywords: Home care InterRAI Assessment Quality indicators Performance measurement

- **Effects of protein rich nutritional supplementation and bisphosphonates on body composition, handgrip strength and health related quality of life after hip fracture: a 12 month randomized controlled study**

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BMC Geriatrics 2015 15:149; DOI: 10.1186/s12877-015-0144-7

Background: The catabolic state that follows hip fracture contributes to loss of muscle mass and strength that is sarcopenia, which impacts functional ability and health-related quality of life. Measures to prevent such long-term postoperative consequences are of important concern. The aim of this study was to evaluate the combined effects of protein-rich nutritional supplementation and bisphosphonate on body composition, handgrip strength and health-related quality of life following hip fracture.

Methods: The study included 79 men and women with hip fracture, mean age 79 years (SD 9), without severe cognitive impairment, who were ambulatory and living independently before fracture. Patients were randomized postoperatively

to receive liquid supplementation that provided 40 g of protein and 600 kcal daily for six months after the fracture, in addition to bisphosphonates once weekly for 12 months (group N, $n = 26$), or bisphosphonates alone once weekly for 12 months (group B, $n = 28$). All patients, including the controls (group C, $n = 25$) received calcium 1 g and vitamin D3 800 IU daily. Body composition as measured by dual-energy X-ray absorptiometry (DXA), handgrip strength (HGS) and health-related quality of life (HRQoL) were registered at baseline, six and 12 months postoperatively.

Results: There were no differences among the groups regarding change in fat-free mass index (FFMI), HGS, or HRQoL during the study year. Intra-group analyses showed improvement of HGS between baseline and six months in the N group ($P = 0.04$). HRQoL decreased during the first year in the C and B groups ($P = 0.03$ and $P = 0.01$, respectively) but not in the nutritional supplementation N group ($P = 0.22$).

Conclusions: Protein-rich nutritional supplementation was unable to preserve FFMI more effectively than vitamin D and calcium alone, or combined with bisphosphonate, in this relatively healthy group of hip fracture patients. However, trends toward positive effects on both HGS and HRQoL were observed following nutritional supplementation.

Trial registration: Clinicaltrials.gov NCT01950169 (Date of registration 23 Sept 2013).

Keywords: Hip fracture Nutritional supplementation FFMI Handgrip strength HRQoL

- **Identification of gait domains and key gait variables following hip fracture**

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BMC Geriatrics 2015 15:150; DOI: 10.1186/s12877-015-0147-4

Background: Restoration of gait is an important goal of rehabilitation after hip fracture. Numerous spatial and temporal gait variables have been reported in the literature, but beyond gait speed, there is little agreement on which gait variables should be reported and which are redundant in describing gait recovery following hip fracture. The aims of this study were to identify distinct domains of gait and key variables representing these domains, and to explore how

known predictors of poor outcome after hip fracture were associated with these key variables.

Methods: Spatial and temporal gait variables were collected four months following hip fracture in 249 participants using an electronic walkway (GAITRite®). From the initial set of 31 gait variables, 16 were selected following a systematic procedure. An explorative factor analysis with oblique (oblmin) rotation was performed, using principal component analysis for extraction of factors. Unique domains of gait and the variable best representing these domains were identified. Multiple regression analyses including six predictors; age, gender, fracture type, pain, global cognitive function and grip strength were performed for each of the identified key gait variables.

Results: Mean age of participants was 82.6 (SD = 6.0) years, 75% were women, and mean gait speed was 0.6 (SD = 0.2) m/sec. The factor analysis revealed four distinct gait domains, and the key variables that best represented these domains were double support time, walk ratio, variability of step velocity, and single support asymmetry. Cognitive decline, low grip strength, extra capsular fracture and male gender, but not pain or age, were significant predictors of impaired gait.

Conclusions: This work proposes four key variables to represent gait of older people after hip fracture. These core variables were associated with known predictors of poor outcome after hip fracture and should warrant further assessment to confirm their importance as outcome variables in addition to gait speed.

Keywords: Gait Hip fracture Factor analysis Rehabilitation

- **Vitamin D supplementation to prevent depression and poor physical function in older adults: Study protocol of the D-Vitaal study, a randomized placebo-controlled clinical trial**

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BMC Geriatrics 2015 15:151; DOI: 10.1186/s12877-015-0148-3

Background: Depressive symptoms and decreased physical functioning are interrelated conditions and common in older persons, causing significant individual and societal burden. Evidence suggests that vitamin D supplementation may be

beneficial for both mental and physical functioning. However, previous randomized controlled trials have yielded inconsistent results and often had suboptimal designs. This study examines the effect of vitamin D supplementation on both depressive symptoms and physical functioning in a high-risk population of older persons with low vitamin D status.

Methods/design: The D-Vitaal study is a randomized, double-blind, placebo-controlled trial investigating the effects of a daily dose of 1200 IU vitamin D₃ versus placebo for one year on depressive symptoms and physical functioning (primary outcomes) in older adults. Participants ($N = 155$, age 60–80 years) were recruited from the general population. Eligibility criteria included the presence of depressive symptoms, ≥ 1 functional limitation and serum 25-hydroxyvitamin D levels between 15 and 50/70 nmol/L (depending on season). Secondary outcomes include incidence of major depressive disorder, anxiety symptoms, health-related quality of life, cognitive function and cost-effectiveness of the intervention.

Discussion: With this study, we aim to elucidate the effects of vitamin D supplementation on depressive symptoms and physical functioning in older persons who are at high risk of developing more substantial mental and physical problems. If effective, vitamin D supplementation can be a preventive intervention strategy that is easy to implement in the primary care setting.

Trial registration: Netherlands Trial Register NTR3845. Registered 6 February 2013.

Keywords: Vitamin D Depressive symptoms Physical functioning Functional limitations Physical performance Older adults Randomized clinical trial Prevention Supplementation

- **Detection of potentially inappropriate prescribing in the very old: cross-sectional analysis of the data from the BELFRAIL observational cohort study**

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BMC Geriatrics 2015 15:156; DOI: 10.1186/s12877-015-0149-2

Background: Little is known about the prevalence and clinical importance of potentially inappropriate prescribing instances (PIPs) in the very old (>80 years). The main objective was to describe the prevalence of PIPs according to START

(Screening Tool to Alert doctors to Right Treatment; omissions) and, STOPP (Screening Tool of Older Person's Prescriptions; over/misuse) and the Beers list (over/misuse). Secondary objectives were to identify determinants of PIPs and to assess the clinical importance to modify the treatment in case of PIPs.

Methods: Cross-sectional analysis of baseline data of the BELFRAIL cohort, which included 567 Belgian patients aged 80 and older in primary care. Two independent researchers applied the screening tools to the study population to detect PIPs. Next, a multidisciplinary panel of experts rated the clinical importance of the PIPs on a subsample of 50 patients.

Results: In this very old population (median age 84 years, 63% female), the screening detected START-PIPs in 59% of patients, STOPP-PIPs in 41% and Beers-PIPs in 32%. Assessment of the clinical importance revealed that the most frequent PIPs were of moderate or major importance. In 28% of the subsample, the relevance of the PIP was challenged by the global medical, functional and social background of the patient hence the validity of some criteria was questioned.

Conclusion: Potentially inappropriate prescribing is highly prevalent in the very old. A good understanding of the patients' medical, functional and social context is crucial to assess the actual appropriateness of drug treatment.

Keywords: Inappropriate Prescribing Aged 80 and older Primary care General practice STOPP&START Beers

- **Frailty predicts short-term incidence of future falls among British community-dwelling older people: a prospective cohort study nested within a randomised controlled trial**

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BMC Geriatrics 2015 15:155; DOI: 10.1186/s12877-015-0152-7

Background: Although population-based studies have shown frailty predicted future falls, their follow-up periods were one year or longer and short-term fall risks associated with frailty are unknown.

Methods: A prospective cohort study nested within a randomised controlled trial was conducted to examine associations between frailty and short-term incident future falls among community-

dwelling older people. Two hundred forty eight community-dwelling people ≥ 65 years without history of ≥ 3 falls and allocated to a usual care arm of exercise intervention trial were prospectively monitored for falls over 24 weeks. Frailty index (FI) was constructed from 40 deficits at baseline. The future fall risks according to frailty status was examined using logistic regression models.

Results: Of 248 participants, 46 were classified as frail and 57 had one or more falls during follow-up. Both each 0.01 increase in FI and frailty defined as $FI \geq 0.25$ were significantly associated with higher risks of future falls in multivariate logistic regression models adjusted for age, gender and history of two falls in the previous year (odds ratio (OR) = 1.05, 95% confidence interval (95% CI) = 1.02–1.07, $p < 0.001$; OR = 3.04, 95% CI = 1.53–6.02, $p = 0.001$, respectively). Receiver operating characteristic (ROC) curve analysis showed FI predicted future falls with fair accuracy with area under ROC curve of 0.62 (95% CI = 0.53–0.71, $p < 0.01$).

Conclusions: Frailty was a significant and independent predictor of short-term future falls among community-dwelling older people who had volunteered for a physical activity study. It is important for healthcare practitioners to recognise frailty as a risk factor of imminent future falling even in older people who appear to be ageing well.

Keywords: Frailty Falls Older people

- **Frailty still matters to health and survival in centenarians: the case of China**

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BMC Geriatrics 2015 15:159; DOI: 10.1186/s12877-015-0159-0

Background: Frailty indicates accumulated vulnerability of adverse health outcomes in later life. Its robustness in predicting dependent living, falls, comorbidity, disability, health change, mortality, and health care utilization at older ages is well-documented. However, almost no studies have ever attempted to examine its robustness in centenarians, mainly due to data unavailability. This study examines prevalence of frailty in centenarians and its predictive powers on subsequent mortality and health conditions.

Methods: We use a sample of 4434 centenarians from the 2002, 2005, 2008, and 2011 waves of the Chinese Longitudinal Healthy Longevity Survey (CLHLS), with elders in three

younger age groups 65–79, 80–89, and 90–99 as comparisons. Frailty is measured by a cumulative deficit index (DI) that is constructed from 39 variables covering physical and cognitive function, disease conditions, psychological well-being, and other health dimensions. Survival analysis is conducted to examine how frailty is associated with subsequent mortality at an average follow-up length of 3.7 years (2.6 years for deceased persons died in 2002–2011 and 7.6 years for survived persons at the 2011 wave). Logistic regressions are applied to examine how frailty is associated with subsequent physical and cognitive functions, disease conditions, and self-rated health with an average follow-up length of 3.0 years.

Results: The study reveals that centenarians are frailer than younger elders. The DI scores increase from less than 0.1 at ages 65–79 to over 0.30 in centenarians. Women are frailer than men at all ages. However, there is a great variation in frailty among all age groups. We also find that each additional increase of 0.01 score of the DI is associated with 1.6% higher mortality risk (95% CI: 1.014–1.018) in female centenarians and 1.4% higher mortality risk (95% CI: 1.010–1.018) in male centenarians, although these associations are weaker than those in other three younger age groups.

Conclusions: Frailty still plays an important role in determining subsequent health outcomes and mortality in centenarians.

Keywords: Centenarians Frailty index Cumulative deficit index China Mortality Successful aging Healthy aging Healthy longevity CLHLS

- **The long-term effect of being treated in a geriatric ward compared to an orthopaedic ward on six measures of free-living physical behavior 4 and 12 months after a hip fracture - a randomised controlled trial**

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BMC Geriatrics 2015 15:160; DOI: 10.1186/s12877-015-0153-6

Background: This study is part of the Trondheim Hip Fracture Trial, where we compared free-living physical behavior in daily life 4 and 12 months following hip surgery for patients managed with comprehensive geriatric care (CGC) in a

geriatric ward with those managed with orthopedic care (OC) in an orthopedic ward.

Methods: This is a single centre, prospective, randomized controlled trial. 397 hip fracture patients were randomized to CGC ($n = 199$) or OC ($n = 198$) in the Emergency Department with follow-up assessments performed four and 12 months post-surgery. Outcomes were mean upright time, number and length of upright events recorded continuously for four days at four and 12 months post-surgery by an accelerometer-based activity monitor. Missing data were handled by multiple imputation and group differences assessed by linear regression with adjustments for gender, age and fracture type.

Results: There were no group differences in participants' pre-fracture characteristics. Estimated group difference in favor of CGC in upright time at 4 months was 34.6 min (17.4%, CI 9.6 to 59.6, $p = .007$) and at 12 months, 27.7 min (13.9%, CI 3.5 to 51.8, $p = 0.025$). Average and maximum length of upright events was longer in the CGC (p 's < 0.042). No group difference was found for number of upright events (p 's $> .452$).

Conclusion: Participants treated with CGC during the hospital stay improved free-living physical behavior more than those treated with OC both 4 and 12 months after surgery, with more time and longer periods spent in upright. Results support findings from the same study for functional outcomes, and demonstrate that CGC impacts daily life as long as one year after surgery.

Trials registration: ClinicalTrials.gov, NCT00667914, April 18, 2008

Keywords: Geriatric assessment Hip fracture Physical activity Accelerometers Activity monitoring

- **Prevalence of frailty and contributory factors in three Chinese populations with different socioeconomic and healthcare characteristics**

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BMC Geriatrics 2015 15:163; DOI: 10.1186/s12877-015-0160-7

Background: Frailty predicts dependence and mortality, and is an important health indicator for aging populations. Comparing frailty prevalence between populations of the same ethnicity but different socioeconomic, lifestyle, health and social

care systems, and environmental characteristics would address the role of these factors in contributing to frailty.

Methods: We compare frailty prevalence and contributory factors across three Chinese populations: Beijing rural, Beijing urban, and Hong Kong (urban). Older people aged 65 years and above living in the community were invited to respond to a general health questionnaire covering demographic, socioeconomic, medical and drug histories, geriatric syndromes, assessment of physical and cognitive functioning, psychological wellbeing and nutritional status. Frailty is defined as an index calculated from multiple deficits ≥ 0.25 (FI). The ratio of FI/life expectancy at birth was used as an indicator of compression of morbidity. Risk factors and attributable fraction for frailty were compared across the three cohorts.

Results: The prevalence of frailty increases with age in all three cohorts, and was lower among rural compared with urban (Beijing and Hong Kong) populations. The highest FI/LE ratio was observed in the Beijing urban population, followed by Hong Kong, with the Beijing rural population having the lowest ratio. Risk factors for frailty were similar in all three populations. Those having the highest ORs were multi-morbidity (number of diseases ≥ 3), polypharmacy (number of drugs ≥ 4), age 85+, female gender, followed by low education level, and physical inactivity. For all three cohorts, age and multi-morbidity constitute the highest attributable fraction, and were highest in the Beijing rural cohort. A major difference between the Beijing and Hong Kong cohorts is the high AF from polypharmacy in Beijing and the 'protective' contribution of being married; and the effect of being a teetotaler in the Hong Kong cohort.

Conclusions: This comparison draws attention to the importance of frailty prevention for ageing populations.

Keywords: Frailty Compression of morbidity Polypharmacy Multi-morbidity

- **Physical activity and vascular disease in a prospective cohort study of older men: The Health in Men Study (HIMS)**

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BMC Geriatrics 2015 15:164; DOI: 10.1186/s12877-015-0157-2

Background: The dose–response relationship between volume of physical activity and incidence of major vascular events at older age is unclear. We aimed to investigate this association in a cohort of older men.

Methods: For this prospective cohort study, 7564 men aged 65–83 years and without prior vascular disease were recruited in 1996–99 from the general population in Perth, Western Australia. Men were followed up using the Western Australian Data Linkage System to identify deaths and hospitalisations. During mean follow-up of 11 (SD 4) years, there were 1557 first major vascular events: 833 ischaemic heart disease events, 551 stroke events and 173 other vascular events. Cox regression was used to calculate hazard ratios (adjusted for age, education and smoking) for incidence of major vascular events by volume of baseline recreational physical activity (measured in metabolic equivalent [MET] hours per week).

Results: Hazard ratios among men who performed 0, 1–14, 15–24, 25–39, ≥ 40 MET-hours per week of recreational physical activity were 1.00 (95% CI 0.91–1.10; referent), 0.88 (0.79–1.00), 0.81 (0.72–0.91), 0.81 (0.72–0.91) and 0.80 (0.71–0.89), respectively ($P_{\text{trend}} = 0.006$). The association was slightly attenuated with further adjustment for BMI. There was evidence of stronger associations at older ages and greater intensity of activity, but no evidence of effect modification by smoking, alcohol intake or BMI. There was also no evidence that the association varied by type of vascular event.

Conclusions: Among men aged over 65 years, there was a curvilinear association between recreational physical activity and incidence of major vascular events, with an inverse association up to about 20 MET-hours per week (equivalent to 1 h of non-vigorous, or half an hour of vigorous, physical activity per day) and no evidence of further reductions in risk thereafter.

Keywords: Epidemiology Cardiovascular diseases Exercise.

- **Living with and dying from advanced heart failure: understanding the needs of older patients at the end of life**

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BMC Geriatrics 2015 15:125; DOI: 10.1186/s12877-015-0124-y

Background: Heart failure (HF) is a life-limiting illness and patients with advanced heart failure often suffer from severe physical and

psychosocial symptoms. Particularly in older patients, HF often occurs in conjunction with other chronic diseases, resulting in complex co-morbidity. This study aims to understand how old and very old patients with advanced HF perceive their disease and to identify their medical, psychosocial and information needs, focusing on the last phase of life.

Methods: Qualitative longitudinal interview study with old and very old patients (≥ 70 years) with severe HF (NYHA III-IV). Interviews were conducted at three-month intervals over a period of up to 18 months and were analysed using qualitative methods in relation to Grounded Theory.

Results: A total of 95 qualitative interviews with 25 patients were conducted and analysed. The following key categories were developed: (1a) dealing with advanced heart failure and ageing, (1b) dealing with end of life; (2a) perceptions regarding care, and (2b) interpersonal relations. Overall, our data show that older patients do not experience HF as a life-limiting disease. Functional restrictions and changed conditions leading to problems in daily life activities were often their prime concerns. The needs and priorities of older HF patients vary depending on their disease status and individual preferences. Pain resulting in reduced quality of life is an example of a major symptom requiring treatment. Many older HF patients lack sufficient knowledge about their condition and its prognosis, particularly concerning emergency situations and end of life issues, and many expressed a wish for open discussions. From the patients' perspective, there is a need for improvement in interaction with health care professionals, and limits in treatment and medical care are not openly discussed.

Conclusion: Old and very old patients with advanced HF often do not acknowledge the seriousness and severity of the disease. Their communication with physicians predominantly focuses on curative treatment. Therefore, aspects such as self-management of the disease, dealing with emergency situations and end-of-life issues should be addressed more prominently. An advanced care planning (ACP) programme for heart disease in older people could be an option to improve patient-centred care.

Keywords: Older patients Advanced heart failure Palliative care End of life General practice Needs Patient perspective Health care service Advanced care planning.

- **Identifying common impairments in frail and dependent older people: validation of the COPE assessment for non-specialised health workers in low resource primary health care settings**

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BMC Geriatrics 2015 15:123; DOI: 10.1186/s12877-015-0121-1

Background: Frail and dependent older people in resource-poor settings are poorly served by health systems that lack outreach capacity. The COPE (Caring for Older PEople) multidimensional assessment tool is designed to help community health workers (CHWs) identify clinically significant impairments and deliver evidence-based interventions

Methods: Older people ($n = 150$) identified by CHWs as frail or dependent, were assessed at home by the CHW using the structured COPE assessment tool, generating information on impairments in nutrition, mobility, vision, hearing, continence, cognition, mood and behaviour. The older people were reassessed by local physicians who reached a clinical judgment regarding the presence or absence of the same impairments based upon clinical examination guided by the EASY-Care assessment tool.

Results: The COPE tool was considered easy to administer, and gave CHWs a sense of empowerment to understand and act upon the needs of older people. Agreement between COPE assessment by CHW and clinician assessors was modest (ranged from 45.8 to 91.3%) for most impairments. However, the prevalence of impairments was generally higher according to clinicians, particularly for visual impairment (98.7 vs 45.8%), cognitive impairment (78.4 vs. 38.2%) and depression (82.0 vs. 59.9%). Most cases identified by WHO-COPE were clinician confirmed (positive predictive values -72.2 to 98.5%), and levels of disability and needs for care among those identified by COPE were higher than those additionally identified by the clinician alone.

Conclusions: The COPE is a feasible tool for the identification of specific impairments in frail dependent older people in the community. Those identified are likely to be confirmed as having clinically relevant problems by clinicians working in the same service, and the COPE may be particularly effective at targeting attention upon those with the most substantial unmet needs.

Keywords: Geriatric assessment Frailty assessment Frail older people Dependence Ageing Case-finding Primary health care settings India

- **Self-reported hearing difficulties and changes in life-space mobility among community-dwelling older adults: A two year follow up study**

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BMC Geriatrics 2015 15:121; DOI: 10.1186/s12877-015-0119-8

Background: Life-space mobility reflects individuals' actual mobility and engagement with society. Difficulty in hearing is common among older adults and can complicate participation in everyday activities, thus restricting life-space mobility. The aim of this study was to examine whether self-reported hearing predicts changes in life-space mobility among older adults.

Methods: We conducted a prospective cohort study of community-dwelling older adults aged 75–90 years ($n = 848$). At-home face-to-face interviews at baseline and telephone follow-up were used. Participants responded to standardized questions on perceived hearing at baseline. Life-space mobility (the University of Alabama at Birmingham Life-Space Assessment, LSA, range 0–120) was assessed at baseline and one and two years thereafter. Generalized estimating equations were used to analyze the effect of hearing difficulties on changes in LSA scores.

Results: At baseline, participants with major hearing difficulties had a significantly lower life-space mobility score than those without hearing difficulties (mean 54, 95% CI 50–58 vs. 57, 95% CI 53–61, $p = 0.040$). Over the 2-year follow-up, the life-space mobility score declined in all hearing categories in a similar rate (main effect of time $p < 0.001$, group x time $p = 0.164$). Participants with mild or major hearing difficulties at baseline had significantly higher odds for restricted life-space (LSA score < 60) at two years (OR 1.8, 95% CI 1.0–3.2 and 2.0, 95% CI 1.0–3.9, respectively) compared to those without hearing difficulties. The analyses were adjusted for chronic conditions, age, sex and cognitive functioning.

Conclusions: People with major hearing difficulties had lower life-space mobility scores at baseline but did not exhibit accelerated decline over the follow-up compared to those without hearing difficulties. Life-space mobility describes older

people's possibilities for participating in out-of-home activities and access to community amenities, which are important building blocks of quality of life in old age. Early recognition of hearing difficulties may help prevent life-space restriction.

Keywords: Hearing Life-space Aging Cohort Longitudinal study

• **Validation of the Dutch version of the quick mild cognitive impairment screen (Qmci-D)**

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BMC Geriatrics 201515:115; DOI: 10.1186/s12877-015-0113-1

Background: Differentiating mild cognitive impairment (MCI) from dementia is important, as treatment options differ. There are few short (<5 min) but accurate screening tools that discriminate between MCI, normal cognition (NC) and dementia, in the Dutch language. The Quick Mild Cognitive Impairment (Qmci) screen is sensitive and specific in differentiating MCI from NC and mild dementia. Given this, we adapted the Qmci for use in Dutch-language countries and validated the Dutch version, the Qmci-D, against the Dutch translation of the Standardised Mini-Mental State Examination (SMMSE-D).

Method: The Qmci was translated into Dutch with a combined qualitative and quantitative approach. In all, 90 participants were recruited from a hospital geriatric clinic (25 with dementia, 30 with MCI, 35 with NC). The Qmci-D and SMMSE-D were administered sequentially but randomly by the same trained rater, blind to the diagnosis.

Results: The Qmci-D was more sensitive than the SMMSE-D in discriminating MCI from dementia, with a significant difference in the area under the curve (AUC), 0.73 compared to 0.60 ($p = 0.024$), respectively, and in discriminating dementia from NC, with an AUC of 0.95 compared to 0.89 ($p = 0.006$). Both screening instruments discriminated MCI from NC with an AUC of 0.86 (Qmci-D) and 0.84 (SMMSE-D).

Conclusion: The Qmci-D shows similar, (good) accuracy as the SMMSE-D in separating NC from MCI; greater (albeit fair), accuracy differentiating MCI from dementia, and significantly greater accuracy in separating dementia from NC. Given its brevity and ease of administration, the Qmci-D seems a useful cognitive screen in a Dutch

population. Further study with a suitably powered sample against more sensitive screens is now required.

Keywords: Validity Mild cognitive impairment Dementia Quick mild cognitive impairment screen Screening

• **Heart failure in nursing home residents: A cross-sectional study to determine the prevalence and clinical characteristics**

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BMC Geriatrics 2015 15:167; DOI: 10.1186/s12877-015-0166-1

Background: Heart failure (HF) is expected to be highly prevalent in nursing home residents, but precise figures are scarce. The aim of this study was to determine the prevalence of HF in nursing home residents and to get insight in the clinical characteristics of residents with HF.

Methods: The study followed a multi-centre cross-sectional design.

Nursing home residents ($n = 501$) in the southern part of the Netherlands aged over 65 years and receiving long-term somatic or psychogeriatric care were included in the study. The diagnosis of HF and related characteristics were based on data collected from actual clinical examinations (including history, physical examination, ECG, cardiac markers and echocardiography), patient records and questionnaires. A panel of two cardiologists and a geriatrician ultimately judged the data to diagnose HF.

Results: The overall prevalence of HF in nursing home residents was 33% of which 52% had HF with preserved ejection fraction. The symptoms dyspnoea and oedema and a cardiac history were more common in residents with HF. Diabetes mellitus, chronic obstructive pulmonary disease (COPD) were also more prevalent in those with HF. Residents with HF had a higher score on the Mini Mental State Examination. 54% of those with HF where not known before, and in 31% with a history of HF, this diagnosis was not confirmed by the expert panel.

Conclusion: This study shows that HF is highly prevalent in nursing home residents with many unknown or falsely diagnosed with HF. Equal number of HF patients had reduced and preserved left-ventricular ejection fraction.

Trial registration: The Netherlands National Trial Register NTR2663 (27-12-2010)

Keywords: Heart failure Nursing home residents Diagnosis Prevalence

- **Prospective longitudinal study of frailty transitions in a community-dwelling cohort of older adults with cognitive impairment**

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BMC Geriatrics 2015 **15**:175 DOI: 10.1186/s12877-015-0174-1

Background: Frailty and cognitive impairment are seemingly distinct syndromes, but have a shared vulnerability to stress in older adults, resulting in poorer outcomes. Although there has been recent interest in cognitive frailty, frailty transitions in relation to cognitive deterioration in older adults with cognitive impairment have not yet been well studied. We thus aim to study frailty transitions and change in cognitive status over 1-year follow-up among subjects with cognitive impairment attending a tertiary Memory Clinic.

Methods: This is a prospective cohort study of mild cognitive impairment (MCI) and mild-moderate Alzheimer's disease (AD) community-dwelling subjects. We obtained data on clinical measures, muscle mass and physical performance measures. Cognitive status was measured using Chinese Mini-Mental State Examination (CMMSE) and Clinical Dementia Rating-Sum of Boxes (CDR-SB) scores. We measured gait speed, hand grip strength, exhaustion and weight loss at baseline, 6 and 12 months to classify subjects according to the modified Fried criteria (involving strength, gait speed, body composition and fatigue) into non-frail (<2 frail categories) and frail categories (≥2 frail categories). Frailty transitions between baseline and 12-months were assessed. We performed random effects statistical modelling to ascertain baseline predictors of longitudinal frailty scores for all subjects and within MCI subgroup.

Results: Among 122 subjects comprising 41 MCI, 67 mild and 14 moderate AD, 43.9, 35.8 and 57.1% were frail at baseline respectively. Frailty status regressed in 32.0%, remained unchanged in 36.0% and progressed in 32.0% at 12 months. Random effects modelling on whole group showed longitudinal CDR-SB scores (coeff. 0.09, 95% confidence interval (CI) 0.03–0.15) and age (coeff. 0.04, 95% CI 0.02–0.07) to be significantly associ-

ated with longitudinal frailty score. Among MCI subjects, only female gender (coeff. 1.28, 95 % CI 0.21–2.36) was associated with longitudinal frailty score, while mild-moderate AD subjects showed similar results as those of the whole group.

Conclusions: This is the first study to show longitudinal frailty state transitions in cognitively-impaired older adults. Frailty transitions appear to be independent of progression in cognitive status in earliest stages of cognitive impairment, while mild-moderate AD subjects showed associations with age and cognitive deterioration. The potential for cognitive frailty as a separate therapeutic entity for future physical frailty prevention requires further research with a suitably powered study over a longer follow-up period.

Keywords: Frailty Transitions Cognitive impairment.

- **Improving the assessment of quality of life in the clinical care of myeloma patients: the development and validation of the Myeloma Patient Outcome Scale (MyPOS)**

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BMC Cancer 2015 **15**:280 DOI: 10.1186/s12885-015-1261-6

Background: Multiple myeloma is an incurable cancer with a rising incidence globally. Less toxic treatments are increasingly available, so patients are living longer and treatment decisions are increasingly guided by QOL concerns. There is no QOL assessment tool designed specifically for use in the clinical care of people with myeloma. This study aimed to develop and test the psychometric properties of a new myeloma-specific QOL questionnaire designed specifically for use in the clinical setting – the MyPOS.

Methods: The MyPOS was developed using findings from a previously reported literature review and qualitative study. The prototype MyPOS was pretested using cognitive interviews in a purposive sample of myeloma patients and refined prior to field testing. The psychometric properties of the MyPOS were evaluated in a multi-centre, cross sectional survey of myeloma patients recruited from 14 hospital trusts across England.

Results: The prototype MyPOS contained 33 structured and open questions. These were refined using cognitive interviews with 12 patients, and the final MyPOS contained 30 items taken forward for field-testing. The cross-sectional survey recruited

380 patients for the MyPOS validation. Mean time to complete was 7 minutes 19 seconds with 0.58% missing MyPOS items overall. Internal consistency was high ($\alpha = 0.89$). Factor analysis confirmed three subscales: Symptoms & Function; Emotional Res-ponse and Healthcare Support. MyPOS total scores were higher (worse QOL) in those with active disease compared to those in the stable or plateau phase ($F = 11.89$, $p < 0.001$) and were worse in those currently receiving chemotherapy ($t = 3.42$, $p = 0.001$). Scores in the Symptoms & Function subscale were higher (worse QOL) in those with worse ECOG performance status ($F = 31.33$, $p < 0.001$). Good convergent and discriminant validity were demonstrated.

Conclusions: The MyPOS is the first myeloma-specific QOL questionnaire designed specifically for use in the clinical setting. The MyPOS is based on qualitative enquiry and the issues most important to patients. It is a brief, comprehensive and acceptable tool that is reliable and valid on psychometric testing. The MyPOS can now be used to support clinical decision making in the routine care of myeloma patients.

Keywords: Cancer Oncology Haematology Multiple myeloma Quality of life Outcome assessment Psychometrics

- **A case of simultaneous occurrence of acute myeloid leukemia and multiple myeloma**

Wang Lu-qun, Li Hao, Li Xiang-xin, Li Fang-lin, Wang Ling-ling, Chen Xue-liang and Hou Ming

BMC Cancer 2015;15:724 DOI: 10.1186/s12885-015-1743-6

Background: Although the occurrence of Acute Myeloid Leukemia (AML) after chemotherapy for Multiple Myeloma (MM) is common in clinical settings, the simultaneous occurrence of these malignancies in patients without previous exposure to chemotherapy is a rare event. Etiology, disease management, and clinical treatment remain unclear for this particular occurrence. To the best of our knowledge, this study is the first to report a case of simultaneous presentation of AML and MM after exposure to ultraviolet irradiation.

Case presentation: We reported the case of a 73-year-old man (Han Chinese ethnicity) without previous medical history of AML and MM. The morphology and immunology of bone marrow cells confirmed the co-existence of AML and MM. Fluorescent in situ hybridization analysis of

immunomagnetically separated abnormal plasma cells showed abnormal expression of the amplified *RB-1*, *TP53*, and *CDKN2C* (1p32). Cytogenetic analysis demonstrated Y chromosome deletion.

After the patient was administered with bortezomib combined with cytarabine + aclarubicin + granulocyte colony-stimulating factor (CAG regimen), and evident curative effects were observed. The patient achieved and maintained complete remission for more than 6 months. Prior to the disease occurrence, the patient had received ultraviolet irradiation for 1 year and was detected with aberrant gene expression of *RB-1*, *TP53*, and *CDKN2C* (1p32). Nevertheless, the correlation of this phenomenon with the etiology of concurrent AML with MM remains unclear.

Conclusion: This study discussed the case of a patient diagnosed with AML concurrent with MM, who has no previous exposure to chemotherapy. This patient was successfully treated by bortezomib combined with CAG regimen. This study provides a basis for clinical treatment guidance for this specific group of patients and for confirmation of the disease etiology.

Keywords: Acute myeloid leukemia Multiple myeloma Treatment

- **Epidemiology, clinical profile and treatment patterns of venous thromboembolism in cancer patients in Taiwan: a population-based study**

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BMC Cancer 2015;15:298 DOI: 10.1186/s12885-015-1200-6

Background: Venous thromboembolism (VTE) is a clinically significant complication that is well documented among Caucasian cancer patients. However, evidence regarding VTE incidence and treatment among Asian cancer patients is very limited. The objective of this study is to investigate the incidence, risk factors and management of VTE among Taiwanese cancer patients.

Methods: Using Taiwan's National Health Insurance Research Database, we identified 43,855 newly diagnosed cancer patients between 2001 and 2008. Two alternative algorithms for identifying VTE event were explored to better quantify a range of incidence rates of VTE in our cancer patients. Multivariable logistic regression models were used to explore VTE risk factors.

Results: The incidence rates of VTE were 9.9 (algorithm 1) and 3.4 (algorithm 2) per 1,000 person-years, respectively. The incidence rates were higher in certain cancers, particularly liver, pancreas, and lung. Significant risk factors for VTE were site of cancer, prior history of VTE, chemotherapy and major surgeries. Long-term anticoagulant therapy was initiated in 64.1% patients with VTE and 72.2% of them received warfarin alone. Approximately two-thirds of patients with VTE received ≤ 3 months of anticoagulant therapy.

Conclusion: Incidence of cancer-related VTE is lower among Taiwanese compared to Caucasian populations. Nevertheless, risk factors for cancer-related VTE found in our study were consistent with current literature.

Keywords: Venous thromboembolism Cancer Epidemiology Population-based study

- **The relationship between pain management and psychospiritual distress in patients with advanced cancer following admission to a palliative care unit**

Ya-Ping Lee, Chih-Hsun Wu, Tai-Yuan Chiu, Ching-Yu Chen, Tatsuya Morita, Shou-Hung Hung, Sin-Bao Huang, Chia-Sheng Kuo and Jaw-Shiun Tsai

BMC Palliative Care 2015 14:69 DOI: 10.1186/s12904-015-0067-2

Background: Although many cross-sectional studies have demonstrated the association between cancer pain and psychospiritual distress, the time-dependent relationship has not been fully explored. For that reason, this study aims to investigate the time-dependent relationship between psychospiritual distress and cancer pain management in advanced cancer patients.

Methods: This is a prospective observational study. Two hundred thirty-seven advanced cancer patients were recruited from a palliative care unit in Taiwan. Demographic and clinical data were retrieved at admission. Pain and psychospiritual distress (i.e. anxiety, depression, anger, level of family and social support, fear of death) were assessed upon admission and one week later, by using a "Symptom Reporting Form". Patients were divided into two groups according to the pain status one week post-admission (*improved* versus *not improved* groups).

Results: One hundred sixty-three (68.8%) patients were assigned to the *improved* group, and 74 (31.2%) patients were assigned to the *not improved* group. There were no differences in the

psychospiritual variables between groups upon admission. In overall patients, all psychospiritual variables improved one week post-admission, but the improvement of depression and family/social support in the *not improved* group was not significant. Consistent with this, for depression scores, there was a statistically significant *pain group x time* interaction effect detected, meaning that the pain group effect on depression scores was dependent on time.

Conclusions: We demonstrated a time-dependent relationship between depression and pain management in advanced cancer patients. Our results suggest that poor pain management may be associated with intractable depression. The inclusion of interventions that effectively improve psychospiritual distress may contribute to pain management strategies for advanced cancer patients.

Keywords: Cancer pain Psychospiritual distress Advanced cancer Hospice palliative care.

- **INSPIRE (INvestigating Social and PractIcal supportS at theEnd of life): Pilot randomised trial of a community social and practical support intervention for adults with life-limiting illness**

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BMC Palliative Care 2015 14:65 DOI: 10.1186/s12904-015-0060-9

Background: For most people, home is the preferred place of care and death. Despite the development of specialist palliative care and primary care models of community based service delivery, people who are dying, and their families/carers, can experience isolation, feel excluded from social circles and distanced from their communities. Loneliness and social isolation can have a detrimental impact on both health and quality of life. Internationally, models of social and practical support at the end of life are gaining momentum as a result of the Compassionate Communities movement. These models have not yet been subjected to rigorous evaluation. The aims of the study described in this protocol are: (1) to evaluate the feasibility, acceptability and potential effectiveness of The Good Neighbour Partnership (GNP), a new volunteer-led model of social and practical care/support for community dwelling

adults in Ireland who are living with advanced life-limiting illness; and (2) to pilot the method for a Phase III Randomised Controlled Trial (RCT).

Design: The INSPIRE study will be conducted within the Medical Research Council (MRC) Framework for the Evaluation of Complex Interventions (Phases 0–2) and includes an exploratory two-arm delayed intervention randomised controlled trial. Eighty patients and/or their carers will be randomly allocated to one of two groups: (I) Intervention: GNP in addition to standard care or (II) Control: Standard Care. Recipients of the GNP will be asked for their views on participating in both the study and the intervention. Quantitative and qualitative data will be gathered from both groups over eight weeks through face-to-face interviews which will be conducted before, during and after the intervention. The primary outcome is the effect of the intervention on social and practical need. Secondary outcomes are quality of life, loneliness, social support, social capital, unscheduled health service utilisation, caregiver burden, adverse impacts, and

satisfaction with intervention. Volunteers engaged in the GNP will also be assessed in terms of their death anxiety, death self efficacy, self-reported knowledge and confidence with eleven skills considered necessary to be effective GNP volunteers.

Discussion: The INSPIRE study addresses an important knowledge gap, providing evidence on the efficacy, utility and acceptability of a unique model of social and practical support for people living at home, with advanced life-limiting illness. The findings will be important in informing the development (and evaluation) of similar service models and policy elsewhere both nationally and internationally.

Trial registration: ISRCTN18400594 18th February 2015.

Keywords: Randomised Controlled Trial Palliative care needs Practical support Social support Volunteers Community Adults Carers Quality of life INSPIRE Home.