Multimorbidity and systematic reviews

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Conflict interest

• Primary research on interventions for people with multimorbidity
• Update Cochrane review due 18 months
• Seeking grant funding
• Current funding
  – Health Research Board Ireland
  – Health Services Executive, Ireland
Overview

- Multimorbidity (MM)
- Systematic review of interventions designed to improve outcomes for patients with MM
- Incorporating MM into existing systematic reviews
- MM and Guidelines
• 59 year old woman
• Living alone
• IHD; Depression; Neurological condition; Arthritis
• Multiple medications including warfarin
• Presents with pain in her right shoulder
THE ELEPHANT IN THE ROOM
Multimorbidity vs Comorbidity

Multimorbidity
in primary care and general practice

Multimorbidity and age

Prevalence (%) vs. Age (yr)

Deprivation and multimorbidity

In Scotland, people living in more deprived areas develop multimorbidity 10 years before those living in the most affluent areas.

Healthy patient £288 per year vs £2599 for person with three or more conditions (multimorbidity)
Key issues (BMJ editorial series 2012)

- “Ordering the chaos”
- Mental health
- Continuity
  - Relationship and information
- Managing medicines
- Need interventions and patient oriented outcomes
- Treatment burden
Multimorbidity and systematic reviews

• Reviews with MM as topic

• Incorporating MM into existing reviews
Interventions for improving outcomes in patients with multimorbidity in primary care and community settings: Systematic review

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Cochrane systematic review within EPOC

• Studies
  – RCTs, CCTs, CBAs and ITS

• Participants
  – Two or more conditions

• Interventions
  – Any intervention designed to improve outcomes in individuals defined as having multimorbidity
  – Primary care and community settings
  – Classification: EPOC taxonomy

• Outcomes
Results: Search

Records identified through Medline (n=15,984)
Records identified through Embase (n=2,647)
Records identified through CINAHL, CAB Health, and EPOC register (n=1,546)

Records screened (n=20,177)
Records excluded (n=20,147)

Full text articles assessed for eligibility (n=30)
Full text articles excluded, with reasons (n=17)

Studies included in qualitative synthesis (n=10)
Ongoing studies (n=3)
Included studies

- Ten studies; all RCTs
  - 3407 patients
  - 8 in USA and 2 in UK
  - Majority 6-12 months
  - 8 included patients with broad range of conditions though elderly
  - 2 focused on co-morbidities

- Overall minimal risk of bias though consideration of contamination of control patients was generally inadequate
Results: Interventions

Interventions:
- 6 organisational
- 4 patient oriented

Multifaceted including:
- Case management
- Enhanced skill mix in teams
- Structured care provision
- Patient focussed approaches such as self-care and self-management
<table>
<thead>
<tr>
<th>Intervention element</th>
<th>Study</th>
</tr>
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<tbody>
<tr>
<td><strong>1. Professional</strong></td>
<td></td>
</tr>
<tr>
<td>Health Educator</td>
<td>Eakin</td>
</tr>
<tr>
<td>Care manager (non-clinical)</td>
<td>Bognor</td>
</tr>
<tr>
<td>Clinical nurse managers</td>
<td>Boult, Katon, Lin, Sommers</td>
</tr>
<tr>
<td>Pharmacists</td>
<td>Krska</td>
</tr>
<tr>
<td>Social workers</td>
<td>Sommers</td>
</tr>
<tr>
<td><strong>2. Financial</strong></td>
<td></td>
</tr>
<tr>
<td>No study</td>
<td></td>
</tr>
<tr>
<td><strong>3. Organisational</strong></td>
<td></td>
</tr>
<tr>
<td>Structured visits and/or care plans</td>
<td>Eakin, Bognor, Boult, Katon, Krska</td>
</tr>
<tr>
<td>Structured telephone contact</td>
<td>Eakin</td>
</tr>
<tr>
<td>Enhanced multidisciplinary team</td>
<td>Boult, Katon, Lin, Sommers</td>
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<tr>
<td><strong>4. Patient oriented</strong></td>
<td></td>
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<tr>
<td>Self management support</td>
<td>Eakin, Boult, Lorig</td>
</tr>
<tr>
<td>Individual patient programme</td>
<td>Bognor, Boult</td>
</tr>
<tr>
<td>Patient education</td>
<td>Katon</td>
</tr>
<tr>
<td>Problem solving therapy</td>
<td>Lin</td>
</tr>
<tr>
<td>Peer support</td>
<td>Lorig</td>
</tr>
</tbody>
</table>
Results: overview

- Variation in participants and interventions
- Co-morbidity vs multimorbidity
  - Problems with definitions and overlap with frailty
  - May need different interventions for different groups
- Timescale
  - Improvements in medication related measures
- Targeting risk factors or specific functional difficulties may be more effective
Implications: Research

• Definition of multimorbidity challenging

• Searching and labelling:
  – MeSH term needed

• Outcomes
  – Generic across conditions
  – Physical functioning, quality of life, goal attainment

• Economic analyses needed
Systematic review conclusions

• Limited evidence with focus on co-morbid conditions or multimorbidity in older patients
• Need for clear definition of participants, and appropriate outcomes
• Suggestion that interventions may be more effective if targeted at specific risk factors of functional difficulties
• Need for well-designed intervention studies
Where does MM fit into existing reviews?

- Participants
- Interventions
- Outcomes
- Results
Participants

– Are they likely to have Co-M / MM?

– Potential exclusions?

– Balance between external validity and individualised patient-centred interventions*

Diabetes Co-morbidity

• Cohort of 424 patients with type 2 diabetes from RCT
• Results
  – 90% two or more conditions
  – 25% had five or more chronic conditions
  – 189 conditions
• Mismatch between self-report and chart review
• GP visits and medication numbers related to multimorbidity but not diabetes control

Information in Clinical Trials*

- 161 RCTs from 11 Cochrane Reviews on diabetes, heart failure, COPD and stroke
- 43.5% described the prevalence of any comorbidity among participants with the index disease
- Replicability of inclusion and exclusion criteria only fair
- Proportion exclusions for comorbidities: 0 - 55%
- Very uncommon assessment of whether comorbidities were potential modifiers of treatment effects

*Boyd, Vollenweider, Puhan. PLOS One. 2012
Interventions

- Possible different effect in MM patients?
  - Heterogeneity of treatment effect?

- Would intervention add to treatment burden in MM?
What outcomes matter in MM?

• Clinical Outcomes
  – Disease Specific Measures, Clinical quality measures, Risk factors, body weight, frailty/physical fitness

• Patient-reported Outcomes
  – Psychological, Behavior, Daily functioning, Social, Treatment burden, Shared Decision Making, Goal Setting, Satisfaction with care provision
• Health Care System
  – Health care utilization, processes of care, accessibility of services, safety
• Cost Outcomes
• Other Outcomes
  – Health care utilization, processes of care, accessibility of services, safety

Smith S, Journal of Comorbidity 2013
Results

• ? Potential for sub-group analysis
  – Impact MM on intervention effect
  – How will you define MM

• Consideration of generalisability of review findings
Challenges

• Unclear reporting in original trials

• Search strategies
  • What if disease focused review?

• Study designs
  • Pragmatic trials with quasi-experimental designs may be more likely in MM
MM and Guidelines

- Mr B: 75 yr old with Diabetes and COPD

- Mrs A: A 78-year-old woman with previous MI, type 2 diabetes, osteoarthritis, COPD and depression

Hughes et al. Age and Ageing, 2013, 42(1)
MM and Guidelines

• Mr B: 75 yr old with Diabetes and COPD
  – 5 medications (+8)
  – 6 self-care/lifestyle alterations
  – 5-6 routine primary care appointments

• Mrs A: A 78-year-old woman with previous MI, type 2 diabetes, osteoarthritis, COPD and depression
  – 11 medications (minimum, +10)
  – 9 self-care/lifestyle alterations
  – 8–10 routine primary care appointments + smoking cessation support and pulmonary rehabilitation if she chose to accept a referral.

Hughes et al. Age and Ageing, 2013, 42(1)
MM and Guidelines

- Increasing consensus on need to adapt guidelines to take account MM

- Balance between clinical utility and levels evidence

- Challenge is how to adapt them
  - Cross referencing with electronic delivery

Guthrie et al. BMJ 2012;345
Summary

• MM common and important
• Is evidence to guide policy and future research
• Should be considered for all reviews

• Challenge for EBM, guidelines and clinical care delivery but need evidence to support decision making
Thank you

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