Medications

- Aspirin 100mg daily
- Clopidogrel 75mg daily
- Atorvastatin 80mg nocte
- Diltiazem CD 240mg daily
- Frusemide 80mg BD
- Isosorbide mononitrate 60 daily
- Prazosin 2.5mg BD
- Buprenophine patch
- Oxazepam at night
- Risedronate 35mg weekly
- Calcium/VitD 600mg/1000U
- Allopurinol 100mg daily
- Laxatives daily
- Omeprazole 20mg daily
Guides for stopping:

- STOPP/START
- Beers criteria
- PIM
- Drug Burden Index
Medications

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Focus on Quality

THE MORE HEALTHCARE QUALITY IMPROVES, THE MORE PATIENT OUTCOMES DO TOO

See how Target: Stroke is making a difference

When medical professionals apply the most up-to-date evidence-based treatment guidelines, patient outcomes improve.
U.S. Medicare Statistics

- 20% of Medicare Beneficiaries have 5 or more chronic conditions

- Of these patients, 50% are on 5 or more medications

Gnjidic D, Hilmer S, et al. Polypharmacy cutoff and outcomes: five or more medicine were used to identify community-dwelling older men at risk of different adverse outcomes. J Clin Epidemiol 2012; 65:989-95.
Benefits of polypharmacy:

• BB in CCF or ischemic heart dz
• ACE or ARB in CCF
• Spironolactone in systolic heart failure
• digoxin
• BP treatment

• but in the frail 87yo is the evidence strong?
ACE-Inhibitors and ARBs

- Wide range of indications:
  - Hypertension
  - Secondary Prevention of stroke
  - Reduction of CVD risk
  - Prevention of progression of renal disease (CKD, Diab. Nephropathy)
  - Systolic heart failure

- Most trials excluded frail patients
  - No chance to reach trial endpoints

- Practically, often lower dosages are used
  - (? Due to fear of adverse effects?)
### Effect of beta blockers on all cause mortality in heart failure

<table>
<thead>
<tr>
<th>Trial</th>
<th>Drug</th>
<th>Treatment effect* (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SENIORS</td>
<td>Nebivolol</td>
<td>0.88 (0.71 to 1.08)†</td>
</tr>
<tr>
<td>COPERNICUS</td>
<td>Carvedilol</td>
<td>0.65 (0.52 to 0.81)</td>
</tr>
<tr>
<td>CIBIS-II</td>
<td>Bisoprolol</td>
<td>0.66 (0.54 to 0.81)</td>
</tr>
<tr>
<td>MERIT-HF</td>
<td>Metoprolol-CR</td>
<td>0.66 (0.53 to 0.81)</td>
</tr>
</tbody>
</table>

* Hazard ratios with 95% confidence intervals, except for MERIT-HF, reported as a relative risk
† Not significant
## Trial comparison

**Patient characteristics in major trials of beta blockers in heart failure**

<table>
<thead>
<tr>
<th>Drug and trial</th>
<th>Age mean (years)</th>
<th>Female (%)</th>
<th>LVEF mean (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nebivolol</td>
<td>76</td>
<td>38</td>
<td>36</td>
</tr>
<tr>
<td>SENIORS n = 2128</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carvedilol</td>
<td>63</td>
<td>21</td>
<td>20</td>
</tr>
<tr>
<td>COPERNICUS n = 2289</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bisoprolol</td>
<td>61</td>
<td>19</td>
<td>28</td>
</tr>
<tr>
<td>CIBIS-II n = 2647</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metoprolol-CR</td>
<td>64</td>
<td>23</td>
<td>28</td>
</tr>
<tr>
<td>MERIT-HF n = 3991</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NPS-Radar March 2010
Potential perils of polypharmacy in the Elderly: consistent associations

- Falls
- Cognitive decline
- Adverse drug reactions
- Frailty
- Death
Effects of polypharmacy in the Elderly

- It’s not simply the risks of polypharmacy
- Dwindling benefits of medications for single organ problems
- Diminishing chances of the patient realizing any improvement in life
Two groups of mice: young and old, four week intervention, with controls.

Given five commonly prescribed meds: simvastatin, metoprolol, omeprazole, paracetamol, citalopram

Old mice: polypharmacy caused significant decrease in locomotor activity; loss of improvement in rotarod latency; and front paw wire holding impulse, lowered blood pressure.

South Australia: older (>75yo) patients going to RCF

- Patients discharged from hospital to RCF have 25-70% one year mortality
- Patients discharged from GEM to home have 20% one year mortality
Not every 34 year old is the same
HOW TO LIVE LONGER AND FEEL BETTER

LINUS PAULING
AUTHOR OF VITAMIN-C AND THE COMMON COLD

THE NEW YORK TIMES BESTSELLER!
Identifying the tipping point
Prognostic tool applied at the tipping point or when circumstances change
The role for a RCT: “..a valid determination of a treatment’s efficacy and safety.”

- Polypharmacy = harm?
- Deprescribing = benefit?
Any prospective deprescribing studies so far?

- Garfinkel 2007
- Non-randomised, 120 intervention, 70 controls
- 12 month follow up
- Avg 3 drugs stopped per patient
- 1yr mortality: 45% in control group; 21% in study group
- Referral to hospital: 30% in control, 12% study

Garfinkel D et al. IMAJ 2007; 9: 430-34
what did those patients look like?

- age: 82 +/- 8yr
- 95% demented
- MMSE=14
- double incontinence >90%
- 10% with CCF
which medications were ceased?

- nitrates
- H2 blockers
  - antiHTN
  - diuretics
  - iron
  - sedatives
  - antidepressants
  - antipsychotics
barriers to deprescribing:

• Doctors: busy (time); lack of demonstrated safety; lack of guidelines

• Patients: attachment to medicine regime

• Staff: antipsychotics and dementia
Australian efforts

• Australian Deprescribing Network (ADeN)
• OptiMED, Perth
• South Australian Deprescribing Initiative
South Australian Deprescribing Initiative (SADI)

- In-hospital enrollment

Multi-Domain
- Patient-centred
- Expert opinion
- Gen.Pract. Involvement
- Community pharmacy involvement
Outcomes

- Mortality
- Readmission
- Patient qual.of life measures
reflection on the opening story, preventable death

• is allowing a person to die from the natural progression of a disease the same as slowly poisoning them with medications to prevent death?
Ways to improve our practice of medicine

• Deliberate practice each day
• Feedback (360)
• Clinical research
Data collection in the trenches

• Consultant physician: while listening to presentation by house officer, entering basic data
• Using checklists, data entry can be a standard part of every admission.
• Each patient admitted to hospital is entered into a study protocol.
• Potential for General Medicine patients, in city or regional Australia
www.projectredcap.org
REDCap: research data collection application

- Free
- Web-based
- Secure (HIPPA compliant)
- Dashboard/instruments can be constructed without experience
- Versatile
- Control: administrator can tailor which user has access to which tool
• **Availability** - Software is available at no cost for REDCap Consortium Partners.

• **Secure and web-based** - Input data or build an online survey or database from anywhere in the world over a secure web connection with authentication and data logging.

• **Fast and flexible** - Conception to production-level database or survey in less than one day.

• **Multi-site access** - REDCap databases/surveys can be used by researchers from multiple sites and institutions.
• **Export data to common data analysis packages** - Exports raw data and syntax files for SAS, Stata, R, and SPSS.

• **Fully customizable** - You are in total control of shaping your database or survey
How to do this:

• Find someone with a license or approach REDCap directly
• Need a server (e.g. University of Adelaide)
• Sign up for a free trial
• Decide on a title of your project
• Development phase, testing, etc.
• Production mode
www.projectredcap.org
End

Thank you