Medication use amongst older Australians: Analysis of the Australian Longitudinal Study of Ageing (ALSA) data

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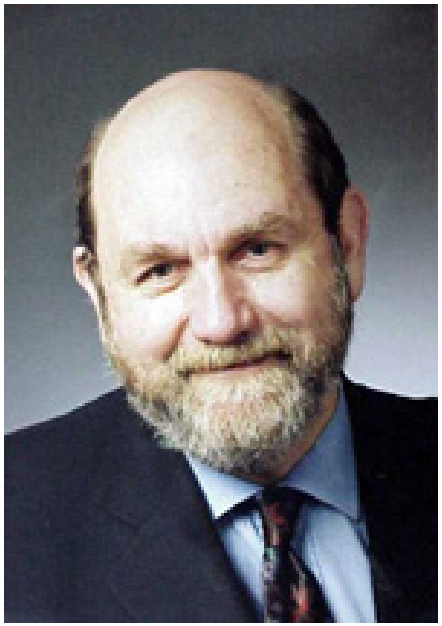
Medication Use

- Other speakers have presented some of the general issues concerning use of medicines by older adults
- Aim of this Presentation:
  - Snapshot of medication use among local sample – ALSA
  - Prescription, OTC, CAM
  - Some implications, e.g., for falls

Australian Longitudinal Study of Ageing (ALSA)



Gary Andrews

2 May 1938 – 18 May 2006

A population-based panel for exploring the complexity of normative ageing

Baseline: 1992, N= 2087; 565 couples

equal men & women

88% Australian or UK born

2014 - Wave 13 (N = 94) 75% Women

Now - 'oldest-old', >85 years, M = 89.7

January 2014: 1,806 (86%) deaths

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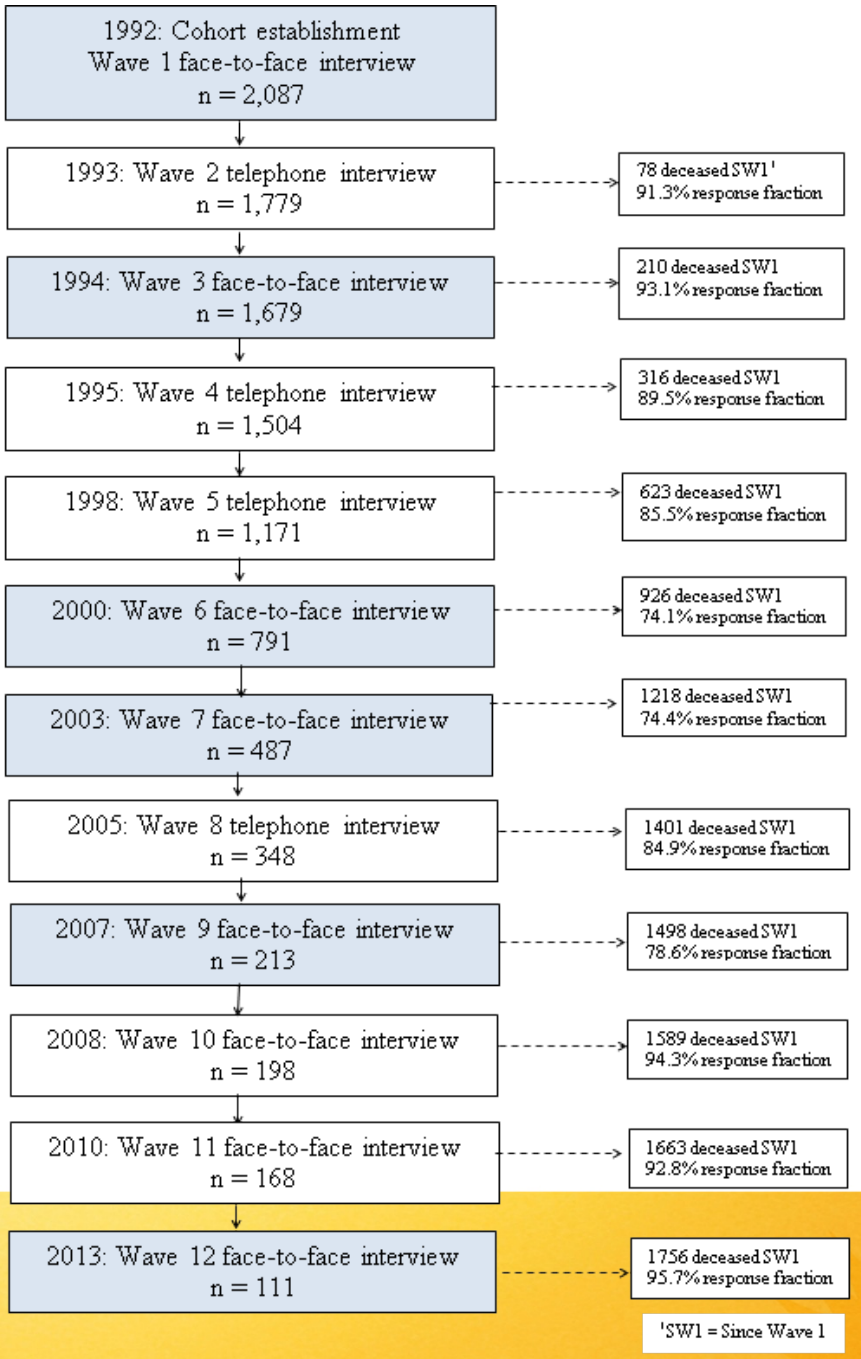
Mode of interview and number of participants over time in the ALSA



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Methods

- **Quantitative Approach**
  - **Home Interview**
  - Clinical Assessment
  - Self-complete Questionnaires
- **Qualitative Approach**
  - Open-ended Question after Clinical Assessment
    - *What are your hopes and fears for your/the future?*
  - Specific Sub-studies: Sleep, Widowhood, Resilience

1994 W3: Age 80

Interviews & Assessments at Participant's Home

2010 W11
Age 95

2013 W12:
Age 99

(Female – 482)

Data Acquisition

- W1, W6, W9: Asked to present all drug containers; recorded dose, reason for script, duration taken
- W3: Asked about changes to medication usage and containers
- W7+: Data from HIC/PBS

- Mixture of methods mixed blessing

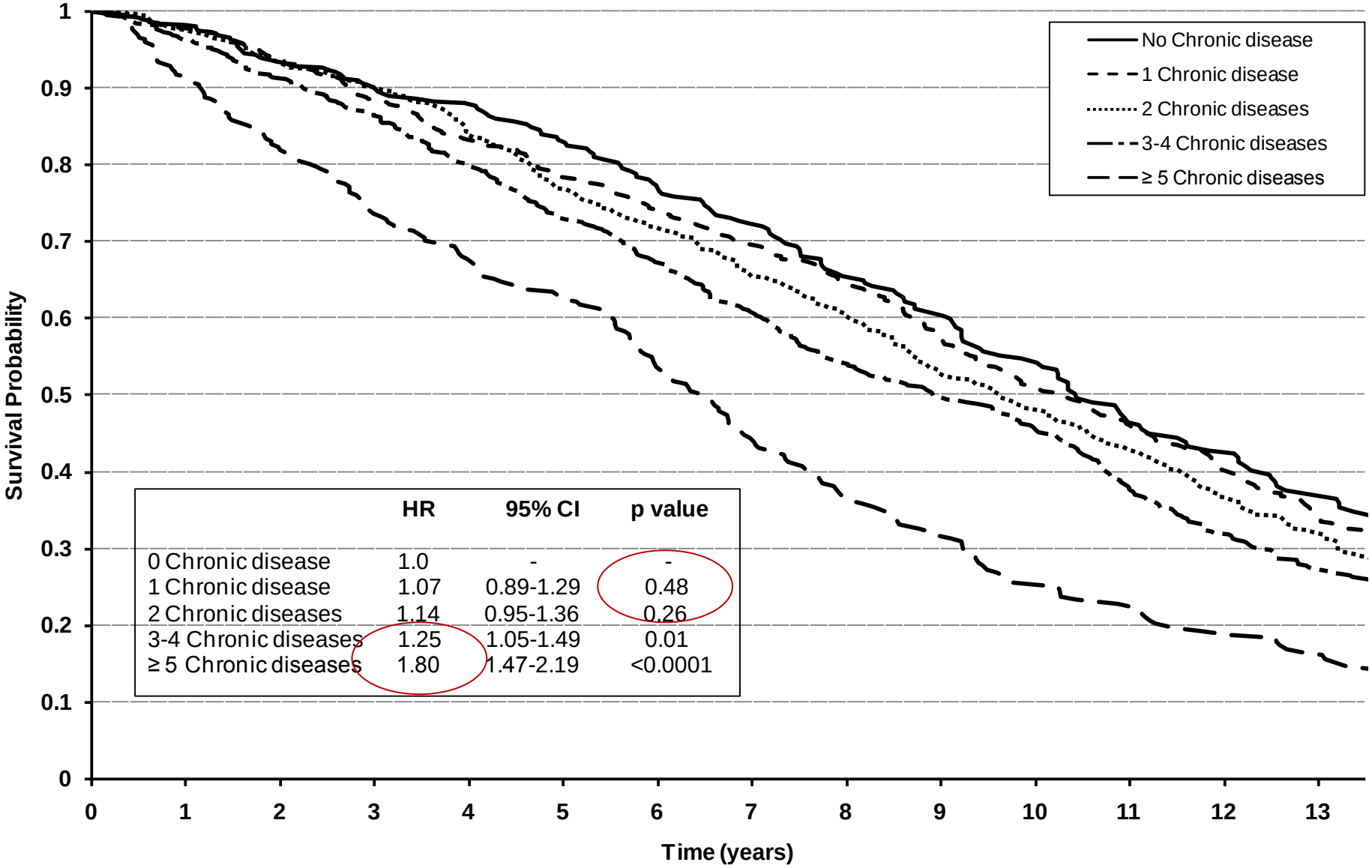
Bio-**Psych-Social** Approach

- Psychological: Affect, Cognition, Morale
- Social: Networks, Living Arrangements, Participation, Marital Status, Work History
- Functional: Activities, Falls, Mobility
- BIO…

Bio-Psycho-Social Approach

- Self-reported health: 'poor' – 'excellent'
- [Medication Use]
- Morbidity (baseline)
  arthritis most common, then CVD, hypertension, GI disease, 'mental health problems' (mostly with others)
- Mortality (1992 +14 years) – increased by 25% if 3-4 diseases vs 80% ≥5, *cf.* none

Caughey et al. (2010)



	HR	95% CI	p value
0 Chronic disease	1.0	-	-
1 Chronic disease	1.07	0.89-1.29	0.48
2 Chronic diseases	1.14	0.95-1.36	0.26
3-4 Chronic diseases	1.25	1.05-1.49	0.01
≥ 5 Chronic diseases	1.80	1.47-2.19	<0.0001

Median Survival Time & Distribution, Given Baseline Morbidity

- no chronic diseases 10.4 years (12%)
- 1 - 10.2 (23%)
- 2 - 9.6 (24%)

- 3-4 - 8.9 (28%)
- ≥5 - 6.4 (13%)

(adjusted for age, gender, residential status).

By implication …

- the greater the number of co-morbid diseases

… the greater the number of medications

- so poly-pharmacy as much as poly-morbidity at play here…
- limitation

Medication Topics Covered

- Baseline: Overview of medication use
- Over Time: Use of OTC and CAMs
- Psychotropic drug use - relationship to falls and fractures

Baseline Overview

- 89% taking at least one medication
- Average: 3.2 medications (SD 2.4)
- ~25%: taking at least five medications
- One third using non-prescription and prescription combinations
- 20% - were non-prescription

Anatomical Chemical Therapeutic Classification (WHO)

- To code medications
- Groups according to organ or system on which they act
- Results for 1993 Version

  C = Cardiovascular System

  N = Nervous System

  A = Alimentary System and Metabolism

10 Most Common Medications Baseline

ATC code	Generic name	%
N02BA01	Aspirin	23
N02BE01	Paracetamol	15
C03CA01	Furosemide (diuretic)	14
C01AA05	Digoxin (cardiovascular)	9
C07AB03	Atenolol (beta blocker)	8
C03DB01	Amiloride (diuretic)	7
C01DA08	Isosorbide Dinitrate (vasodilator)	6
C02EA01	Antihypertensives	6
A02BA02	Ranitidine (ulcers)	5
C01DA02	Glyceryl trinitrate (angina)	5

Roughhead 1993

With Ageing …

- polypharmacy, multiple (co)morbid illnesses and physiological changes:

➢ Can increase the risk of adverse drug reactions, hospitalizations, etc

- Use of OTC and CAMs is understudied in older adults, especially in Australia & over time

Non-prescription (self-) medications

- Over the Counter (OTC) Medicines
  - E.g., antacids, antihistamines
- Complementary and Alternative Medicines (CAM)
  - E.g., herbal and traditional medicines
- Estimates of 33% to 50% older people report using 1 or more
- ALSA – less usage

Goh, Vitry, Semple, Esterman, Luszcz 2009

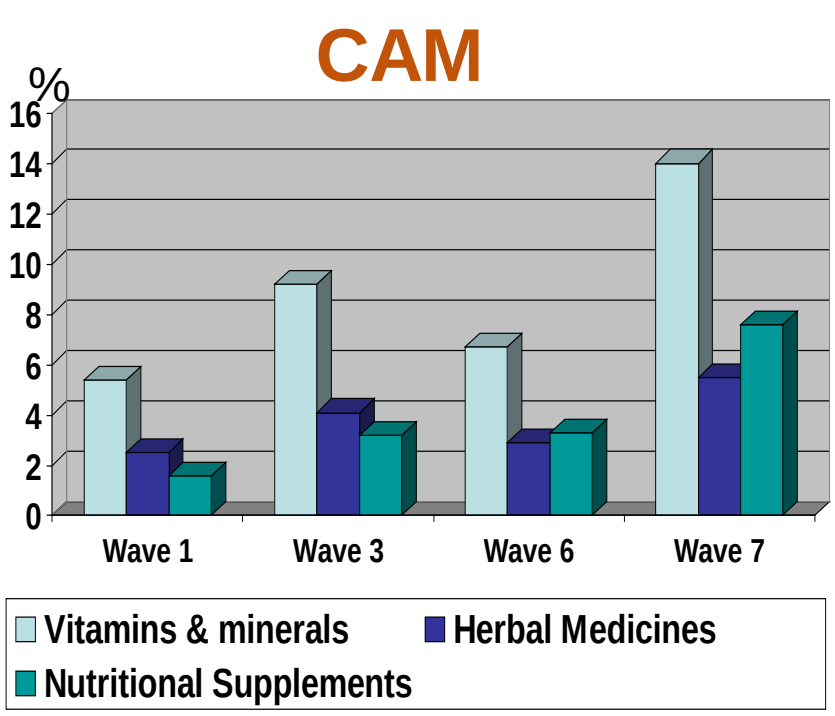
Self - Medication

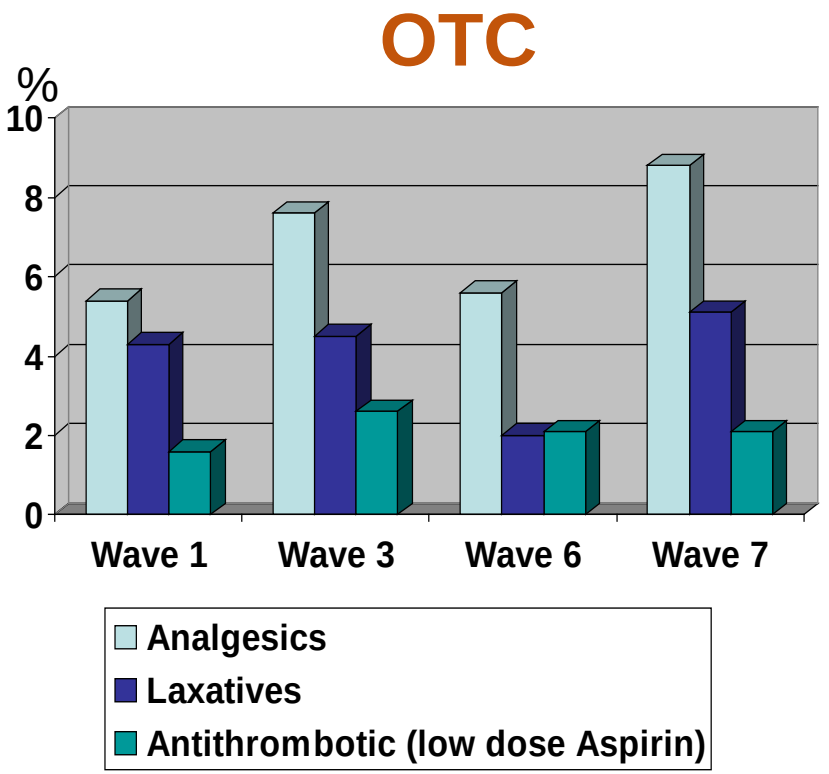
	1992-1993		1994-1995		2000-2001		2003-2004	
	Wave 1	N = 2087	Wave 3	N =1679	Wave 6	N =791	Wave 7	N =487
Variable	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
CAM/OTC	404	19.4%	460	27.4%	140	17.7%	173	35.5%
OTC	268	12.8%	278	16.6%	79	10%	83	17%
CAM	180	8.6%	241	14.4%	71	9%	118	24.2%

- No obvious temporal trend or pattern of preferred use
- Overall about 10 – 35% use one or both

Goh, Vitry, Semple, Esterman, Luszcz 2009

Results:
Top classes of CAM and OTC drugs used





Who Self-prescribes?

- Examined Demographics
- Do Age, Gender, Education, Income level or Self-rated Health affect OTC or CAM use?
- OTC – no significant effects
- CAM – more used by women and at younger ages (65-79 vs $\geq$ 80)
  - used for enhancement of general health, boosting of immune system

Psychotropic Rx and Falls

- Consequences or 'side effects'
- >65 years:
  33% incidence of falls
  30% accompanied by fractures or other injuries
  if hospitalised, 50% die within 12 months

Risk factors for falling

- **environmental** (e.g., poor lighting, loose carpets, slippery flooring, lack of handrails)
- **intrinsic** (e.g., weak muscle strength or impairment in balance, gait, vision, or cognition)
- **extrinsic** such as use of *certain medicines* or polypharmacy

Method

- 1492 people: waves 1 (1992) and wave 3 (1994)
- 'Persistent Users': at both waves - 22% (325) vs non-users (1167) [others excluded (187)]
- Psychotropic medicines recorded
  - Antipsychotics – 13%
  - Anxiolytics - 31%
  - Hypnotics and sedatives – 12%
  - Antidepressants – 32%
- Confounders: e.g., gender, arthritis, cognition, depression, balance, gait, strength, other Rx

Vitry, Hoile, Gilbert, Esterman, Luszcz 2010

More Persistent Users

- female (61.5% vs. 46.6%)
- older (78.5 years vs. 77.1 years)
- living in residential aged care (9.2% vs. 2.6%)
- experiencing dizziness (41.5% vs. 20.1%)
- poorer mobility (23.7% vs. 12.5%)
- cognitive impairment (17.2% vs. 11.6%)
- arthritis (63.4% vs. 49.4%)
- cataract (53.4% vs. 23.2%)
- history of stroke or transient ischemic attack (16.6% vs. 8.6%)

- Number of **Falls** reported in 12 months previous to wave 3
  - 540 fell (36%)
  - 2.5 (6.3 S.D.) in non-users vs. 3.4 (9.9) in persistent users
- Gender modified Risk for Users:

➢ **F - IRR = 1.77;** (95% CI = 1.54–2.05; p < 0.0001);

➢ **M - IRR = 1.03;** (95% CI = 0.85–1.26; p = 0.72)

➢ **F** - after **BMI** adjustment, **IRR = 1.22**
(95% CI = 1.02–1.45; p < 0.015)
underweight & obese

- **Fractures** in the previous 2 years

  persistent users (9.5% or 30)
  non-users (3.9% or 45)
- Gender again modified risk for Users:

➢ **F IRR = 2.54;** (CI = 1.57–4.11; p < 0.0001)

➢ **M IRR = 0.66;** (CI = 0.15–2.86; p = 0.584)

➢ **F** > BMI adjustment: **IRR = 1.92**
(p < 0.015, CI = 1.13–3.24). [underweight]

- Despite some group differences between users and non-users:
- Only additional effects attributable to
  - Gender: female users more falls + fractures
  - BMI: > Falls if underweight or obese
    > Fractures if underweight
- Persistent use of Psychotropic Drugs is significant risk factor for these older women
- > frailty, osteoporosis, dosage/duration?

Outlook

- 'Snapshot' reveals that only limited attention has been given in ALSA to understanding medication use patterns or their implications
- Other domains suggest relatively 'healthy' sample, -> underestimate patterns in wider community of older adults

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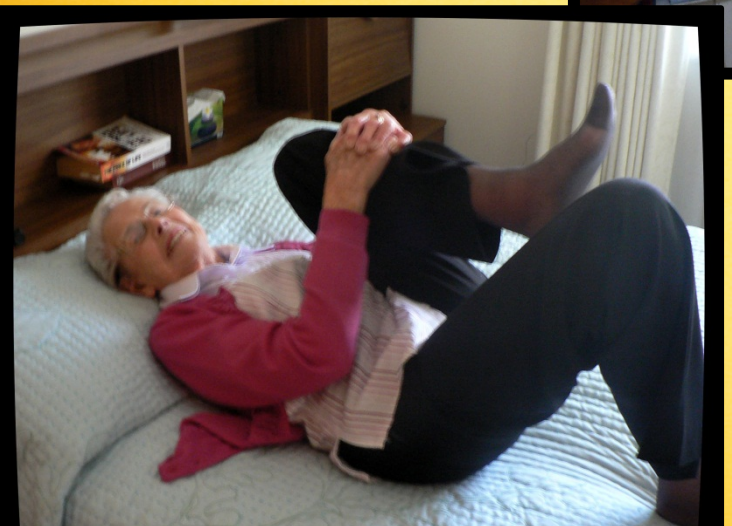
Ageing Well



Thank You!