Roles for pharmacists in improving the quality use of psychotropic medicines in Residential Aged Care Facilities

Juanita L. Westbury
BPharm MSc GradDipCommPracPharm

A thesis submitted to the University of Tasmania in fulfilment of the requirements for the degree of Doctorate of Philosophy

University of Tasmania
School of Pharmacy
November 2011
DECLARATION OF ORIGINALITY

This thesis contains no material which has been accepted for the award of any other degree or diploma by the university or any other institution, except by way of background information and duly acknowledged in the thesis. To the best of my knowledge and belief, this thesis contains no material previously published or written by another person except where due acknowledgement is made in the text of the thesis, nor does the thesis contain any material that infringes copyright.

Juanita L Westbury

Nov 2011
STATEMENT OF AUTHORITY OF ACCESS

This thesis may be made available for loan and limited copying in accordance with the Copyright Act of 1968.

Juanita L Westbury

Nov 2011
ABSTRACT

The major psychotropic drug classes are antipsychotics, antidepressants and anxiolytic/hypnotics. Professional guidelines advise that these agents should only be prescribed to manage behavioural and psychological symptoms of dementia (BPSD), anxiety and insomnia in older people after non-drug measures have proved ineffective. Psychotropic medications, particularly antipsychotics and benzodiazepines, are associated with significant risks, yet they only offer modest benefits to treat these conditions. Consequently, these medications should be initiated at the lowest effective dose, monitored regularly and administered for time-limited periods. Despite this advice, many researchers have reported high rates of psychotropic drug use in Residential Aged Care Facilities (RACFs) both in Australia and internationally over the last three decades. Moreover, rates of psychotropic use in RACFs appear to be increasing, a trend which most likely reflects the growing proportion of residents with mental health conditions.

The main focus of this thesis was on antipsychotic and benzodiazepine use as the prescribing of these particular psychotropic agents is widespread, there are doubts over their effectiveness and they are strongly associated with significant risks in older people. There has also been considerable attention from both professional and regulatory authorities directed at rationalising the use of these medications. Although antidepressants are also associated with risks, there is strong evidence for their effectiveness in this population and many experts in the psychogeriatric field feel they are underutilised in the RACF setting. For this reason, the research was targeted at promoting guideline-based use of antipsychotics and benzodiazepines.

Aside from their traditional supply role, pharmacists are increasingly becoming involved in promoting Quality Use of Medicines or ‘QUM’. In Australia, at the time of this research, community pharmacies were funded to provide Residential Medication Management Reviews (RMMRs) and associated QUM strategies to each facility, such as medication audit, formulary development and nurse education. Although RMMRs were shown to improve medication use in one large controlled trial, the effect of pharmacist-led QUM strategies on RACF psychotropic prescribing has not been evaluated. Therefore, the key objective of this thesis was to assess if pharmacists could positively influence RACF psychotropic utilisation through the use of a series of facility-focused QUM strategies delivered in a dedicated intervention project.

However, before the intervention project could be developed, some vital background research was required. This is why the research for this thesis was conducted in three chronological stages. An evaluation of current psychotropic usage was initially needed to identify the main areas of concern and gauge the overall pattern of prescribing; thus, the first stage involved a retrospective cross-sectional study of prescribing data in a large representative sample of 40 RACFs throughout...
Roles for Pharmacists in improving the quality use of psychotropic medicines in Residential Aged Care Facilities

Tasmania. As professional guidelines recommend that psychotropic medications are reviewed on a regular basis and dose reductions attempted routinely, the cross-sectional measure was repeated 12 months later to evaluate the extent of review in the RACFs.

Previous studies had shown a high rate of psychotropic use in Tasmanian RACFs. This trend was also evident in this study, with an average of 42% of residents taking regular doses of benzodiazepines and 20% of residents taking antipsychotics during 2006. Although the rate of antipsychotic prescribing was similar to rates reported in Sydney and New Zealand in the same time frame, the rate of benzodiazepine use in Tasmania was three times that reported in these other studies. Further, when the RACFs were re-audited a year later, over 60% of antipsychotic and benzodiazepine medications and doses were unchanged; a finding which strongly implies a lack of review of these psychotropic agents, contrary to current professional guidance.

After obtaining an overall picture of prevalence, inappropriateness and the extent of review of antipsychotics and benzodiazepines, the second stage of this research thesis sought to gain a greater understanding of the determinants underlying their use in RACFs. A qualitative approach involving thematic analysis of semi-structured interviews with health professionals and relatives was chosen to answer the key research questions of this second stage, including why these medications are used and who is influencing their initiation and review? As there is a paucity of qualitative research related to psychotropic use in the residential aged care setting, this study not only provided valuable insight but also strongly informed the methodology of the subsequent intervention project.

It became evident that many health professionals had limited knowledge about the risks associated with psychotropic use in older people, and that reviews were conducted infrequently, if at all. Of all health professionals, nursing staff were the most influential when psychotropic medications were initiated and utilised. As a consequence of this qualitative research, the key strategies of the intervention project were primarily targeted at nursing staff and designed to offer feedback on psychotropic use to individual RACFs, provide education about the risks associated with these agents, promote professional guidelines and encourage regular review and dose reduction.

The main objective of the thesis was to design, conduct and evaluate an intervention project, trialling QUM strategies provided by community pharmacists, to facilitate the quality use of antipsychotic and benzodiazepine medications in RACFs. This third and final stage involved a large controlled trial run in 25 RACFs in the two major cities of Tasmania and was termed the ‘Reducing Use of Sedatives’ (RedUSe) project. Thirteen Hobart RACFs were recruited as the intervention group, with 12 Launceston RACFs acting as the control group.

The RedUSe intervention was run over six months during 2008 to 2009. A series of QUM strategies were offered in the intervention RACFs, including two dedicated psychotropic medication audits, nurse education and feedback, and an interdisciplinary sedative review process.
At the conclusion of the project, the prevalence of benzodiazepines was significantly reduced in intervention facilities (31.8% to 26.9%, $p < 0.005$), whereas a small non-significant increase in use was found in control homes. Likewise, antipsychotic use was significantly reduced in intervention facilities when compared to control facilities, although to a lesser extent than benzodiazepines (20.3% to 18.6%, $p < 0.05$). Over the six months of the intervention project, the proportion of dose reductions of both benzodiazepines and antipsychotics in intervention facilities was almost double the proportion recorded in control facilities.

Although several intervention projects aimed at improving RACF psychotropic use have been published, few research teams have reported cost effectiveness data, clinical outcomes for residents or evaluated the sustainability of the intervention project over the long term. Consequently, various post-analyses of intervention data were conducted to evaluate the clinical impact of the project on residents in terms of falls and behaviour, and assess cost effectiveness. In order to determine the sustainability of the intervention, a final follow-up audit measure was performed 12 months after the project was completed.

The post analyses indicated that the reduction in sedative use had limited impact on falls; however, there was a significant decrease in challenging behaviours in those facilities recording a significant reduction in antipsychotic use. Some cost savings were achieved resulting from the reduction in benzodiazepine prescribing, but savings were not observed in antipsychotic costing. Finally, the repeat 12-month audit measure demonstrated that the reduction in benzodiazepine use in the intervention RACFs was sustained, with the mean daily dose of benzodiazepines continuing to reduce even further. In contrast, RACF antipsychotic use returned to pre-trial levels and doses remained static.

The RedUSE intervention led to a statistically significant reduction in the proportion of residents in RACFs receiving benzodiazepines and antipsychotics, and the number of dosage reductions of these agents in intervention facilities was double that reported in the control facilities. These findings suggest that QUM strategies coordinated through community pharmacies, and incorporating the dissemination of local data on medication use, offer an effective approach to reduce antipsychotic and benzodiazepine use in RACFs.
ACKNOWLEDGEMENTS

I would like to acknowledge the contribution of many people who assisted with this work. Firstly, my three supervisors, especially Greg Peterson, who allowed me the scope and freedom to conduct the RedUSe project when many others thought I was overly ambitious to take it on. Greg has this uncanny knack of getting right to the nexus of a problem and offering then right advice on how to fix it. His statistical know-how was also much appreciated. Next, I would like to acknowledge the contribution of Shane Jackson who was positive and directive right from the start, showing a much needed ‘can-do’ philosophy that was sorely tested at times. Further, I would like to thank Andrew Robinson whose nursing perspective and qualitative research background was invaluable, especially for the second phase of this research.

I would also like to acknowledge the contribution of Douglas Ezzy who assisted with the qualitative methodology and research; Clare Weston with her clear thinking and concise editing of all the RedUSe educational materials; my two enthusiastic Dutch masters students, Karin and Lisette, for their assistance entering and checking RACF psychotropic data; Professor John Snowdon for coming down to Hobart and presenting at the RedUSe launch, and Dr Martin Morrissey and Dr Jane Tolman for their professional advice and support. I also need to thank my fellow researchers and administrative support team at UMORE for their support, advice and good company throughout the past 4 years.

In particular, I would like to thank all the nursing staff, the pharmacists and the GPs that participated not only in the RedUSe project and the follow-up study, but in the pre-evaluation, in the focus groups, for completing quizzes, volunteering to be interviewed and for attending the training sessions. Without the keen participation and willing feedback of these health professionals this project would not have been the success it turned out to be.

It should be acknowledged that the ‘RedUSe’ project was funded by the Australian Government Department of Health and Ageing – as part of the Fourth Community Pharmacy Agreement through the Fourth Community Pharmacy Agreement Grants Program managed by the Pharmacy Guild of Australia.

Finally, I need to acknowledge the support of my friends and family. They have all become a little too familiar with the sight of me carrying a big bag of psychotropic journal articles and my trusty laptop. I thank them for listening and not telling me I was mad all that often. My greatest acknowledgement, however, needs to go to my husband Mark who has taken the children away on far too many occasions so I can hit the books and listened to more discussions on the determinants of psychotropic prescribing than any human being should have to. Lastly, acknowledgement has to go to my three children who have had a mother preoccupied with reducing psychotropic medications in residential aged care residents for too long now. Thanks Mark, Dan, Susie and Joe for your understanding. I solemnly promise not to take the laptop with me on the next holiday.
LIST OF PUBLICATIONS

All publications listed resulted from work described in this thesis.

Peer-reviewed journal publications


Parliamentary report

Other professional Journal publications


Conference abstracts (oral presentations)


Westbury J, Peterson G, Robinson A, Ezzy D. Why are sedatives prescribed in aged care homes and what are the roles of health professionals and relatives when these drugs are used? 7th National Conference of Emerging Researchers in Ageing. Perth, November 2008.


Westbury JL. An effective approach to reduce antipsychotic and benzodiazepine use. The combined 2009 conference of the RANZCP Faculty of Psychiatry of Old Age and the APS psychology of Ageing Interest Group. Bond University. Gold Coast, November 2009.

Roles for Pharmacists in improving the quality use of psychotropic medicines in Residential Aged Care Facilities


Conference abstracts (posters)


Westbury JL. Working together to ‘RedUSe’ the use of sedatives to manage challenging behaviours in residential aged care homes. Pharmacy Australia Congress PAC10 Melbourne, October 2010.
Roles for Pharmacists in improving the quality use of psychotropic medicines in Residential Aged Care Facilities


Westbury J, Robinson A, Peterson G. Why are psychotropic medications prescribed in aged care homes to manage behaviours of concern and whose role is it when these medications are initiated and reviewed? IPA 15th International Congress. Den Hague, the Netherlands, September 2011.

AWARDS RECEIVED

The Following awards were received for work described in this thesis:

Junior Research Awards in Psychogeriatrics
Awarded at the 14th International Congress, Montreal, Canada

May 2010: Second prize. 2010. Australian Society of Medical Research (ASMR)
Medical Research Week Student Award
Awarded at the ASMR Dinner, May 2010, Hobart, Australia

October 2011: Poster Award: Best Practice Pearl. Pharmaceutical Society of Australia
Pharmacy Australia Congress 2011 (PAC11)
Awarded at the final day address, PAC11, Melbourne, Australia
TABLE OF CONTENTS

Declaration of Originality ......................................................................................................................... i
Statement of Authority of Access ............................................................................................................... ii
Abstract ..................................................................................................................................................... iii
Acknowledgements ................................................................................................................................. vi
List of Publications ................................................................................................................................... vii
Awards received ......................................................................................................................................... xi
Table of Contents ...................................................................................................................................... xii
List of Figures .............................................................................................................................................. xix
List of Tables .............................................................................................................................................. xx
List of Appendices ..................................................................................................................................... xxii
Abbreviations ........................................................................................................................................... xxiii

PART ONE: THE TREATMENT OF MENTAL HEALTH CONDITIONS IN OLDER PEOPLE .............................................................. 1

Chapter 1: An overview of old age mental health and residential aged care ................................................. 1
  1.1 The ageing population and mental health ........................................................................................... 1
  1.2 Residential Aged Care in Australia ................................................................................................... 2
  1.3 The dependency level of residents in RACFs ................................................................................... 3
  1.4 Mental health in RACFs ................................................................................................................... 4
  1.5 Barriers to the diagnosis of mental health disorders in RACFs ...................................................... 6
  1.6 Mental health care expertise in RACFs............................................................................................. 6

Chapter 2: Quality use of medicines in RACFs .......................................................................................... 7
  2.1 Quality use of medicines in RACFs .................................................................................................. 8
  2.2 The RMMR program ....................................................................................................................... 9
    2.2.1 Evaluation and refinement of the RACF RMMR program ....................................................... 10
  2.3 RACF QUM strategies .................................................................................................................... 11
    2.3.1 Evaluation of QUM services .................................................................................................... 12

Chapter 3: Psychotropic medications use in RACFs ................................................................................ 13
  3.1 Psychotropic medication .................................................................................................................. 13
  3.2 Psychotropic medication and older people ...................................................................................... 13
  3.3 Falls and psychotropic medication .................................................................................................. 14
  3.4 Psychotropic medication use in RACFs .......................................................................................... 16
  3.5 Antipsychotics ............................................................................................................................... 17
    3.5.1 Antipsychotics and movement disorders ............................................................................... 18
    3.5.2 Other adverse effects associated with antipsychotic use ................................................... 19
  3.6 Benzodiazepines .............................................................................................................................. 21
    3.6.1 Pharmacokinetics and pharmacodynamics of benzodiazepine use in older people .......... 22
    3.6.2 Adverse effects of benzodiazepines .................................................................................... 23
    3.6.3 Benzodiazepines and falls risk .............................................................................................. 24
    3.6.4 Dependence and tolerance to benzodiazepines ................................................................. 25
  3.7 Antipsychotic and benzodiazepine use and old age mental health conditions ............................. 27

Chapter 4: Management of dementia ........................................................................................................ 29
  4.1 Dementia overview .......................................................................................................................... 29
    4.1.1 Types of dementia ................................................................................................................... 29
    4.1.2 Diagnosis of dementia ............................................................................................................ 31
    4.1.3 Cognitive testing ..................................................................................................................... 31
    4.1.4 Dementia, delirium or depression.......................................................................................... 33
  4.2 Behavioural and Psychological Symptoms of Dementia (BPSD) .................................................. 33
    4.2.1 Agitation................................................................................................................................. 35
    4.2.2 Psychosis ............................................................................................................................... 35
    4.2.3 Mood disorders....................................................................................................................... 36
  4.3 Behavioural and psychological symptoms in RACFs ....................................................................... 36
    4.3.1 Impact of behavioural symptoms on relatives, carers and nursing staff ............................ 36
  4.4 Evaluation of BPSD ......................................................................................................................... 38
    4.4.1 Screening tools for behavioural and psychological symptoms ........................................... 38
    4.4.2 Detailed investigation of BPSD ............................................................................................ 38
Roles for Pharmacists in improving the quality use of psychotropic medicines in Residential Aged Care Facilities

Chapter 5: Management of anxiety

5.1 Anxiety
5.1.1 Diagnosis of late-life anxiety.................................57
5.1.2 Sub-types of anxiety disorders.................................58
5.1.3 The relationship between anxiety and depression in old age...59

5.2 The treatment of anxiety disorders
5.2.1 Non-pharmacological treatment of anxiety.....................60
5.2.2 Pharmacological treatment of anxiety.........................61
5.2.2.1 Antidepressant therapy.....................................61
5.2.2.2 Benzodiazepines.............................................62
5.2.2.3 Other drug options for anxiety.............................63

5.3 Guidelines for the use of benzodiazepines in the treatment of anxiety..................................................63

Chapter 6: Management of sleep disturbance

6.1 Sleep disturbance in older people................................66
6.1.1 Sleep changes and ageing.....................................68
6.1.2 Sleep disorders..................................................69

6.2 Insomnia..................................................................69
6.2.1 Medications and insomnia.....................................69
6.2.2 Sleep disturbances in RACFs ..................................71

6.3 Management of insomnia............................................71
6.3.1 Non-pharmacological management of insomnia...........72
6.3.2 Pharmacological management of insomnia..................74
6.3.2.1 Benzodiazepines.............................................75
6.3.2.2 Z-drugs......................................................77
6.3.2.3 Melatonin..................................................78

6.4 Guidelines for the use of benzodiazepines.......................78

Chapter 7: Overall thesis Objectives and Aims

7.1 Introduction................................................................80
7.2 The Quality Use of Psychotropic Medication in Australian RACFs ..........................................................80
7.2.1 Professional Guidelines relating to psychotropic use in older people and RACFs...........................................81
7.3 Implementing evidence-based practice.............................81
7.4 The main objective: An Intervention Project.....................82
7.4.1 Theoretical basis for the intervention project..................83
7.5 The components of the intervention................................84
7.5.1 Two exploratory stages.........................................85
7.5.2 Overall Research Plan..........................................86
7.5.3 Post-evaluation of the intervention.............................87
PART TWO: PSYCHOTROPIC MEDICATION USE IN TASMANIAN RESIDENTIAL AGED CARE FACILITIES ................................................. 89

Chapter 8: Introduction ................................................................................................................................. 90
  8.1 Psychotropic use in RACFs .................................................................................................................... 90
  8.1.1 Australian RACF psychotropic use in the 1980s and mid 1990s .................................................... 90
  8.1.2 Psychotropic use in U.S. RACFs after OBRA-87 ........................................................................... 92
  8.1.3 Psychotropic prescribing in RACFs outside the U.S. ..................................................................... 94
  8.2 Inappropriate psychotropic prescribing .............................................................................................. 96
  8.2.1 Beers criteria ................................................................................................................................... 97
  8.2.2 U.S. RACF Interpretive Guidelines ................................................................................................. 98
  8.2.3 RACF incidence of Potentially Inappropriate Psychotropic Prescribing ....................................... 99
  8.3 Assessment of multiple psychotropic use ............................................................................................ 99
  8.3.1 The sedative load model .................................................................................................................. 100
  8.3.2 The Drug Burden Index (DBI) ...................................................................................................... 100
  8.3.3 The CNS Drug model ..................................................................................................................... 101
  8.3.4 The application of multiple sedative assessment tools ................................................................. 101
  8.4 Aims and objectives ............................................................................................................................. 102

Chapter 9: Methods ........................................................................................................................................ 103
  9.1 Study design ......................................................................................................................................... 103
  9.2 Data Collection .................................................................................................................................... 103
    9.2.1 Setting ........................................................................................................................................... 103
    9.2.2 Data collection ............................................................................................................................... 103
    9.2.3 Resident variables ......................................................................................................................... 104
    9.2.4 RACF variables ............................................................................................................................. 104
    9.2.5 Assessment of Psychotropic use ................................................................................................... 104
  9.3 Statistical analysis ................................................................................................................................. 105
  9.4 Ethical approval ..................................................................................................................................... 105

Chapter 10: Results .......................................................................................................................................... 106
  10.1 Baseline data collection ..................................................................................................................... 106
    10.1.1 Resident characteristics ................................................................................................................ 106
    10.1.2 RACF characteristics .................................................................................................................. 106
  10.2 Psychotropic prevalence ..................................................................................................................... 107
    10.2.1 Pattern of psychotropic use by gender ....................................................................................... 108
    10.2.2 Pattern of psychotropic use by age ............................................................................................ 109
  10.3 RACF psychotropic pattern of use ..................................................................................................... 110
    10.3.1 Prevalence of psychotropic use by RACF size ........................................................................... 110
    10.3.2 Prevalence of psychotropic use by RACF locality .................................................................... 111
    10.3.3 Prevalence of psychotropic use by rural classification of RACF ................................................ 111
    10.4 Prevalence of potentially inappropriate psychotropic prescribing ................................................. 112
      10.4.1 Prevalence of potentially inappropriate psychotropic prescribing according to Beers criteria .... 112
      10.4.2 Prevalence of potentially inappropriate psychotropic according to U.S. Long-term facility interpretive guidelines ................................................................................................................. 113
    10.5 Prevalence of multiple psychotropic use ......................................................................................... 114

Chapter 11: Discussion ................................................................................................................................... 115
  11.1 Prevalence of psychotropic use ......................................................................................................... 115
  11.2 Determinants of psychotropic use ..................................................................................................... 118
  11.3 Appropriateness of RACF psychotropic use ..................................................................................... 120
  11.4 Multiple psychotropic agent use ....................................................................................................... 122
  11.5 Strengths and limitations ................................................................................................................... 123
  11.6 Conclusion ......................................................................................................................................... 123

Chapter 12: Introduction and Method: Assessing psychotropic variation in Tasmanian RACFs ........... 125
  12.1 Reviewing and reducing antipsychotic and benzodiazepine medication ........................................... 125
    12.1.1 Antipsychotic withdrawal ............................................................................................................ 125
    12.1.2 Benzodiazepine withdrawal ....................................................................................................... 128
  12.2 Psychotropic review practice in RACFs ............................................................................................. 130
    12.2.1 Research on psychotropic review practice .................................................................................. 131
    12.2.2 Research on psychotropic review practice in RACFs ................................................................. 131
  12.3 Aim .................................................................................................................................................... 132
  12.4 Study design ...................................................................................................................................... 132
  12.5 Data collection .................................................................................................................................. 132
    12.5.1 Data entry and analysis ............................................................................................................... 132
    12.5.2 Data entry and analysis ............................................................................................................... 133
    12.5.3 Data entry and analysis ............................................................................................................... 133
Chapter 13: Results ........................................................................................................................................... 134
13.1 Baseline data collection .......................................................................................................................... 134
13.1.1 Resident characteristics .................................................................................................................. 134
13.1.2 RACF characteristics ...................................................................................................................... 134
13.2 Psychotropic prevalence among residents ......................................................................................... 134
13.3 Extent of dosage variation of antipsychotic and benzodiazepine medication among residents ........ 135
13.3.1 Alteration in mean CPZ equivalents between 2006 and 2007 ....................................................... 135
13.3.2 Alteration in mean DZP equivalents between 2006 and 2007 ....................................................... 136
13.3.3 Initiation of new psychotropic medication .................................................................................... 136
13.3.4 Alteration in psychotropic medication dose from 2006 to 2007 ................................................... 137

Chapter 14: Discussion ................................................................................................................................. 138
14.1 Review of psychotropic medication .................................................................................................... 138
14.2 Strengths and limitations ..................................................................................................................... 140
14.3 Conclusion ............................................................................................................................................ 140

PART THREE: DETERMINANTS OF PSYCHOTROPIC MEDICATION USE IN RACFS .................................................. 141

Chapter 15: Introduction .............................................................................................................................. 142
15.1 The determinants of psychotropic prescribing .................................................................................... 142
15.2 Prescribing decisions ............................................................................................................................ 142
15.3 Factors influencing prescribing in RACFs .......................................................................................... 143
15.3.1 External factors ............................................................................................................................... 143
15.3.2 Internal factors ................................................................................................................................ 144
15.3.2.1 Resident factors ........................................................................................................................ 145
15.3.2.2 Relative and carer factors ........................................................................................................ 147
15.3.2.3 GP factors ............................................................................................................................... 148
15.3.2.4 Nursing staff factors ................................................................................................................ 149
15.3.2.5 Pharmacist factors .................................................................................................................... 151
15.3.3 RACF organisational culture ........................................................................................................ 152
15.4 Chemical restraint ............................................................................................................................... 153
15.5 Key research questions ....................................................................................................................... 154

Chapter 16: Methodology ............................................................................................................................ 155
16.1 Qualitative research methodology ....................................................................................................... 155
16.1.1 Types of qualitative methodologies ............................................................................................. 155
16.1.2 Grounded theory ............................................................................................................................ 156
16.1.3 Qualitative methodology chosen for this study ........................................................................... 157
16.2 Data collection method ....................................................................................................................... 158
16.3 Sampling .............................................................................................................................................. 158
16.4 The interview ....................................................................................................................................... 160
16.4.1 Interview procedure ..................................................................................................................... 160
16.4.2 The interview design ..................................................................................................................... 160
16.4.3 The interview schedule ................................................................................................................ 160
16.5 Reflexivity ........................................................................................................................................... 161
16.6 Data analysis ....................................................................................................................................... 162
16.7 Ethical approval .................................................................................................................................. 163

Chapter 17: Results ...................................................................................................................................... 164
17.1 Study population ................................................................................................................................... 164
17.1.1 The nursing staff ............................................................................................................................ 164
17.1.2 The GPs ......................................................................................................................................... 164
17.1.3 The pharmacists ............................................................................................................................ 165
17.1.4 The relatives ................................................................................................................................... 165
17.2 Interview results ................................................................................................................................... 166
17.3 Why are antipsychotics and benzodiazepines used extensively in RACFs? ..................................... 167
17.3.1 Comfort ......................................................................................................................................... 167
17.3.2 Limited one-on-one time .............................................................................................................. 170
17.3.3 Pressure to prescribe ..................................................................................................................... 171
17.3.4 Inadequate assessment before prescribing ................................................................................ 172
17.3.5 Lack of psychopharmacological knowledge .............................................................................. 175
17.3.6 Minimisation of side effects ......................................................................................................... 176
17.4 What are the barriers to the review of psychotropic medication ..................................................... 177
17.4.1 If it ain’t broke don’t fix it............................................................................................................ 178
Roles for Pharmacists in improving the quality use of psychotropic medicines in Residential Aged Care Facilities

17.4.2 It’s only a small dose

17.4.3 Are there any guidelines

17.4.4 GP-nurse communication

17.5 What are the roles of GPs, nursing staff, pharmacists and the resident’s family when psychotropic medications are initiated and reviewed

17.5.1 Nursing staff play the central role

17.5.2 GP involvement

17.5.3 Relative non-involvement

17.5.4 ‘It’s not what I do’

Chapter 18: Discussion

18.1 Why are antipsychotics and benzodiazepines used extensively in RACFs

18.1.1 Lack of time for one-on-one

18.1.2 Lack of knowledge regarding psychotropic medication

18.1.3 Pressure to prescribe and inadequate assessment

18.2 What are the barriers to the review of psychotropic medication

18.3 What are the roles of the health professionals and the resident’s family when psychotropic medications are initiated and reviewed

18.3.1 Role of the pharmacist

18.3.2 Relative involvement when it comes to prescribing decisions

18.4 Strengths and limitations of this study

18.5 Conclusion

PART FOUR: ROLES FOR PHARMACISTS TO IMPROVE THE QUALITY USE OF PSYCHOTROPIC MEDICINES IN RACFS

Chapter 19: Introduction: Interventions to improve quality psychotropic use in RACFs

19.1 Intervention framework

19.2 Interventions to reduce inappropriate RACF psychotropic medication use

19.2.1 Regulation

19.2.2 Safety warnings

19.2.3 Educational initiatives

19.2.4 Audit and feedback

19.2.5 Medication review

19.2.6 Interdisciplinary collaboration

19.2.7 Reviews on interventions to promote appropriate prescribing in RACFs

19.3 Roles for pharmacists in improving the quality use of antipsychotics and benzodiazepines in RACFs

19.4 Aims and objectives of the RedUSe intervention trial

19.5 The key objectives of ‘RedUSe’

Chapter 20: Method

20.1 Study design

20.2 Outcome measures

20.3 Data collection

20.4 Recruitment of participants

20.5 Advisory Committee

20.6 Intervention strategies

20.6.1 Guideline development and distribution

20.6.2 Consciousness-raising activities

20.6.3 Education of participant pharmacists

20.6.4 Educational strategies of RedUSe

20.6.5 Sedative review plans

20.7 Statistical analysis

20.8 Qualitative analysis

20.9 Costing study

20.10 Trial registration and Ethics

20.11 Funding

Chapter 21: Quiz validation

21.1 Background

21.2 Aim

21.3 Methods

21.3.1 Content validity

21.3.2 Construct validity

21.3.3 Re-test reliability

21.3.4 Internal consistency

Juanita L Westbury
Chapter 22: Results of the intervention

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>22.1</td>
<td>Baseline data collection</td>
<td>245</td>
</tr>
<tr>
<td>22.1.1</td>
<td>The intervention and control RACF and pharmacy sample</td>
<td>245</td>
</tr>
<tr>
<td>22.1.2</td>
<td>Facility characteristics</td>
<td>245</td>
</tr>
<tr>
<td>22.1.2.1</td>
<td>Existing RMMR program services supplied by participant RACFs</td>
<td>245</td>
</tr>
<tr>
<td>22.1.2.2</td>
<td>Existing QUM services supplied by participant RACFs</td>
<td>247</td>
</tr>
<tr>
<td>22.2</td>
<td>Training evaluation</td>
<td>249</td>
</tr>
<tr>
<td>22.2.1</td>
<td>Evaluation of pharmacist training weekend</td>
<td>249</td>
</tr>
<tr>
<td>22.2.2</td>
<td>Evaluation of RedUSe launch</td>
<td>250</td>
</tr>
<tr>
<td>22.2.3</td>
<td>Evaluation of nurse educational sessions</td>
<td>250</td>
</tr>
<tr>
<td>22.3</td>
<td>Effectiveness of nursing staff educational sessions</td>
<td>252</td>
</tr>
<tr>
<td>22.4</td>
<td>Psychotropic prevalence</td>
<td>254</td>
</tr>
<tr>
<td>22.4.1</td>
<td>Rates of antipsychotic and benzodiazepine use</td>
<td>254</td>
</tr>
<tr>
<td>22.4.2</td>
<td>Rates of overall psychotropic use</td>
<td>257</td>
</tr>
<tr>
<td>22.4.3</td>
<td>Rates of antidepressant use</td>
<td>258</td>
</tr>
<tr>
<td>22.4.4</td>
<td>Summary of the effect of the RedUSe intervention on psychotropic prevalence</td>
<td>259</td>
</tr>
<tr>
<td>22.5</td>
<td>Prevalence of potentially inappropriate prescribing</td>
<td>260</td>
</tr>
<tr>
<td>22.6</td>
<td>Prevalence of multiple psychotropic use</td>
<td>261</td>
</tr>
<tr>
<td>22.6.1</td>
<td>Co-administration of antipsychotics and benzodiazepines</td>
<td>263</td>
</tr>
<tr>
<td>22.7</td>
<td>Dose variation</td>
<td>264</td>
</tr>
<tr>
<td>22.7.1</td>
<td>Variation in dosage equivalents</td>
<td>266</td>
</tr>
<tr>
<td>22.7.2</td>
<td>Initiation of antipsychotic or benzodiazepine therapy</td>
<td>268</td>
</tr>
<tr>
<td>22.8</td>
<td>Basic costing analysis</td>
<td>269</td>
</tr>
<tr>
<td>22.9</td>
<td>Qualitative evaluation</td>
<td>270</td>
</tr>
<tr>
<td>22.9.1</td>
<td>Perceptions of the RedUSe project</td>
<td>271</td>
</tr>
<tr>
<td>22.9.2</td>
<td>Training</td>
<td>271</td>
</tr>
<tr>
<td>22.9.3</td>
<td>Psychotropic audit and checking medication records at the RACF</td>
<td>272</td>
</tr>
<tr>
<td>22.9.4</td>
<td>Sedative review plan</td>
<td>273</td>
</tr>
<tr>
<td>22.9.5</td>
<td>RedUSe newsletter and resident/relative pamphlet</td>
<td>274</td>
</tr>
<tr>
<td>22.9.6</td>
<td>Barriers to RedUSe-ing</td>
<td>274</td>
</tr>
<tr>
<td>22.9.7</td>
<td>Enabling factors and barriers to the RedUSe project</td>
<td>275</td>
</tr>
<tr>
<td>22.9.7.1</td>
<td>Enablers</td>
<td>275</td>
</tr>
<tr>
<td>22.9.7.2</td>
<td>Barriers</td>
<td>276</td>
</tr>
<tr>
<td>22.9.8</td>
<td>Conclusions from the independent analysis of the RedUSe project</td>
<td>276</td>
</tr>
</tbody>
</table>

Chapter 23: Discussion

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>23.1</td>
<td>Antipsychotic and benzodiazepine prevalence rates</td>
<td>278</td>
</tr>
<tr>
<td>23.2</td>
<td>Substitute sedative agents</td>
<td>279</td>
</tr>
<tr>
<td>23.3</td>
<td>Potentially inappropriate medication use</td>
<td>280</td>
</tr>
<tr>
<td>23.4</td>
<td>Prevalence rates of multiple psychotropic use</td>
<td>280</td>
</tr>
<tr>
<td>23.5</td>
<td>Review of sedative medication</td>
<td>281</td>
</tr>
<tr>
<td>23.6</td>
<td>Initiation of new psychotropic medication</td>
<td>282</td>
</tr>
<tr>
<td>23.7</td>
<td>Strategies of the RedUSe project</td>
<td>282</td>
</tr>
<tr>
<td>23.7.1</td>
<td>The RedUSe clinical audit</td>
<td>283</td>
</tr>
<tr>
<td>23.7.2</td>
<td>Sedative review plan</td>
<td>283</td>
</tr>
<tr>
<td>23.7.3</td>
<td>Nursing staff education</td>
<td>285</td>
</tr>
<tr>
<td>23.8</td>
<td>The auxiliary strategies of the RedUSe project</td>
<td>286</td>
</tr>
<tr>
<td>23.9</td>
<td>A combination of strategies</td>
<td>286</td>
</tr>
<tr>
<td>23.10</td>
<td>Potential applications</td>
<td>287</td>
</tr>
<tr>
<td>23.11</td>
<td>The role of pharmacists to improve the quality use of psychotropic medicines in RACFs</td>
<td>287</td>
</tr>
<tr>
<td>23.12</td>
<td>Strengths and limitations</td>
<td>288</td>
</tr>
<tr>
<td>23.12.1</td>
<td>GP participation</td>
<td>290</td>
</tr>
<tr>
<td>23.13</td>
<td>Conclusion</td>
<td>291</td>
</tr>
</tbody>
</table>

Chapter 24: Clinical outcomes study

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>24.1</td>
<td>Introduction</td>
<td>292</td>
</tr>
<tr>
<td>24.2</td>
<td>Aim</td>
<td>293</td>
</tr>
<tr>
<td>24.3</td>
<td>Method</td>
<td>293</td>
</tr>
</tbody>
</table>
### Chapter 24: Roles for Pharmacists in improving the quality use of psychotropic medicines in Residential Aged Care Facilities

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>24.1</td>
<td>Introduction</td>
<td>246</td>
</tr>
<tr>
<td>24.2</td>
<td>Methodology</td>
<td>250</td>
</tr>
<tr>
<td>24.3</td>
<td>Analysis</td>
<td>258</td>
</tr>
<tr>
<td>24.3.1</td>
<td>Study design</td>
<td>293</td>
</tr>
<tr>
<td>24.3.2</td>
<td>Data collection</td>
<td>293</td>
</tr>
<tr>
<td>24.3.3</td>
<td>Assessment of clinical outcome data</td>
<td>293</td>
</tr>
<tr>
<td>24.4</td>
<td>Statistical analysis</td>
<td>294</td>
</tr>
<tr>
<td>24.5</td>
<td>Results</td>
<td>294</td>
</tr>
<tr>
<td>24.5.1</td>
<td>Baseline data collection</td>
<td>294</td>
</tr>
<tr>
<td>24.5.2</td>
<td>Clinical outcomes</td>
<td>295</td>
</tr>
<tr>
<td>24.5.3</td>
<td>Follow-up</td>
<td>295</td>
</tr>
<tr>
<td>24.5.4</td>
<td>Challenging behaviour</td>
<td>297</td>
</tr>
<tr>
<td>24.6</td>
<td>Discussion</td>
<td>298</td>
</tr>
<tr>
<td>24.7</td>
<td>Strengths and limitations</td>
<td>299</td>
</tr>
<tr>
<td>24.8</td>
<td>Conclusion</td>
<td>300</td>
</tr>
</tbody>
</table>

### Chapter 25: Follow-up study

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>25.1</td>
<td>Introduction</td>
<td>301</td>
</tr>
<tr>
<td>25.2</td>
<td>Aim</td>
<td>301</td>
</tr>
<tr>
<td>25.3</td>
<td>Research design</td>
<td>302</td>
</tr>
<tr>
<td>25.3.1</td>
<td>Setting</td>
<td>302</td>
</tr>
<tr>
<td>25.3.2</td>
<td>Assessment of psychotropic use</td>
<td>302</td>
</tr>
<tr>
<td>25.3.3</td>
<td>Data collection</td>
<td>303</td>
</tr>
<tr>
<td>25.3.4</td>
<td>Recruitment of RACFs</td>
<td>303</td>
</tr>
<tr>
<td>25.4</td>
<td>Statistical analysis</td>
<td>304</td>
</tr>
<tr>
<td>25.5</td>
<td>Ethical approval</td>
<td>304</td>
</tr>
<tr>
<td>25.6</td>
<td>Results</td>
<td>304</td>
</tr>
<tr>
<td>25.6.1</td>
<td>The overall effect of RedUSe on benzodiazepine rates from baseline to follow-up</td>
<td>305</td>
</tr>
<tr>
<td>25.6.2</td>
<td>Psychotropic variance</td>
<td>306</td>
</tr>
<tr>
<td>25.6.2.1</td>
<td>The overall effect of RedUSe on daily diazepam equivalence from baseline to follow-up</td>
<td>307</td>
</tr>
<tr>
<td>25.6.2.2</td>
<td>The overall effect of RedUSe on antipsychotic rates from baseline to follow-up</td>
<td>308</td>
</tr>
<tr>
<td>25.6.3</td>
<td>General psychotropic use</td>
<td>309</td>
</tr>
<tr>
<td>25.7</td>
<td>Discussion</td>
<td>311</td>
</tr>
<tr>
<td>25.8</td>
<td>Strengths and limitations</td>
<td>312</td>
</tr>
<tr>
<td>25.9</td>
<td>Conclusion</td>
<td>313</td>
</tr>
</tbody>
</table>

### Chapter 26: General conclusion

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>26.1</td>
<td>General conclusion</td>
<td>314</td>
</tr>
<tr>
<td>26.2</td>
<td>Future directions</td>
<td>317</td>
</tr>
<tr>
<td>26.2.1</td>
<td>The refinement and expansion of the RedUSe project</td>
<td>317</td>
</tr>
<tr>
<td>26.2.2</td>
<td>The investigation of clinical and cost effectiveness outcomes</td>
<td>317</td>
</tr>
<tr>
<td>26.2.3</td>
<td>Barriers and facilitators to nursing involvement in medication review process</td>
<td>317</td>
</tr>
<tr>
<td>26.3</td>
<td>Roles for pharmacists in improving the quality use of psychotropic medicines in RACFs</td>
<td>317</td>
</tr>
</tbody>
</table>

### REFERENCES

<table>
<thead>
<tr>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>320</td>
</tr>
</tbody>
</table>

### APPENDICES

<table>
<thead>
<tr>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>345</td>
</tr>
</tbody>
</table>