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Netuveli, G; Wiggins, RD; Hildon, Z; Montgomery, SM; Blane, D  
(2005) Functional limitation in long standing illness and quality of  
life: evidence from a national survey. *BMJ*, 331 (7529). pp. 1382-3.  
ISSN 1468-5833 DOI: 10.1136/bmj.331.7529.1382

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DOI: [10.1136/bmj.331.7529.1382](https://doi.org/10.1136/bmj.331.7529.1382)

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relevant diagnostic investigations—that is, patients in whom treatment is likely to be initiated in everyday practice.

In conclusion, several easily obtained clinical parameters and a few additional diagnostic investigations—notably, natriuretic peptide and electrocardiography—may improve the detection of concomitant heart failure in primary care patients with COPD. The use of these parameters should increase confidence about the diagnosis of heart failure and will help GPs to decide about the need for additional echocardiography or treatment in patients with COPD.

We thank the participating patients, general practitioners and their assistants, including the general practices connected to the General Practice Network Utrecht (HNU), the cardiac sonographers Elly Lutgert-Hagman and Ineke Kasteleijn, the pulmonology technicians, especially Paul Munnik, and Pieter Zanen, lung physiologist. Frances Verheij assisted us with the data management.

Contributors: See [bmj.com](http://bmj.com).

Funding: Research grant (number 904-61-144) of the Netherlands Organisation for Scientific Research (NWO). Roche (Mannheim, Germany) supplied the assays for analysis of NT-proBNP.

Competing interests: None declared.

Ethical approval: Medical Ethical Committee of the University Medical Center Utrecht, the Netherlands.

- 1 Remes J, Miettinen H, Reunanen A, Pyörälä K. Validity of clinical diagnosis of heart failure in primary health care. *Eur Heart J* 1991;12:315-21.
- 2 Swedberg K, Cleland J, Dargie H, Drexler H, Follath F, Komajda M, et al. Guidelines for the diagnosis and treatment of chronic heart failure: executive summary (update 2005). Task Force for the Diagnosis and Treatment of Chronic Heart Failure of the European Society of Cardiology. *Eur Heart J* 2005;26:1115-40.
- 3 Moons KG, van Es GA, Michel BC, Buller HR, Habbema JD, Grobbee DE. Redundancy of single diagnostic test evaluation. *Epidemiology* 1999;10:276-81.
- 4 Moons KG, Biesheuvel CJ, Grobbee DE. Test research versus diagnostic research. *Clin Chem* 2004;50:473-6.
- 5 Harrell FE, Lee KL, Mark DB. Multivariable prognostic models: issues in developing models, evaluating assumptions and adequacy, and measuring and reducing errors. *Stat Med* 1996;15:361-87.

- 6 Cowie MR, Struthers AD, Wood DA, Coats AJ, Thompson SG, Poole-Wilson PA, et al. Value of natriuretic peptides in assessment of patients with possible new heart failure in primary care. *Lancet* 1997;350:1349-53.
- 7 Maisel AS, Krishnaswamy P, Nowak RM, McCord J, Hollander JE, Duc P, et al. Rapid measurement of B-type natriuretic peptide in the emergency diagnosis of heart failure. *N Engl J Med* 2002;347:161-7.
- 8 Moons KG, Grobbee DE. When should we remain blind and when should our eyes remain open in diagnostic studies? *J Clin Epidemiol* 2002;55:633-6.
- 9 Whiting P, Rutjes AW, Dinnes J, Reitsma J, Bossuyt PM, Kleijnen J. Development and validation of methods for assessing the quality of diagnostic accuracy studies. *Health Technol Assess* 2004;8:iii1-4.
- 10 Ransohoff DF, Feinstein AR. Problems of spectrum and bias in evaluating the efficacy of diagnostic tests. *N Engl J Med* 1978;299:926-30.
- 11 Sackett DL, Haynes RB, Tugwell P. *Clinical epidemiology: a basic science for clinical medicine*. New York: Little, Brown, 1985.
- 12 Cowie MR, Wood DA, Coats AJ, Thompson SG, Poole-Wilson PA, Suresh V, et al. Incidence and aetiology of heart failure; a population-based study. *Eur Heart J* 1999;20:421-8.
- 13 Wright SP, Doughty RN, Pearl A, Gamble GD, Whalley GA, Walsh HJ, et al. Plasma amino-terminal pro-brain natriuretic peptide and accuracy of heart-failure diagnosis in primary care: a randomized, controlled trial. *J Am Coll Cardiol* 2003;42:1793-800.
- 14 Bossuyt PM, Reitsma JB, Bruns DE, Gatsonis CA, Glasziou PP, Irwig LM, et al. The STARD statement for reporting studies of diagnostic accuracy: explanation and elaboration. *Clin Chem* 2003;49:7-18.
- 15 Vasan RS, Benjamin EJ, Levy D. Congestive heart failure with normal left ventricular systolic function. Clinical approaches to the diagnosis and treatment of diastolic heart failure. *Arch Intern Med* 1996;156:146-57.
- 16 Zile MR. Heart failure with preserved ejection fraction: is this diastolic heart failure? *J Am Coll Cardiol* 2003;41:1519-22.
- 17 Hosmer DW, Lemeshow S. *Applied logistic regression*. New York: John Wiley, 1989.
- 18 Landray MJ, Lehman R, Arnold I. Measuring brain natriuretic peptide in suspected left ventricular systolic dysfunction in general practice: cross sectional study. *BMJ* 2000;320:985-6.
- 19 Nielsen OW, Hansen J, Hilden J, Larsen ST, Svanegaard J. Risk assessment of left ventricular systolic dysfunction in primary care: cross sectional study evaluating a range of diagnostic tests. *BMJ* 2000;320:220-4.
- 20 Davie AP, Francis CM, Caruana L, Sutherland GR, McMurray JJ. Assessing diagnosis in heart failure: which features are any use? *QJM* 1997;90:335-9.
- 21 Smith H, Pickering RM, Struthers A, Simpson I, Mant D. Biochemical diagnosis of ventricular dysfunction in elderly patients in general practice: observational study. *BMJ* 2000;320:906-8.
- 22 Lloyd-Jones DM, Levy D. C-reactive protein in the prediction of cardiovascular events. *N Engl J Med* 2003;348:1059-61.
- 23 Mosterd A, Hoes AW, de Bruyne MC, Deckers JW, Linker DT, Hofman A, et al. Prevalence of heart failure and left ventricular dysfunction in the general population: the Rotterdam study. *Eur Heart J* 1999;20:447-55.
- 24 Redfield MM, Jacobsen SJ, Burnett JC, Mahoney DW, Bailey KR, Redfield RJ. Burden of systolic and diastolic ventricular dysfunction in the community: appreciating the scope of the heart failure epidemic. *JAMA* 2003;289:194-202.

(Accepted 31 October 2005)

doi 10.1136/bmj.38664.661181.55

## Functional limitation in long standing illness and quality of life: evidence from a national survey

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Quality of life is the most desired patient centred outcome of medical care.<sup>1</sup> In older patients with long term illness, with no possible cure, it might be the only outcome achievable. Most clinicians are aware of the importance for quality of life of functional limitation, but lack an estimate of the size of its impact compared with long term illness in itself. We aimed to fill this gap in knowledge, using new data from a large national sample of older people in England.

### Participants, methods, and results

Our participants were 9298 people aged 50 years or older with complete data on the relevant variables in wave 1 of the English longitudinal study of ageing, a follow-up of the appropriately aged respondents to the health surveys of England in 1998, 1999, and 2001.<sup>2</sup>

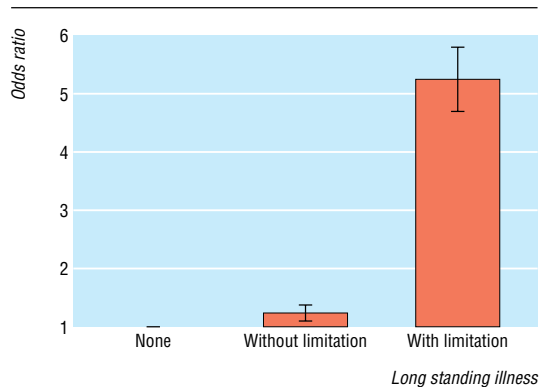
We measured long term illness and functional limitation due to long term illness by the two standard survey questions: “Do you have any long standing illness, disability, or infirmity?” and, if yes, “Does this illness limit your activities in any way?”

Our outcome variable was quality of life at older ages, as measured by a 19 Likert item scale summed as an index—CASP-19.<sup>3</sup> This new measure accesses the domains of control, autonomy, self realisation, and pleasure. Its emphasis on the more positive aspects of quality of life at older ages has led recently to its use in several of the main international studies of ageing. High scores correspond to higher quality of life.

To estimate the impact of long term illness on quality of life, we dichotomised the CASP-19 scores at their median value and, using logistic regression, calculated

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BMJ 2005;331:1382-3



Associations of poor quality of life (CASP-19 score  $\leq 44$ , the median value) with the presence of long standing illness with and without functional limitations (adjusted for age and sex)

the odds ratios of poor quality of life (less than median CASP-19 score) for long standing illness without and with functional limitation. People without long standing illness were the reference group. As a precaution against response bias (poor psychological health affecting the self reports of both functional limitation and quality of life), we repeated the analyses after excluding all study subjects who were clinically depressed on the Center for Epidemiological Studies Depression Scale.<sup>4</sup>

The mean CASP-19 score in this sample was 42.5, with a standard deviation of 8.6 and a range of 7-57. After controlling for age and sex, the odds ratio of long standing illness without functional limitation was 1.25 (95% confidence interval 1.12 to 1.39) and that of long standing illness with functional limitation was 5.34 (4.80 to 5.94; figure). These ratios attenuated somewhat when we excluded people with depression (odds ratios of 1.05 and 3.47).

## Comment

In older patients, the impact on quality of life of functional limitation due to long term illness is more than four times greater than long term illness by itself; a difference which is affected little by response bias. Patients place high value on their quality of life. If the General

## What is already known on this topic

Older age groups are at increased risk of reduced quality of life due to long term illness and concomitant functional limitations

## What this study adds

The impact of functional limitation due to long term illness on reducing quality of life is more than four times greater than long term illness by itself

Medical Services contract wishes to recognise the patient's perspective, it needs to be amended to include functional limitation due to chronic disease.

This conclusion adds to, rather than challenges, the medical perspective of the present contract. Monitoring, and trying to alleviate, functional limitation should become normal parts of patient care. This apparently simple recommendation has implications for consultations on the General Medical Services contract, the role of non-medical support in the care of patients with chronic disease, the training of primary care staff and the National Service Framework for Older People.<sup>5</sup>

We thank Josip Car, Norma O'Flynn, Azeem Majeed, Marilyn Plant, and Martin Rhodes.

Contributors: GN and DB conceived the study, GN analysed the data, and all authors participated in the interpretation of results and writing the paper.

Funding: Economic and Social Research Council grant L326253061.

Competing interests: None declared.

Ethical approval: Not needed.

1 Lepège A, Hunt S. The problem of quality of life in medicine. *JAMA* 1997;278:47-50.

2 Marmot M, Banks J, Blundell R, Lessof C, Nazroo J. *The health, wealth and lifestyles of older populations in England: the 2002 English longitudinal study of ageing*. London: Institute of Fiscal Studies, 2003.

3 Wiggins RD, Higgs PFD, Hyde M, Blane DB. Quality of life in the third age: key predictors of the CASP-19 measure. *Ageing Soc* 2004;24:693-708.

4 Steffick DE. *Documentation of affective functioning measures in the health and retirement study*. Ann Arbor: Hrs Health Working Group, 2000.

5 Department of Health. *National service framework for older people: intermediate care: moving forward*. London: DoH, 2002. [www.dh.gov.uk/assetRoot/04/06/56/94/04065694.pdf](http://www.dh.gov.uk/assetRoot/04/06/56/94/04065694.pdf) (accessed 28 Nov 2005).

(Accepted 5 September 2005)

## My favourite surgical instrument

When I started as a registrar in orthopaedics, one of the first consultants I worked with always used a MacDonald's dissector when things were difficult. His theatre sister remarked to me quietly that he could not operate unless it was on the scrub trolley. The instrument is used to tease soft tissues away from major structures such as nerves, tendons, and arteries as well as a lever to hold tissues away from bone.

By the time I became a consultant, I too could not get by in difficult situations without it, and I was irked by my inability to find out who MacDonald was, where he worked, and in what branch of surgery he practised. I looked on the web, including [www.whonamedit.com](http://www.whonamedit.com), made inquiries of the Wellcome Foundation and manufacturers, and examined the Royal College of Surgeons register of fellows without success.

Thankfully, one fine day, my scrub nurse, Julie Ballard, rang to say, "Eureka, we have found him!" She had telephoned the Charles Thackray Museum in Leeds, and the curator of instruments had been extremely helpful. To my surprise, Greville

MacDonald was born (in 1856) in Manchester, where I practise. He was the eldest son of the notable Scottish poet and novelist George MacDonald.

In 1876 he enrolled at King's College Hospital Medical School and, after qualifying, briefly served as an assistant to Joseph Lister, when his main responsibilities were to clean and sterilise surgical instruments. He had a distinguished career as a throat specialist, serving as professor of laryngology at King's from 1889 to 1904. Increasing deafness prompted his resignation, and he retired to Haslemere, where he spent the remaining 40 years of his life writing novels for children and delving into biography and autobiography. He was also an accomplished critic, evident in his analysis of his father's novels and poems, *The Life of George MacDonald and his Wife*. He died in Haslemere in November 1944.

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