

# Generalist solutions to overprescribing: a joint challenge for clinical and academic primary care

Joanne Reeve<sup>1</sup> and Rebecca Bancroft<sup>2</sup>

<sup>1</sup>NIHR Clinician Scientist in Primary Care, Department of Health Services Research, University of Liverpool, Liverpool, UK

<sup>2</sup>Consultant Geriatrician, Royal Liverpool and Broadgreen University Hospitals NHS Trust and Liverpool Community Health, Liverpool, UK

Polypharmacy is a phenomenon of modern health care that can offer benefits in terms of patient outcomes. Known risks associated with so-called inappropriate polypharmacy can be reduced through good medicine management and appropriate use of clinical guidelines. However, we now see a growing literature highlighting additional risks to individual well-being and social functioning not recognised within these existing frameworks – the burden of polypharmacy and a problem of overprescribing. We need a new approach to defining and understanding inappropriate polypharmacy from a person-centred perspective. This paper discusses practice-based work exploring the impact of introducing generalist needs assessment for elderly patients with multiple chronic morbidities. The work suggests that generalist care offers something ‘different’ to current chronic disease management models, but highlights the need for formal evaluation to determine whether it is ‘better’. We call for new collaborative research between clinical and academic partners to address the question as to whether generalist care offers solutions to the problems of the burden of polypharmacy.

**Key words:** chronic disease; generalism; overprescribing; person-centred care; polypharmacy; practice-based evidence

*Received 19 March 2012; revised 21 August 2012; accepted 14 October 2012; first published online 4 February 2013*

## Introduction

The prescribing of medication is one of the commonest interventions in modern medical practice. In the United Kingdom alone, 886 million prescription items were issued in 2009 at a cost of £8539 million – being about 15% of all National Health Service (NHS) costs (Duerden *et al.*, 2011). It is an often effective intervention, valued by patient, practitioner, and health system alike, but also has potential for harm. An extensive literature acknowledges and addresses the risk associated with poor prescribing – notably unsafe

or biomedically unnecessary prescribing. Here we consider a new problem facing patients and practitioners – a problem of ‘overprescribing’. We first describe the problem before considering the potential to identify solutions from practice.

## The problem – overprescribing

Polypharmacy is a phenomenon of modern health care – the product of an aging population with multiple morbidities (Denneboom *et al.*, 2007), along with a growing capacity for medical intervention (Stehlik and Taylor, 2004). ‘Appropriate polypharmacy’ can reduce disease burden for individuals as well as populations (Stehlik and Taylor, 2004; Aronsen, 2006). Recognised risks of prescribing multiple drugs to individuals include adverse

---

Correspondence to: Dr Joanne Reeve, Department of Health Services Research, University of Liverpool, 1–5 Brownlow Street, Liverpool L69 3GL, UK. Email: joanne.reeve@liv.ac.uk

drug reactions and interactions (Pirmohamed *et al.*, 2004; Aronsen, 2006), as well as medication errors (Bregnhøj *et al.*, 2007; Denneboom *et al.*, 2007). The importance of medication review to minimise the risks of so-called inappropriate polypharmacy has been highlighted (Stehlik and Taylor, 2004; Aronsen, 2006; Bregnhøj *et al.*, 2007; Denneboom *et al.*, 2007). Guidelines for management of particular conditions or diseases, along with protocols and procedures for medicine management define safe and ‘appropriate’ polypharmacy (Stehlik and Taylor, 2004; Duerden *et al.*, 2011; Avery *et al.*, 2012).

There are growing concerns about the burden placed on individuals by the growing magnitude and complexity of medication regimes seen in modern clinical practice (May *et al.*, 2009). High levels of poor adherence reveal that many patients do not want or are not able to manage their multiple medications. We know polypharmacy increases risks of falls: a risk that is more than the impact of side effects of individual medicines (Huang *et al.*, 2010); however, we now also see emerging evidence of adverse impacts on social functioning and mood (Liu *et al.*, 2011) and cognitive decline (Alic *et al.*, 2011; Fox *et al.*, 2011). Existing guidance has been criticised for not offering support for broader person-centred questions, such as when to withhold or discontinue medication in the elderly when time to benefit may be less than the individual’s lifespan (Holmes *et al.*, 2006). Polypharmacy may reduce disease burden, but can increase the illness burden for some individuals. We are left with a question of if, and when, so-called ‘appropriate’ polypharmacy (defined from a safety perspective) represents overprescribing.

Overprescribing and the burden of polypharmacy is largely an iatrogenic phenomenon – created by the systems and processes we have for making decisions about medicines (Anthierens *et al.*, 2010), along with a wider social/cultural expectation of a ‘technical fix’ (Illich, 1974) and a ‘deep faith in medical technology’ (Moynihan *et al.*, 2012). Drivers for overprescribing mirror those described by Moynihan *et al.* (2012) for overdiagnosis, reflecting an over-reliance on a disease (biomedical) model to describe health need and determine intervention. They include health system drivers and incentives (eg, guidelines and quality/performance monitoring) for

overprescribing, rather than underprescribing; technological changes, which enable more prescribing; drivers from professional and commercial interests; along with cultural beliefs in the profession and lay population that ‘more is better’ (Moynihan *et al.*, 2012).

Just as overdiagnosis causes harm, so does overprescribing. Solutions to overprescribing lie in better understanding of the phenomenon and with the development of evidence to ‘help us all make more informed decisions about when [polypharmacy] might do us more harm than good’ (see also May *et al.*, 2009; Moynihan *et al.*, 2012).

## Reflections from practice

So how do we respond to this problem? The thinking in this development paper arises from discussions between the two authors. Both are practising clinicians with expertise in generalist care. Overprescribing is a problem we, and our patients, are faced with on a daily basis. R.B. is a consultant community geriatrician with a particular interest in the management of care home residents and end of life care (Box 1). J.R. is an ‘expert generalist’<sup>1</sup> (Freeman, 2010, p. 48) in primary care.

Previous studies have queried whether polypharmacy may link to an overly specialist model of care. Chan *et al.* (2009) noted a high correlation between polypharmacy and the number of health providers providing care to individuals in a study of elderly Taiwanese. They suggested that specialist disease-focused care contributed to polypharmacy, and proposed a need for a more primary care, person-centred approach to reduce the adverse outcomes of fragmented care, including polypharmacy. Leading the authors of this paper to question, can generalist care reduce the burden of polypharmacy and thus tackle the problem of overprescribing?

First let us consider, what is generalist care?

## Generalism and generalist care

Generalism is a philosophy of health care that recognises health-care need based on the presence

<sup>1</sup>Freeman (2010) distinguishes between the generalist as a ‘jack of all trades’ with only perfunctory knowledge of many things, and an ‘expert generalist’ as someone with *acquired expertise* in a variety of subjects.

**Box 1 Generalist care supporting Advanced Care Planning**

As a newly appointed Consultant, R.B. observed high rates of hospital attendance by local care home residents. Of these patients, 40% received little or no treatment that could not have been administered at home; many (25%) patients died within 24 hours of admission. Observations suggested a problem with current models of care; notably a burden of protocol-based disease care on a cohort of patients approaching the 'end of life' period – the last 12 months of life. With the support of local Community Matrons, R.B. began a process of assessing care home residents with advanced dementia (considered at highest risk of burden) using a generalist Comprehensive Geriatric Assessment framework (Stuck *et al.*, 1993) to produce individualised Anticipatory Care Plans (ACPs) for identified care needs. Plans included discontinuation of both inappropriate medication (for example, primary prevention of limited individual benefit) and technical care (routine blood testing and (often multiple) specialist clinic appointments for monitoring). The ACPs were subsequently discussed with family and the care home staff, and priorities of care including admission avoidance documented.

Of the 600 patients assessed to date, 300 residents have died, but only 10 in hospital. There has been a significant reduction in the numbers of medications being taken by residents with an ACP in place compared with those without. The commonest medications that have been discontinued are statins and bisphosphonates. (Neither medication offers therapeutic benefit in the timeframe, yet both can cause significant side effects, which may not be reported by individuals with advanced dementia because of communication difficulties.) Qualitative data have also been positive in terms of family and care home staff satisfaction with the care plans, assessment process, and outcomes.

of a personal problem perceived to be health related, rather than simply the presence or absence of disease. Generalist care is thus person, not disease, oriented, taking a continuous rather than an episodic view of health experience, integrating biotechnical and biographical accounts in order to understand and address health as a resource for living and not an end in itself (Reeve, 2010b). Generalists are experts in personal illness care. Generalists differ from specialists in terms of their approach to decision making about what is wrong (diagnosis) and what to do about it (intervention). Thus, a specialist view of health need asks, does this patient meet the diagnostic criteria for a given disease, and if so, is it appropriate (safe) to treat? The onus is on justifying exempting an individual from disease-defined care. By contrast, the generalist asks (how) does a disease model help us understand and address the health and illness needs of this individual and at this time? The onus is on justifying a decision to instigate medical intervention for an illness problem.

Generalists hold deep tacit knowledge about the benefits to individuals and society of using biomedical disease categories to understand personal illness experience (Heath, 2011). The expert generalist works with a patient to negotiate

care which best suits their individual health and illness needs at this time (Reeve *et al.*, 2011) – a process which has been as Interpretive Medicine (Reeve, 2010a).

Generalism has been described as being 'deeply known' by practitioners around the world (Stange, 2009). Rich descriptions of this professional philosophy of practice have informed practitioner views on effective health care, on professional training, and on practices, which support the delivery of care. However, generalism is an approach that is not widely understood outside of practising clinicians, by patients, other health professionals, managers, policymakers, researchers, and politicians. As such, it is 'often overlooked in the fragmented world of modern healthcare' (Stange, 2009). Generalist care has not done enough to demonstrate when and how it is 'different and better' (Kings Fund, 2011) to alternative approaches to defining and addressing health-care need. There is a growing body of work that seeks to address this gap (Gunn *et al.*, 2008; Stange, 2009; Royal College of General Practitioners (RCGP), 2012). As active generalist practitioners, our interest was in exploring what can be learnt from the observation of clinical practice – from observations of generalism in action.

*Primary Health Care Research & Development* 2014; 15: 72–79

## Generalism in practice – the complex needs project

The Complex Needs project is a service development project in a UK-based General Practice. The Practice is situated in an area of high socio-economic deprivation in Northwest England. At the time of the study, the Practice team consisted of three full-time equivalent partners, two full-time equivalent salaried General Practitioners (GPs), two practice nurses along with access to the district nursing teams and a Community Matron. There were a little over 6000 registered patients.

The Practice team was concerned about a spiralling burden of workload for patients and practitioners in dealing with the needs of housebound patients with chronic complex illness. Concerns were sparked in particular by recognition of increasingly complex medication regimes along with growing unplanned admission rates. Usual care arrangements for protocol-driven chronic disease management (CDM) in this group of patients included proactive home visits (usually by nursing staff) supported by a (predominantly) non-face-to-face medication review by GPs. GP visits were usually reserved for reactive visits for acute problems. The Practice scored highly on quality targets for CDM, yet concerns remained. The team wondered whether a proactive generalist assessment might address concerns and improve care.

Thus, we started with a premise – that introducing dedicated time for generalist care could enhance person-centred care with decreased burden to patients and the practice. Efficiency savings from the Neighbourhood Cluster were used to fund dedicated GP time for this work. Initial funding for 2.5 sessions per week of GP time was identified. The intention was to identify a group of ‘at risk’ housebound patients, visit them at home for a face-to-face generalist assessment of ‘whole person’ need, undertake any identified necessary follow-up, and identify which patients benefited from the additional care.

The study was a service development, not a research project, with no formal support for evaluation attached. However, it was run on action learning principles (Cleghorn and Headrick, 1996), with a commitment to ongoing critical reflection to evaluate impact and identify areas for change. Using action learning cycle principles, the team planned and implemented care, with ongoing critical reflection to review and evolve practice.

The first learning cycle involved establishing a register of eligible patients, and then assessing and addressing needs from generalist principles (see Box 2 for more details). Patients were visited in their own homes by an experienced generalist practitioner. (Three different GPs were involved in the initial stages of the work). Assessment considered the wider biopsychosocial experiences and needs of the individual, where appropriate, also involving carers and family members. Initial visits typically lasted for 1 hour. Follow-up visits were conducted where necessary. Most patients received one to three visits in order to assess need and review and, if necessary, amend a plan of care. A minority of patients (around 20) was identified as being at continuing need and received ongoing planned visits.

Critical study sought to identify the ‘added value’ of the changes, including areas for improvement and aspects, which were less successful. The assessment appeared to contribute to reduction in polypharmacy in a group who were at high risk of complications from polypharmacy (by virtue of age, comorbidity, and social circumstances). Not everyone benefited from the additional generalist care. For about one-third of patients, generalist review did not result in any changes away from protocol-based chronic disease or medicine management. (Although for some, there was improvement in the application of medicine management and CDM, for example, in discontinuing medication that was no longer needed). In approximately two-thirds of patients, the changes were the result of a different approach to care – related to decision making about what was wrong and what needed to be done. Current CDM care was identified as creating an excessive burden for these patients, and as not being supportive of ‘health as a resource for living’. Decisions about intervention – including prescribing and associated surveillance – were therefore amended to reduce the burden. Care moved from a dedicated disease-focused model to an individualised supportive care model. Such care was resource intensive in terms of time and personnel, with complex decision making at the illness-disease interface requiring generalist skills and therefore General Practitioner’s time.

In the second cycle, the team explored whether the amount of prescribed medicine predicted burden, overprescribing, and thus a ‘need’ for generalist care. The register of ‘Complex Needs’

*Primary Health Care Research & Development* 2014; **15**: 72–79

**Box 2 Review ('study') of first Action Learning cycle for the Complex Needs Project**

WHO received care?	<p>101 patients: 62 women, 39 men. Age range 35–99 years (mean 77.6 years; median 79 years)  56 lived in own home; 16 in sheltered accommodation; 17 in a care home; 12 in a nursing home  Number of significant active chronic problems coded in patient record: range 2–12, mode = 3, mean = 3.5, median = 5</p>
WHAT care did they receive?	<p>Inappropriate medication stopped in 54 patients (average number 1.7 medicines/patient, range 1–10)  Reduction in overall number of medicines/day prescribed (baseline mean number of medicines/day = 8.5, median 8, range 3–26; End of study mean number of medicines/day = 7.6, median 7, range 0–23)  About a third of changes related to improved medicine management (stepping down the analgesic ladder, discontinuing medicines no longer needed), whereas two-thirds related to change in approach to care (exception reporting/replacing disease protocol-driven care with alternative care approach)  Level of need: 37 patients identified as 'low need' – with their needs met by existing protocols of Chronic Disease Management (CDM)/ medication review, the complex needs visit added nothing extra. Sixty-four patients identified as 'high need', needing 'something more' than standard protocol care. No statistical difference was identified in the age, sex, place of residence (own home/care home), number of chronic problems, or number of medications between the low and high need groups</p>

patients was revised to include people over 65 years on more than 11 medicines a day, regardless of housebound status. (The cut-off of 11 was made largely on practical grounds of a number of patients). A further round of needs assessment was implemented, but it quickly became apparent that the ratio of benefit:no benefit was declining. Level of polypharmacy alone was not adequate to predict burden and need for a generalist approach; rather clinicians felt the key issue was something to do with complexity – related to the nature and number of problems faced by an individual. Reflection within the team suggested risk factors for burden included: being in a period of transition (eg, a change in home circumstances, being newly out of hospital, having a new diagnosis, or recent change in care) and unstable mental health problems, including dementia. It was also noted that the population at need was more transient than reflected by a static register; this group moves in and out of needing care. The third learning cycle is ongoing, seeking to focus care on highest risk patients, but with

ongoing difficulties in differentiating those at most need.

**Critical reflections**

We describe the introduction of additional resource for the assessment of a group of patients identified as being 'at risk' of need by practitioners at a UK General Practice. For some patients, the additional resource simply supported improved delivery of existing protocols of care, including medicine management, rather than a change in approach. Observations raise questions about why known standards of care are not being successfully implemented in current practice, and why such problems seem not to be highlighted by current quality mechanisms.

However, generalist assessment also identified a group of patients whose needs, when viewed from a person rather than a disease perspective, were not being met by standard protocol-based CDM. For these patients, usual care contributed to an additional illness burden interpreted by patient and practitioner

*Primary Health Care Research & Development* 2014; **15**: 72–79

as outweighing any potential benefit. This group was identified as experiencing ‘overprescribing’. We suggest that ‘overprescribing’ can therefore be described as polypharmacy, which creates a burden for the individual who exceeds any perceived benefit in supporting health as a resource for living.

Generalist assessment of need in this group contributed to altered decisions about interventions, including a reduction in prescribing and associated surveillance and hence reduced burden for individuals. There is some suggestion (from R.B.’s work, Box 1) that this approach may also contribute to a reduction in burden for health services also in terms of a reduction in unplanned admissions.

Thus, our observations suggest that current systems of quality care provision for patients with chronic disease are inadequate to meet the needs of all. For some, there is inadequate implementation of known measures to improve quality. For others (in this case, two-thirds), the quality standard is in itself inadequate. Our findings highlight the importance of continued efforts to recognise and overcome barriers to good General Practice (as the community delivery of protocol-based CDM). However, importantly, they also indicate the need, at least for some patients, for additional resource to support delivery of high-quality generalist practice.

Additional resource was needed to identify patients experiencing overprescribing, and to implement an alternative approach to care. Our review suggests that a generalist approach may have a positive impact on polypharmacy, at least for this patient group. However, we cannot say whether the changes are sufficient to justify a change in current policy – whether ‘different’ is ‘better enough’ to justify a shift in strategic direction for services. We must consider whether the overall benefit – for individuals and the collective community – justifies the investment.

### **Developing an evidence base**

Our case study is an example of practice and practitioner-driven, development of care, underpinned by a commitment to reflective practice, and continuing professional development. However, an era of commissioned care demands more. We must also be able to demonstrate quality, health improvement, and value for money (Kings Fund, 2011).

Indeed, the Kings Fund (2011) has argued that to develop and flourish, general(ist) practice must

describe what it does ‘differently and better’ than non-generalist care. So what insights do these case studies offer us about a generalist impact on polypharmacy? And can we translate practice into evidence-based policy?

Both the Complex Needs and R.B.’s anticipatory care planning work (Box 1) suggest that a generalist approach does ‘something different’: that generalist judgement generates a different assessment of need and therefore decisions about interventions, including prescribing. These experiences from practice suggest that the impact of generalist care may include reduced prescribing and burden on individual patients, as well as reduced unplanned admissions and therefore burden on acute services. However, such care is more resource intensive, and as such represents a potential opportunity cost elsewhere. It is not possible from these service development projects to describe whether the observed changes were because of the introduction of a generalist approach, the result of increased contact time with patients, or simply a non-replicable effect of individual practitioners and practice. Against current markers of quality in General Practice, care may even be considered to have declined. The approaches described in these studies were associated with increased levels of exception reporting from the UK General Practice CDM quality standards. Low levels of exception reporting are currently considered a marker of quality in General Practice (NHS Employers, 2011). Although others have also recognised that optimal levels of exception reporting may be too low in the Quality Outcomes Framework (QOF; Mant, 2008), we still do not know whether the impact of care justifies the cost. We need further work to provide ‘evidence to help us all make more informed decisions about when a [decision to prescribe] might do us more harm than good’ (Moynihan *et al.*, 2012). We suggest three specific areas for further development.

### **The challenge for academic and clinical communities**

We propose the need to develop a new measure of the burden of polypharmacy. Avery *et al.*’s (2012) recent study highlights concerns about safety related to polypharmacy and the need for stronger medicine management. However, our

*Primary Health Care Research & Development* 2014; 15: 72–79

work suggests that this approach may be insufficient to support future development of prescribing policy. We propose a need to look at the burden related to prescribing, which may consider both the complexity of the regime and surveillance processes, as well as the impact on patient's functional status. We are currently developing work to address this question.

We propose the need for a new concept of 'overprescribing', which considers the burden on individual patients. On the basis of our reflections, we suggest that overprescribing refers to the prescribing of multiple medications to an individual, which places a greater burden on the individual than supporting health as a resource for living. Our study to measure burden would support further development of this proposal. With an assessment tool to measure burden, we can identify levels of overprescribing, identify patient groups at risk, and thus suggest service redesign to address the problem.

Finally, we propose that generalist care (which we distinguish from General Practice as above) may reduce the impact of overprescribing. However, we recognise that this needs further evaluation. We suggest that this could be assessed using an action research study design, drawing on the service development study described here. Such a study may start, for example, with an assessment of capacity for generalist care. A whole system consideration would assess whether practitioners have the skills and resources (including time) to undertake the interpretive (Reeve, 2010) practice, whether patients are able to engage and identify enablers and constraints within the health-care system for generalist practice. This would support implementation of necessary changes to support the introduction of generalist assessment and care. Evaluation of the impact of changes would seek to describe if and when generalist care was 'different and better' than the usual CDM.

We highlight a need for partnership between clinical and academic communities. Our case studies showed that rigorous evaluation is not possible within the constraints of everyday care. Critical reflection was adequate to support the continuing professional and service development of the practitioners involved – as would be an expected part of professional practice. However, production of evidence sufficient to support the needs of external decision makers was not possible. Both

*Primary Health Care Research & Development* 2014; **15**: 72–79

case studies describe care involving complex clinical decision making, which in turn, generates complex data sets needed to both understand and evaluate the impact of care. From experience, it is not possible to adequately collect and analyse these data within the constraints of usual care. We need additional dedicated resource to undertake the formal evaluation needed to translate practice-based usual care into generalisable practice-based evidence (Mant, 2008). We now need partnerships between clinical and academic scholars to support the 'systematic assessment of effectiveness... and communication of findings in a way that allows others to benefit from [practitioners] expertise' (Shapiro and Coleman, 2000). To quote Mant (2008):

The disadvantages of constrained protocol-driven care may not be so apparent to [those outside of health care]. Therefore we need to put more effort into collecting evidence in general practice justifying the exercise of clinical judgement in usual care.

## Conclusion

In this Development Paper, we offer critical reflections on practice and service development projects, seeking to identify future directions for scholarly development. We propose a new concept of overprescribing – being polypharmacy, which places an excess burden on patients' 'health as a resource for living' over and above any anticipated benefit. In our work, the assessment of overprescribing was a judgement made by expert generalist professionals in consultation with the patient through an integration and interpretation of a whole person assessment of health and illness need. We propose approaches for the critical development and evaluation of this approach to identify an evidence-based model, which supports the identification and description of any necessary changes to policy and practice.

## Acknowledgements

J.R. is funded by an NIHR Clinician Scientist Award. Both authors acknowledge the work and support of colleagues involved in both the projects described within this paper.

## References

- Alic, A., Pranjic, N. and Ramic, E.** 2011: Polypharmacy and decreased cognitive abilities in elderly patients. *Medical Archives* 65, 102–05.
- Anthierens, S., Tansens, A., Petrovic, M. and Christiaens, T.** 2010: Qualitative insights into general practitioners views on polypharmacy. *BMC Family Practice* 11, 65.
- Aronsen, J.K.** 2006: Polypharmacy, appropriate and inappropriate. *British Journal of General Practice* 56, 484–85.
- Avery, T., Barber, N., Ghaleb, M., Franklin, B.D., Armstrong, S., Crowe, S., Dhillon, S., Freyer, A., Howard, R., Pezzolesi, C., Serumaga, B., Swanwick, G. and Talabi, O.** 2012: Investigating the prevalence and causes of prescribing errors in General Practice: the PRACtICE Study. Retrieved 6 July 2012 from <http://www.gmc-uk.org/about/research/12996.asp>.
- Bregnhøj, L., Thirstrup, S., Kristenson, M.B., Bjerrum, L. and Sonne, J.** 2007: Prevalence of inappropriate prescribing in primary care. *Pharmacy World Science* 29, 109–15.
- Chan, D.C., Hao, Y.T. and Wu, S.C.** 2009: Polypharmacy among disabled Taiwanese elderly: a longitudinal observational study. *Drugs and Aging* 26, 345–54.
- Cleghorn, G.D. and Headrick, L.A.** 1996: The PDSA cycle at the core of learning in health professions education. *Joint Commission Journal on Quality Improvement* 22, 206–12.
- Denneboom, W., Dautzenberg, M.G.H., Grol, R. and De Smet, P.A.G.M.** 2007: Treatment reviews of older people on polypharmacy in primary care: cluster controlled trial comparing two approaches. *British Journal of General Practice* 57, 723–31.
- Duerden, M., Millson, D., Avery, A. and Smart, S.** 2011: *The quality of GP prescribing. An inquiry into the quality of general practice in England*. London: The Kings Fund.
- Fox, C., Richardson, K., Maidment, I.D., Sawa, G.M., Matthews, F.E., Smithard, D., Coulton, S., Katona, C., Boustani, M.A. and Brayne, C.** 2011: Anticholinergic medication use and cognitive impairment in the older population: the Medical Research Council Cognitive Function and Aging Study. *Journal of the American Geriatric Society* 59, 1477–83.
- Freeman, G.** 2010: Generalism in medical care: a review for the Health Foundation. In RCGP 2012, *Medical generalism: why expertise in whole person medicine matters*. London: Royal College of General Practitioners. Retrieved 6 July 2012 from [http://www.rcgp.org.uk/policy/commissn\\_on\\_generalism.aspx](http://www.rcgp.org.uk/policy/commissn_on_generalism.aspx).
- Gunn, J.M., Palmer, V.J., Naccarella, L., Kokanovic, R., Pope, C., Lathlean, J. and Stange, K.** 2008: The promise and pitfalls of generalism in achieving the Alma-Ata vision of health for all. *Medical Journal of Australia* 189, 11–12.
- Heath, I.** 2011: Divided we fail. The Harverian Oration. Retrieved 6 July 2012 from <http://www.rcplondon.ac.uk/resources/harveian-oration-2011>.
- Holmes, H.M., Hayley, D.C., Alexander, G.C. and Sachs, G.A.** 2006: Reconsidering medication appropriateness for patients in late life. *Archives of Internal Medicine* 166, 605–09.
- Huang, E.S., Karter, A.J., Danielson, K.K., Warton, E.M. and Ahmed, A.T.** 2010: The association between the number of prescription medicines and incident falls in a multi-ethnic population of type-2 diabetes patients: the Diabetes and Aging Study. *Journal of General Internal Medicine* 25, 141–46.
- Illich, I.** 1974: Medical nemesis. *The Lancet* 303, 918–21.
- Kings Fund.** 2011: *Improving the quality of care in general practice*. London: The Kings Fund.
- Liu, B.C., Leung, D.S. and Chi, I.** 2011: Social functioning, polypharmacy and depression in older Chinese primary care patients. *Aging and Mental Health* 1–10 (epub ahead of print).
- Mant, D.** 2008: The problem with usual care. *British Journal of General Practice* 58, 755–56.
- May, C., Montori, V. and Mair, F.** 2009: We need minimally disruptive medicine. *British Medical Journal* 339, 485–87.
- Moynihán, R., Doust, J. and Henry, D.** 2012: Preventing overdiagnosis: how to stop harming the healthy. *British Medical Journal* 344, e3502.
- NHS Employers.** 2011: Quality and outcomes framework. Retrieved 8 March 2012 from <http://www.nhsemployers.org/PayAndContracts/GeneralMedicalServicesContract/QOF/Pages/QualityOutcomesFramework.aspx>.
- Pirmohamed, M., James, S., Meakin, S., Green, C., Scott, A.K., Walley, T.J., Farrar, K., Park, B.K. and Breckenridge, A.M.** 2004: Adverse drug reactions as a cause of admission to hospital: prospective analysis of 18 820 patients. *British Medical Journal* 329, 15–19.
- Reeve, J.** 2010a: *Interpretive medicine: supporting generalism in a changing primary care world*. London: Royal College of General Practitioners Occasional Paper Series 88.
- Reeve, J.** 2010b: Protecting generalism: moving on from evidence-based medicine? *British Journal of General Practice* 60, 521–23.
- Reeve, J., Irving, G. and Dowrick, C.** 2011: Can generalism help revive the public health vision? *Journal of the Royal Society of Medicine* 104, 395–400.
- Royal College of General Practitioners (RCGP).** 2012: Medical generalism: why expertise in whole person medicine matters. Retrieved 6 July 2012 from [http://www.rcgp.org.uk/policy/commissn\\_on\\_generalism.aspx](http://www.rcgp.org.uk/policy/commissn_on_generalism.aspx).
- Stange, K.** 2009: The generalist approach. *Annals of Family Medicine* 7, 198–203.
- Shapiro, E.D. and Coleman, D.L.** 2000: The scholarship of application. *Academic Medicine* 75, 895–98.
- Stehlik, J. and Taylor, D.O.** 2004: And an ARB makes nine: polypharmacy in patients with heart failure. *Cleveland Clinic Journal of Medicine* 71, 674–76.
- Stuck, A.E., Siu, A.L., Wieland, G.D., Adams, J. and Rubenstein, L.Z.** 1993: Comprehensive geriatric assessment: a meta-analysis of controlled trials. *Lancet* 342, 1032–36.