

Improving Use of Medicines for Older People in Long-Term Care: Contrasting the Policy Approach of Four Countries

Améliorer l'utilisation des médicaments chez les personnes âgées recevant des soins de longue durée : comparaison des politiques de quatre pays



by CARMEL M. HUGHES, PHD
*Professor, Primary Care Pharmacy
School of Pharmacy, Queen's University
Belfast, Northern Ireland*

ELIZABETH ROUGHEAD, PHD
*Associate Professor, Sansom Institute
School of Pharmacy and Medical Sciences
University of South Australia
Adelaide, South Australia*

NGAIRE KERSE, PHD, MB, CHB
*Associate Professor, Department of General Practice and Primary Health Care
School of Population Health
University of Auckland
Auckland, New Zealand*

Abstract

The quality of nursing home care for older people, including medication use and related outcomes, has been problematic in a number of developed countries. This paper compares the policy approaches to drug prescribing and administration in nursing homes adopted by four countries. The United States has led the way in terms of regulating and inspecting nursing homes, with strict requirements for prescribing psychotropic medications, commonly known as “chemical restraints.” These requirements have been facilitated by detailed data collection mandated by the US government. Although regulation has led to marked reductions in the prescribing of these agents, underused medications have received little attention. Despite similar problems with the use of psychotropic drugs, the United Kingdom, Australia and New Zealand have adopted a more generic approach to drug use in the nursing home setting, a situation that may reflect the different organization and ethos of healthcare systems in these countries. Developments in systematic medication data capture, greater collaboration and more educational feedback to prescribers and facilities would represent a major step forward in long-term care policy in these latter three countries, while a broader educational focus would further support improvements in the US setting.

Résumé

La qualité des soins dispensés dans les foyers pour personnes âgées est problématique dans plusieurs pays développés, et cette préoccupation s’est étendue à l’utilisation des médicaments et aux effets connexes. Le présent article compare les politiques adoptées par quatre pays à ce chapitre. Les États-Unis ont pris les devants en matière de réglementation et d’inspection des foyers pour personnes âgées et ont adopté des exigences strictes concernant la prescription de médicaments psychotropes, communément appelés « contraintes chimiques ». Ces exigences s’appuient sur une collecte de données détaillées, effectuée à la demande du gouvernement américain. Bien que la réglementation ait mené à une réduction marquée du nombre d’ordonnances de ces agents, les médicaments sous-utilisés n’ont pas fait l’objet d’une promotion très musclée. Même s’ils ont eu des problèmes semblables avec l’utilisation des médicaments psychotropes, le Royaume-Uni, l’Australie et la Nouvelle-Zélande ont adopté une approche beaucoup plus générique en ce qui concerne l’utilisation des médicaments dans les foyers pour personnes âgées – approche qui reflète peut-être l’organisation et l’éthos différents qui caractérisent les systèmes de santé de ces pays. Les progrès réalisés dans la capture systématique des données sur les médicaments, une collaboration accrue et une rétroaction plus informative aux prescripteurs et aux établissements constitueraient un grand pas en avant dans les politiques sur les soins de longue durée dans ces trois pays, tandis qu’un accent accru sur l’éducation favoriserait l’apport d’améliorations dans le contexte états-unien.

CONCERNS HAVE OFTEN BEEN EXPRESSED REGARDING THE QUALITY OF prescribing and medication use in older persons, particularly those in long-term care (Hughes and Lapane 2005). Policies to influence medication use in residential care vary among countries according to historical, funding and contextual factors. This paper describes the policy approaches adopted in four countries and considers evidence of the relative success of varying strategies in influencing medication use in long-term care.

We considered English-speaking countries with public funding structures for long-term care at a national level. This choice was made for ease of primary policy document review and was based on the authors' personal and professional understanding of long-term care in the differing contexts. The United States, Australia, the United Kingdom and New Zealand were selected. Canada was not eligible because funding for long-term care varied markedly among provinces (Stadnyk 2002). South Africa was excluded because long-term care in that country is largely funded by welfare organizations (Perold 2000).

For clarity, we use the term "nursing home" or "nursing home care" throughout this paper, as we are specifically referring to prescribing and care within an institutional setting for older people. Such settings include facilities that house dependent and semi-dependent older people with nursing care and social needs requiring 24-hour institutional support. In compiling the paper, we reviewed all relevant policy from each country via government websites and published policy documents. We also obtained notable research papers from the respective jurisdictions. We did not seek to undertake a systematic review of this literature, as there have been few if any rigorously conducted studies in this field. Table 1 summarizes statistical information relating to nursing homes in the four countries and provides some context to the subsequent text. Common dimensions of policy approaches considered include regulatory processes related to use of medication, standardized processes within the institutions, educational processes for prescribers and use of guidelines for prescribing. Table 2 summarizes these dimensions as applied in the countries selected for this paper.

While the health systems of these countries all vary markedly, the delivery of health services in long-term care is similar in some ways. Nurses and nursing assistants care for dependent older people in institutions with varying staffing ratios and variable input from allied health services. Doctors visit sporadically in all settings, but in the United States, medical directors of long-term care facilities are mandated and provide systematic input. Organizational features of long-term care in New Zealand and the United Kingdom mean that input by pharmacists is sporadic; however, in the USA, systematic and regulated pharmacy input is mandated via drug regimen reviews. In Australia, while not legislated, pharmacy input is a requirement via accreditation

standards. Facilities tend to be larger in the United States, although variability in size is marked in all countries.

We will first discuss the USA, which has led the way in implementing intense regulation and oversight of care provision in nursing homes.

TABLE 1. Comparative statistics relating to nursing home care in Australia, New Zealand, England and the United States

	Australia (AIHW 2004)	New Zealand*	England**	United States***
Total population	20.8m	4.2m	50.6m	301.7m
Nursing home funding	Federal government plus consumer payments	Government and consumer payments	Government and consumer payments	State and federal government, private insurance, consumer payments
Nursing home service providers	Private	Private, religious and welfare sector (not-for-profit)	Public (statutory) and private	Public (government, not-for-profit) and private
Number of nursing homes	3,056	919	11,543	17,000
Number of places	156,580	35,000	206,395	~1.9 million
Average number of places per home	51	38	~30	~105
Number of nursing home places per 1,000 persons over 70 years	84.2	108	Data not available for those > age 70	231

* Ministry of Health 2003, Kiata et al. 2005 and Statistics NZ 2005.

** Data obtained from Department of Health 2001b. Data for England only are included. Because of political changes resulting in devolution, there is no central agency from which all UK nursing home data can be accessed. However, the organization of care in the other countries (Scotland, Wales and Northern Ireland) is somewhat similar. The definition of home will include facilities that provide nursing, personal or a combination of both types of care.

*** Data obtained from Centers for Medicare and Medicaid Services 2006.

The United States: Regulate and Legislate

Nursing home care in the United States has been intensely scrutinized and criticized because of allegations of abuse and poor-quality care. A report from the Institute of Medicine (1986) detailed neglect and abuse of residents that led to premature death, permanent injury, increased disability and unnecessary fear and suffering. In relation to inappropriate psychotropic prescribing, the report stated: "Understaffed facilities may make excessive use of antipsychotic drugs to substitute for inadequate numbers of nursing staff" (Institute of Medicine 1986).

Subsequently, legislation was passed to improve care: the *Nursing Home Reform Act*, which was embedded in the *Omnibus Budget Reconciliation Act* (OBRA) of 1987, was implemented in October 1990 (Elon and Pawlson 1992; Stoudemire and Smith 1996).

TABLE 2. Framework for considering policy approaches to medication use in nursing homes in the four selected countries

	Australia	New Zealand	England	United States
Regulatory processes	Accreditation standards included in the <i>Aged Care Act, 1997</i> Medication processes included in the accreditation standards	Standards in place Specialist required to authorize prescribing of atypical antipsychotic agents	Care standards laid down under legislation	OBRA legislation Quality Indicators
Institutional processes	Pharmacist reviews Safe administration of medication part of accreditation Medication Advisory Committees recommended	Pharmacist review, no longer in place; inspections do not assess medication-related standards	Inspection as part of accreditation against care standards	Nursing homes auditors assess compliance with OBRA; sanctions and payments linked to compliance
Educational processes	National Prescribing Service	BPAC educational detailers	Pharmacist visitors to general practitioners	—
Use of guidelines	<i>Guidelines for Medication Management in Aged Care Facilities</i>	—	—	—
Medication monitoring process	None	None	None	MDS information plus consultant pharmacist input
Impact of national approach on prescribing	Reduction of hypnotics and anxiolytics, increased antidepressants Antipsychotics persistently high (25%; Snowden et al. 2005)	Impact unclear Antipsychotics (17%; Kerse et al. 2004)	Less than half of nursing homes meet medication-related code of practice	Reduced poor practice with lower antipsychotic use (20%; Hughes and Lapane 2005) Reduced hypnotic and anxiolytic use

Regulations specific to psychotropic medication state that “the resident has the right to be free from any psychoactive drug administered for purposes of discipline or convenience and not required to treat the resident’s medical symptoms” (HCFA 1995) and that each resident’s drug regimen must be free from unnecessary drugs, specifying

excessive doses, for excessive duration, without adequate indications for their use or in the presence of adverse consequences (Tessier 1993). Nursing homes that fail to meet these regulations and other indices of care are subject to a series of sanctions, ranging from financial penalties to closure of the home. OBRA has been extremely successful in reducing the prescribing of psychotropic drugs, as has been widely reported (Hughes and Lapane 2005).

The regulations have continued to develop with the inclusion of the so-called Beers's criteria, medications that should generally be avoided in older people, doses or frequencies of administrations that should not be exceeded and medications that should be avoided in older people known to have any of several co-morbidities (Beers et al. 1991), together with the use of quality indicators (QIs) covering healthcare more broadly (Nursing Home Quality Development Group 1999). In the case of the latter, routinely collected nursing home data have been transmitted via state public health agencies to a national repository. Until January 2004, there were 24 QIs, three of which pertained to psychotropic drug use and reinforced the OBRA regulations.

Two QIs represented a move away from a focus on undesirable drugs (i.e., "chemical restraints") to a focus on encouraging diagnosis and treatment of depression. Marked undertreatment of late-life depression has been highlighted (Brown et al. 2002), as depression is three to five times more common in nursing homes than among those living in the community (NIH Consensus Development Panel 1992). Recent research would suggest that treatment rates with antidepressants are increasing. This is at least partly due to the presence of the depression QI (Brown et al. 2002; Lapane and Hughes 2004).

However, there are very few QIs related to encouraging appropriate drug use in other areas that are known to be undertreated, e.g., heart failure or Parkinson's disease (Lapane et al. 1999; Gambassi et al. 2000). Therefore, it would seem that regulation has not necessarily promoted best practice and is limited in its impact; it has been more successful at preventing or reducing poor practice (Cody et al. 2002). And therein lies a potential problem with this type of regulatory approach to managing prescribing: an external factor as exemplified by legislation will work only for those specific drugs highlighted by the legislation and subject to scrutiny by surveyors/inspectors. Other approaches need to be investigated if there is to be a more holistic approach to prescribing and medication use in this population.

Australia: A Systems Approach

Unlike the US model, Australia has established an ambitious and comprehensive framework for improving use of medicines across the whole community: the *National Strategy for Quality Use of Medicines* (Commonwealth Department of Health and

Ageing 2002a). After research in the 1990s showed significant problems with medication use in nursing homes (Snowdon et al. 1995; Snowdon 1999), initiatives arose for improving the use of medicines in these settings. These initiatives included medication review services, which were funded in 1998 and cover all residents (Roughhead et al. 2003). The funding, initially for pharmacist-initiated reviews, has been recently amended to ensure medical practitioner and pharmacist collaboration.

The national *Guidelines for Medication Management in Aged Care Facilities* (Commonwealth Department of Health and Ageing 2002b) have been developed and incorporated into accreditation standards, which are linked to government funding, because of concerns with quality of care. One standard specifically pertains to medication management, with criteria including safe administration and storage of medications, incident reporting mechanisms, legible and available medication orders and medication review on a regular basis (Commonwealth Department of Health and Aged Care 1998). The practice guidelines do not specify exact levels or indications for psychotropic medication, and inspections do not audit appropriate medication use, just whether processes are in place. The guidelines call for the establishment of multidisciplinary medication advisory committees for nursing homes, which are similar to drug and therapeutics committees operating in hospital settings. However, not all facilities have these in place.

While these practice developments represent a step forward, measurable effects within this setting are not yet possible owing to a complete lack of national data on medication use in nursing homes. A recent survey of nursing homes in Sydney demonstrated a reduction in hypnotic and anxiolytic use since previous comparable surveys in 1995 and 1998 (Snowdon et al. 2005). There has also been increased use of antidepressants, which may be beneficial as depression in the institutionalized elderly has been undertreated historically (Snowdon et al. 2005). However, high levels (25%) of antipsychotic medication use are still being observed (Snowdon et al. 2005). Improvements are therefore still required.

The United Kingdom: Disconnect between Process and Quality

The United Kingdom represents a system in transition in relation to nursing homes. Unlike the United States, it has not adopted punitive adversarial legislation, although regulatory changes have recently been implemented. New legislation in the form of the *Care Standards Act 2000* and the *Care Homes Regulations 2001* has been introduced to England. Regulation and inspection is undertaken by the Commission for Social Care Inspection. National Minimum Standards for Care Homes for Older People have also been introduced and form the basis on which care homes are assessed (Department of Health 2003). Equivalent legislation has been implemented in Scotland and Northern Ireland.

The current National Minimum Standards in relation to medication are seen as a code of practice and thus do not have statutory force. Appropriate prescribing is not explicitly covered under these minimum standards. The standards are quite generic and process-orientated, with an emphasis on policies and procedures, record-keeping, storage, administration, seeking advice from a pharmacist as necessary, monitoring residents receiving medication and initiating a review when required. A recent report revealed that almost half the nursing homes for older people were not meeting the minimum standards relating to medication (Commission for Social Care Inspection 2006).

The *National Service Framework for Older People*, produced by the UK Department of Health, was established to improve services through setting national standards to improve quality (rather than process) and to tackle variations in care, but is not specific to residents in nursing homes (Department of Health 2001a). Unlike the USA, the UK does not require the monitoring of psychotropic drug use. Since the NHS reforms in the 1990s, prescription support services have been available to GPs who prescribe for nursing home residents, usually in the form of referrals to advisers (often pharmacists) who offer objective, evidence-based advice and education on all aspects of drug use in primary care, including prescribing in nursing homes. Again, this approach is generic and fails to recognize that the nursing home population is unique, with a range of complex clinical issues.

Compared to the US literature, UK studies assessing the quality of care in nursing homes are sparse. This difference can be partly attributed to the lack of systematic data collection for medication use; however, some researchers (e.g., Osborne et al. 2002) have concluded that if OBRA legislation were applied to prescribing in some UK homes, these facilities would not meet the required standards. The organization Action on Elder Abuse (Select Committee on Health 2004) has called for further research into “the control of medication within care services” and the need to “publish statistical details on the prevalence of medication abuse identified within ... inspection processes.”

New Zealand: A Work in Progress

Medication policy in New Zealand in the last two decades has focused on rationalizing expenditure for pharmaceuticals through the governmental Pharmaceutical Management Agency (Pharmac). High-quality use of medication is promoted both by Pharmac and a second government agency, Medsafe, which is responsible for regulation of therapeutic products in New Zealand. More recently, a strategy for safe and high-quality use of medicines has been released (Safe and Quality Use of Medicines Group 2005), which aims to achieve safer, more effective and more appropriate use of medicines for the community as a whole, but lacks any specific reference to nursing home care.

The Aged Care Forum (ACF) in 2001 raised issues about quality of care for vulnerable groups. In response, the Ministry of Health established the Quality and Safety Project to provide recommendations to the government on a policy and service framework for ensuring the safety and quality of disability support services delivered in the community or in nursing care settings. Simultaneously, Standards New Zealand released nursing care sector standards (Ministry of Health 2001a,b). These standards included specific reference to the requirement for a pharmacist to undertake Comprehensive Pharmaceutical Care[®] (CPC) as part of development of a Pharmaceutical Review Service (PRS) for residents in long-term care. There were initial attempts to regulate the process through use of contract negotiations, but owing to lack of available training for pharmacists and shortage of funds, PRSs have been undertaken sporadically. The standards make token mention of use of chemical restraints. A major report on dementia care (Ministry of Health 2002) has recommended closer adherence to standards and resulted in incorporation of adherence to restraint minimization strategies into national contracts for nursing home care (Ministry of Health 2003). The use of certain medications, including atypical antipsychotics, is restricted to specialist prescribing, and authorization is required prior to initiation of these drugs.

While the development and implementation of accreditation standards for nursing homes in the early 2000s has improved documentation processes, there is little focus on prescribing in the accreditation procedure, published standards or contracts (Ministry of Health 2001b, 2003). The quality-focused prescribing educational processes supported by Pharmac have covered the main areas of prescribing for older people, but there is little evidence that prescribers have been influenced by the information. While ongoing support from the medication information website Medsafe is available to all prescribers, little is known about quality of medication use in nursing homes. Use of psychotropic medications has been high historically. A representative sample from 14 homes in Auckland in 2000 showed that the average number of medications was 5.6 (SD 3.1), with over 40% of residents receiving some form of psychotropic medication. Half of this group (21% of total) were receiving antidepressant medication and 17% were prescribed antipsychotic drugs (Kerse et al. 2004; Kerse 2005). A further population-based survey of long-term care in a different area of New Zealand in 2004 showed similar levels of psychotropic drug use (M. Tucker, Hawkes Bay DHB, personal communication 2005).

As data on medication use in nursing homes are not identifiable in routine databases, specific research is needed to establish trends in medication use and the potential impact of policy strategies on such use.

Discussion

It is notable that medication use in nursing homes is problematic in all these countries. With an aging population and the emergence of new medicines, including high-cost products, it is critical that we begin to understand the processes and systems that support appropriate medication use in nursing homes. In the examples cited in this paper, countries have responded differently to problems with medication use. Improvements in the United States were driven by adverse publicity and resultant concerns about the overall quality of care; the UK policy approach has focused on *processes* associated with medication use in such facilities (e.g., recording, storage, etc.) rather than the specific medications being prescribed, but there is a recognition that the latter issue needs to be addressed. By comparison, the pharmaceutical policy systems established in Australia and New Zealand were the drivers for improving use of medicines, with concerns about general quality of care in nursing homes becoming subsequent drivers.

In Australia, New Zealand and the United Kingdom, systematically collected information about medication use in nursing homes is absent, meaning that drawing conclusions about relative success of strategies is problematic. In Australia, research suggests persistent problems with high use of antipsychotics (Snowdon et al. 2005), whereas in the USA, regulation has resulted in a reduction in antipsychotic use to around 20% (Hughes and Lapane 2005). However, US regulation does not appear to encompass processes that may improve drug use more broadly. The focus is quite narrow, and while it does produce results for specified drug groups, it does not necessarily improve care overall. By contrast, the UK model has a stronger focus on medication use processes, perhaps to the detriment of prescribing processes. The limitation of the UK model is the difficulty with ensuring implementation of broad standards without legislative mandate, funding or other facilitative mechanisms. The generalist approach of primary care may need to be supplemented by more systematic involvement of pharmacists and geriatricians in seeking to improve prescribing in this population.

The Australian and New Zealand models have emphasized high-quality use of medicines generally. Neither country has taken a drug-specific or administrative process-specific focus, apart from those required as part of accreditation. The New Zealand development, being more recent, is still evolving, but has concentrated on general education aimed at health practitioners and consumers. The goal is primarily to support the publicly subsidized drug benefit program and has resulted in less focus on nursing home residents.

The Australia, New Zealand and UK approaches, with their emphasis on process, would be expected to require more time to achieve effect, as they encourage an overall approach to quality. However, lack of impact in the short term is also a potential problem, as policy makers may not persist with educational endeavours where outcomes appear not to be realized.

The USA has a well-developed monitoring and inspection process that specifically addresses the use of medications in nursing homes but does not take an educational approach. New Zealand, Australia and England lack data about medication use, and a process to monitor it. It would seem desirable for current inspection and monitoring processes to be expanded to address medication use more specifically. The data systems needed to collect medication information in a usable way could be achieved via information technology that links the nursing home, primary care and pharmacy sectors. Feedback to prescribers and nursing homes to promote more appropriate use of medications would be a natural extension of educational processes already developed in these countries. In the USA, development of an educational role for pharmacists, to supplement their regulatory role, may allow greater focus on improving medication use in general.

The OBRA regulation clearly demonstrated that a policy approach could instigate great change in a very narrow therapeutic area, but the impact on broader practice was not considered. The United Kingdom, Australia and New Zealand have adopted a more general policy approach, which may have diluted the effect at the level of practice in long-term care. Wholesale transfer of the US regulatory approach is probably not appropriate for Australia, the United Kingdom and New Zealand, but developments in systematic medication data capture, greater collaboration and educational feedback to prescribers and facilities would represent a major step forward in long-term care policy in these countries.

Correspondence may be directed to: Carmel M. Hughes, School of Pharmacy, Queen's University Belfast, 97 Lisburn Road, Belfast BT9 7BL, Northern Ireland; tel.: 44-28-90-972147; fax: 44-28-90-247794; e-mail: c.hughes@qub.ac.uk.

ACKNOWLEDGEMENTS

The authors wish to acknowledge the support of the Commonwealth Fund, the Nuffield Trust and the Health Foundation, which co-sponsored the First Harkness Fellows in Health Care Policy Alumni Conference, Pennyhill Park Conference Centre, Bagshot, England, July 17–19, 2005, during which the content of this paper was developed. The views presented here are those of the authors and not necessarily those of the Commonwealth Fund, the Nuffield Trust or the Health Foundation.

REFERENCES

- Australian Institute of Health and Welfare (AIHW). 2005 (July 21). *Residential Aged Care in Australia 2003–2004: A Statistical Overview*. Aged Care Statistics Series No. 20. Retrieved January 12, 2008. <<http://www.aihw.gov.au/publications/index.cfm/title/10144>>.
- Beers, M.H., J.G. Ouslander, I. Rollinger, D.B. Reuben, J. Brooks and J.C. Beck. 1991. "Explicit Criteria for Determining Inappropriate Medication Use in Nursing Home Residents." *Archives of Internal Medicine* 151: 1825–32.

Improving Use of Medicines for Older People in Long-Term Care

- Brown, M.N., K.L. Lapane and A.F. Luisi. 2002. "The Management of Depression in Elderly Nursing Home Residents." *Journal of the American Geriatrics Society* 50: 69–76.
- Centers for Medicare and Medicaid Services. *CMS Nursing Home Compendium, 2006*. Retrieved January 12, 2008. <http://www.cms.hhs.gov/CertificationandCompliance/12_NHs.asp>.
- Cody, M., C. Beck and B.L. Svarstad. 2002. "Challenges to the Use of Nonpharmacologic Interventions in Nursing Homes." *Psychiatric Services* 53: 1402–6.
- Commission for Social Care Inspection. 2006 (February). *Handled with Care? Managing Medication for Residents of Care Homes and Children's Homes – A Follow-up Study*. London, UK: Author.
- Commonwealth Department of Health and Aged Care. 1998. *Standards and Guidelines for Residential Aged Care Services Manual*. Canberra: Author.
- Commonwealth Department of Health and Ageing. 2002a. *The National Strategy for Quality Use of Medicines*. Canberra: Author.
- Commonwealth Department of Health and Ageing. 2002b. *Guidelines for Medication Management in Residential Aged Care Facilities* (3rd ed.). Compiled by the Australian Pharmaceutical Advisory Council. Canberra: Author.
- Department of Health. 2001a (March). *National Service Framework for Older People*. London: The Stationery Office.
- Department of Health. 2001b. *National Statistics. Health and Personal Social Services Statistics*. Retrieved January 12, 2008. <<http://www.performance.doh.gov.uk/HPSSS/index.htm>>.
- Department of Health. 2003 (February). *Care Homes for Older People: National Minimum Standards*. London: The Stationery Office.
- Elon, R. and L.G. Pawlson. 1992. "The Impact of OBRA on Medical Practices within Nursing Facilities." *Journal of the American Geriatrics Society* 40: 958–63.
- Gambassi, G., D.E. Forman, K.L. Lapane et al. 2000. "Management of Heart Failure among Very Old Individuals Living in Long-Term Care: Has the Voice of Trials Spread?" *American Heart Journal* 139: 85–93.
- Health Care Financing Administration (HCFA). 1995. *State Operations Manual*. Baltimore: Author.
- Hughes, C.M. and K.L. Lapane. 2005. "Administrative Initiatives for Reducing Inappropriate Prescribing of Psychotropic Drugs in Nursing Homes. How Successful Have They Been?" *Drugs and Aging* 22: 339–51.
- Institute of Medicine. 1986. *Improving the Quality of Care in Nursing Homes*. Washington, DC: National Academy Press.
- Kerse, N. 2005. "Medication Use in Residential Care." *New Zealand Family Physician* 32: 251–55.
- Kerse, N., M. Butler, E. Robinson and M. Todd. 2004. "Wearing Slippers, Falls and Injury in Residential Care." *Australian and New Zealand Journal of Public Health* 28: 180–87.
- Kiata, L., N. Kerse and R. Dixon. 2005. "Residential Care Workers and Residents: The New Zealand Story." *New Zealand Medical Journal* 118(1214): U1445.
- Lapane, K.L., H. Fernandez and J. Friedman. 1999. "Prevalence, Clinical Correlates and Pharmacologic Treatment of Parkinson's Disease Patients Living in Long Term Care." *Pharmacotherapy* 19: 1321–27.

- Lapane, K.L. and C.M. Hughes. 2004. "An Evaluation of the Prospective Payment System on Antidepressant Use in Nursing Home Residents." *Medical Care* 42: 48–58.
- Ministry of Health. 2001a. *Health and Disability Sector Standards*. Wellington: Standards New Zealand. NZS 8134: 2001. Retrieved January 12, 2008. <<http://www.standards.co.nz>>.
- Ministry of Health. 2001b. *Restraint Minimization and Safe Practice*. Wellington: Standards New Zealand. NZS 8141:2001. Retrieved January 12, 2008. <<http://www.standards.co.nz>>.
- Ministry of Health. 2002. *Dementia in New Zealand: Improving Quality in Residential Care. A Report to the Disability Issues Directorate*. Wellington: Author. Retrieved January 12, 2008. <<http://www.moh.govt.nz/moh.nsf/pagesmh/462?Open>>.
- Ministry of Health. 2003. *National Contract for Aged Residential Care Services*. Wellington: Author. Retrieved January 12, 2008. <<http://www.moh.govt.nz/moh.nsf/ea6005dc347e7bd44c2566a40079ae6f/6c09911dfd3a21d9cc256c77008296fb?OpenDocument>>.
- NIH Consensus Development Panel on Depression in Late Life. 1992. "Diagnosis and Treatment of Depression in Late Life." *Journal of the American Medical Association* 268: 1018–24.
- Nursing Home Quality Development Group. 1999. *Facility Guide for the Nursing Home Quality Indicators*. Madison, WI: Center for Health Systems Research and Analysis, University of Wisconsin. Retrieved January 12, 2008. <<http://www.cms.hhs.gov/MinimumDataSets20/Downloads/CHSRA%20QI%20Fact%20Sheet.pdf>>.
- Oborne, C.A., R. Hooper, K.C. Li, C.G. Swift and S.H.D. Jackson. 2002. "An Indicator of Appropriate Neuroleptic Prescribing in Nursing Homes." *Age and Ageing* 31: 435–39.
- Perold, A. and M. Muller. 2000. "The Composition of Old Age Homes in South Africa in Relation to the Residents and Nursing Personnel." *Curationis* 23: 87–94.
- Roughead, E.E., S.J. Semple and A.L. Gilbert. 2003. "Quality Use of Medicines in Aged-Care Facilities in Australia." *Drugs and Aging* 20: 643–53.
- Safe and Quality Use of Medicines Group. 2005. *Safe and Quality Use of Medicines National Strategy*. Auckland: Author. Retrieved January 12, 2005. <<http://www.safeuseofmedicines.co.nz>>.
- Select Committee on Health. 2004. *Minutes of Evidence. Memorandum by Action on Elder Abuse*. UK Parliamentary Publications and Records. Retrieved January 12, 2008. <<http://www.publications.parliament.uk/pa/cm200304/cmselect/cmhealth/111/3121102.htm>>.
- Snowdon, J. 1999. "A Follow-up Survey of Psychotropic Drug Use in Sydney Nursing Homes." *Medical Journal of Australia* 170: 299–301.
- Snowdon, J., S. Day and W. Baker. 2005. "Why and How Antipsychotic Drugs are Used in 40 Sydney Nursing Homes." *International Journal of Geriatric Psychiatry* 20: 1146–52.
- Snowdon, J., R. Vaughan, R. Miller, E.E. Burgess and P. Tremlett. 1995. "Psychotropic Drug Use in Sydney Nursing Homes." *Medical Journal of Australia* 163: 70–72.
- Stadnyk, R. 2002. "The Status of Canadian Nursing Home Care: Universality, Accessibility, and Comprehensiveness." Halifax, NS: Atlantic Centre for Excellence in Women's Health. Retrieved January 12, 2008. <<http://www.acewh.dal.ca/eng/reports/The%20Status%20of%20Canadian%20Nursing%20Home%20Care.pdf>>.
- Statistics New Zealand. 2005. Retrieved January 12, 2008. <<http://www.stats.govt.nz>>.

Improving Use of Medicines for Older People in Long-Term Care

Stoudemire, A. and D.A. Smith. 1996. "OBRA Regulations and the Use of Psychotropic Drugs in Long-Term Care Facilities. Impact and Implications for Geropsychiatric Care." *General Hospital Psychiatry* 18: 77–94.

Tessier, E.G. 1993. "Evaluating Drug Therapy: Principles and Practices for Long-Term Care Providers." In E.G. Tessier and G. Gaziano, eds., *Geriatric Drug Handbook for Long-Term Care* (pp. 165–74). Baltimore: Williams and Wilkins.

Winett, R.A. 1995. "A Framework for Health Promotion and Disease Prevention Programs." *American Psychology* 50: 341–50.