

# 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

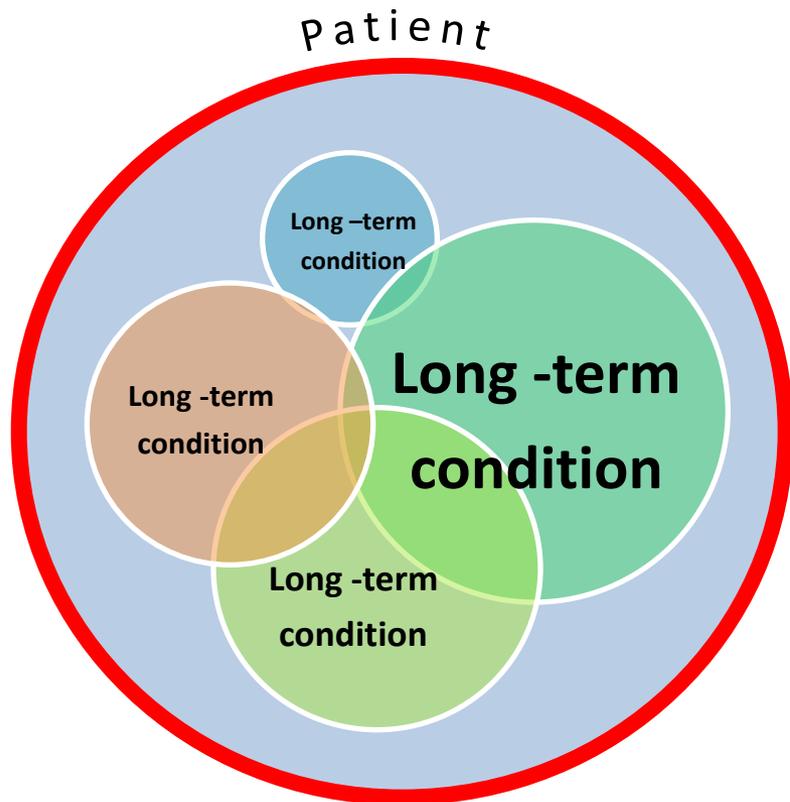


- 59 year old woman
- Living alone
- IHD; Depression; Neurological condition; Arthritis
- Multiple medications including warfarin
- Presents with pain in her right shoulder

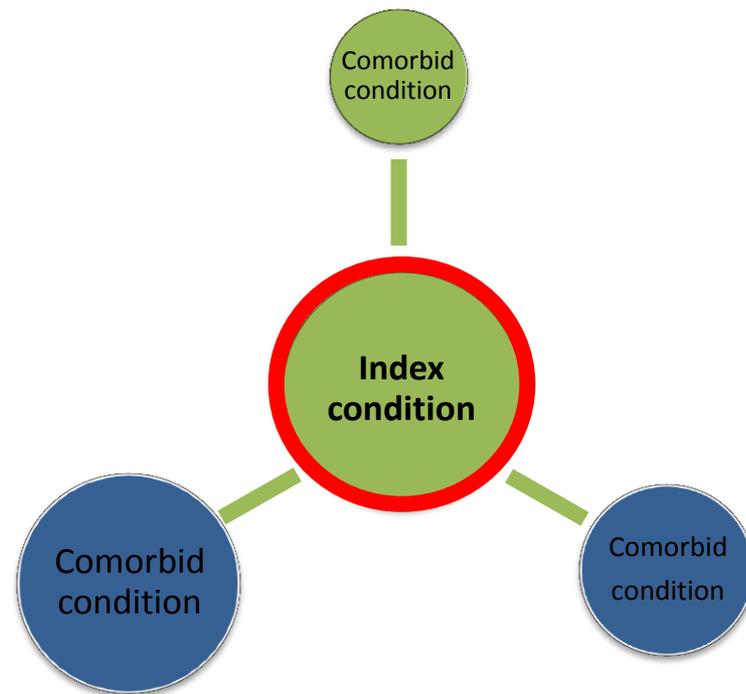




# Multimorbidity vs Comorbidity



**Multimorbidity**

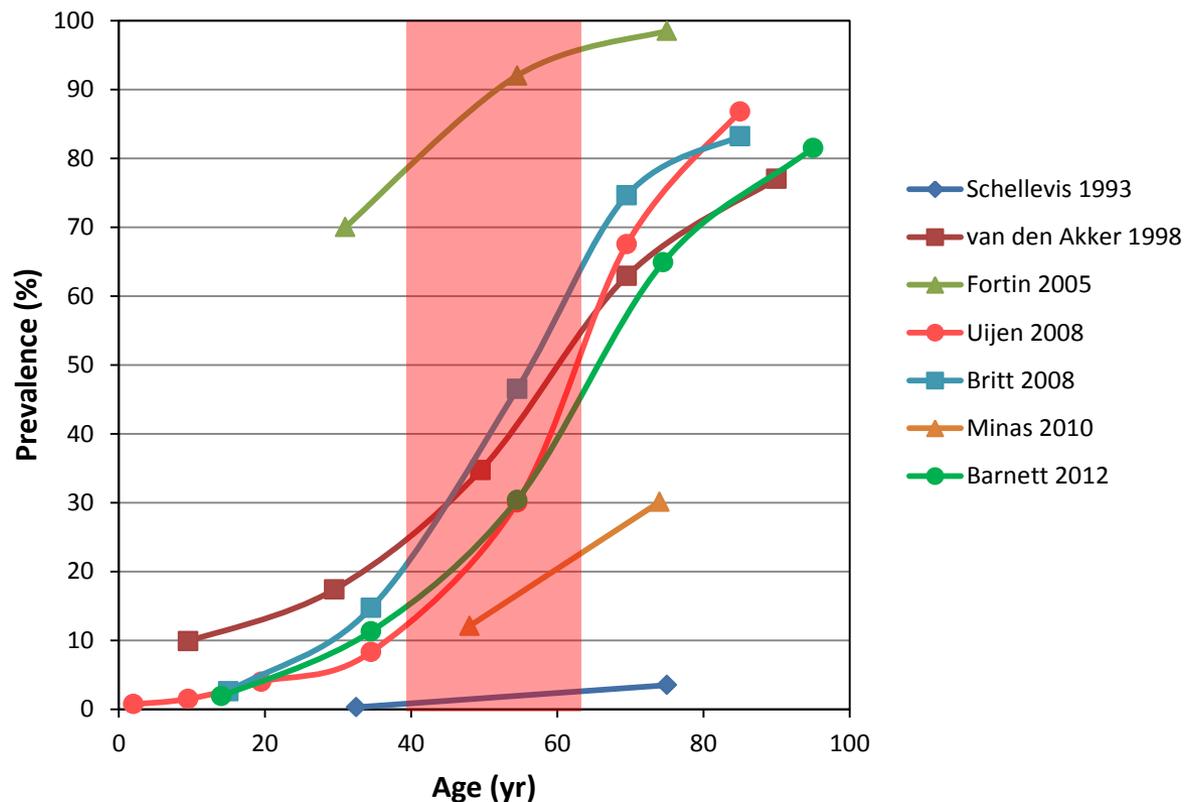


**Comorbidity**



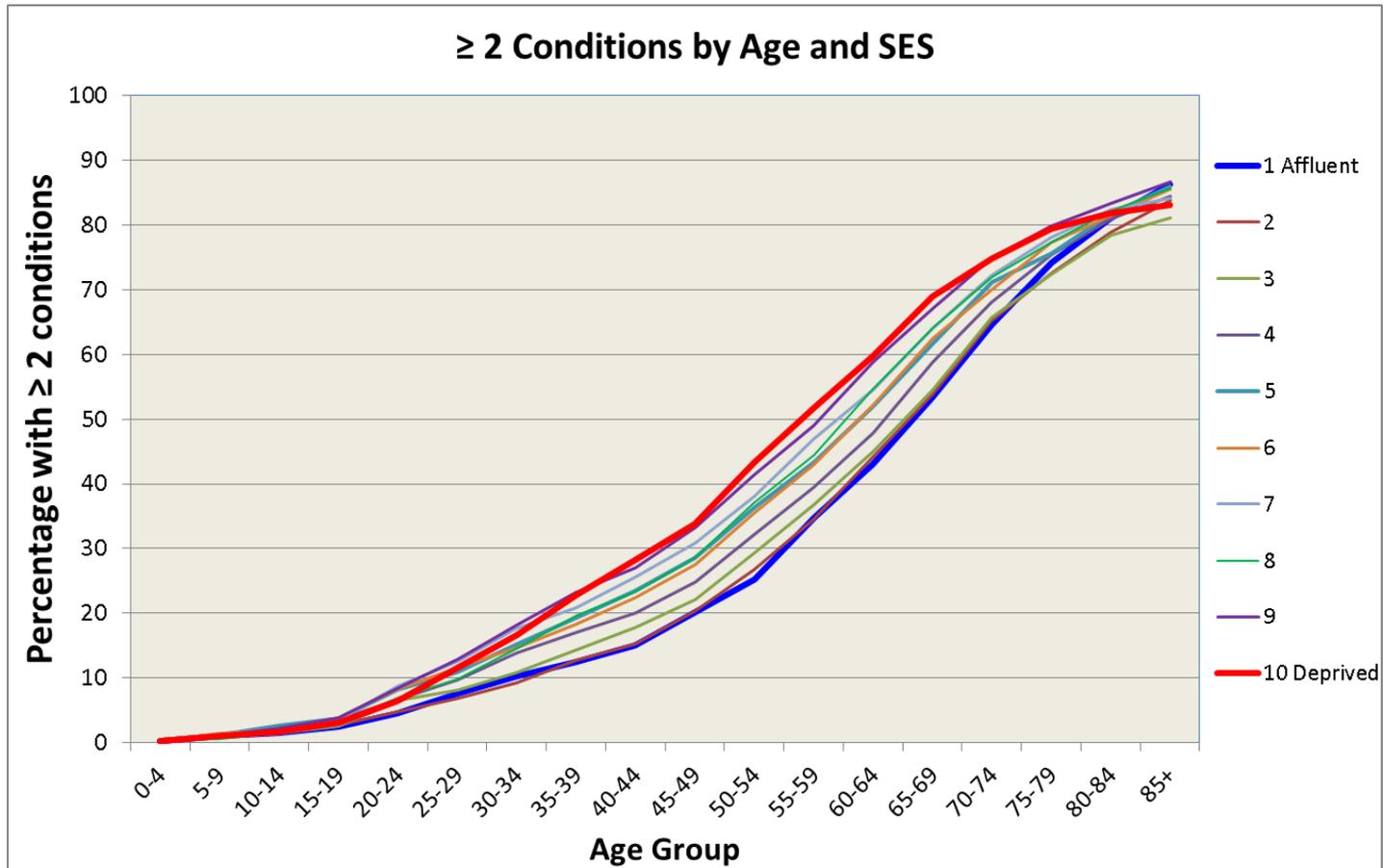
# Multimorbidity in primary care and general practice

## Multimorbidity and age



# Deprivation and multimorbidity

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



# NHS could be 'overwhelmed' by people with long-term medical conditions

One of health service's most senior figures warns there needs to be a serious rethink of how patients are cared for

Denis Campbell, health correspondent  
The Guardian, Friday 3 January 2014 19.30 GMT

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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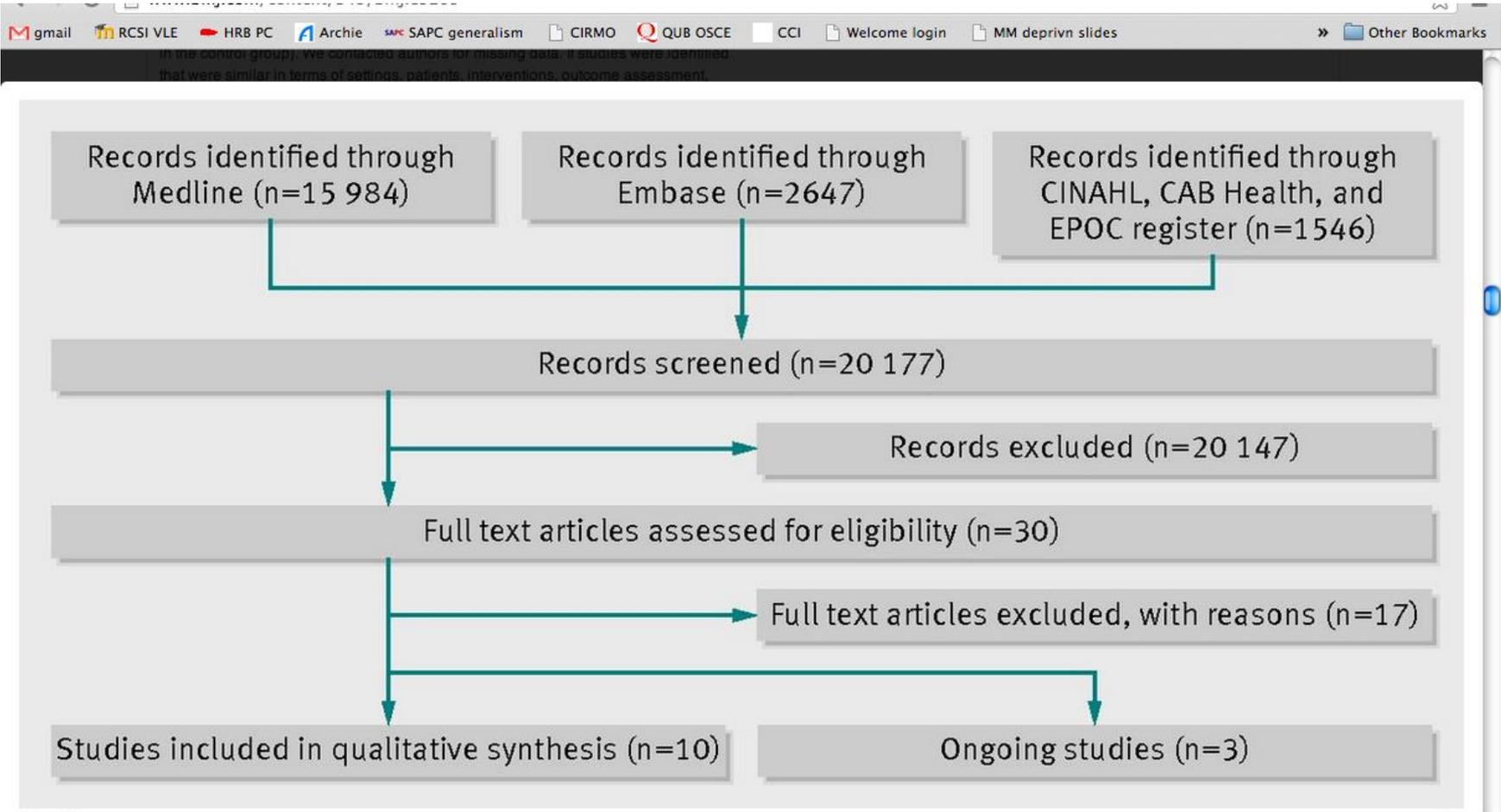
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# Cochrane systematic review within EPOC

- 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



# 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



Intervention element	Study
<b>1. Professional</b>	
Health Educator	Eakin
Care manager (non-clinical)	Bognor
Clinical nurse managers	Boult, Katon, Lin, Sommers
Pharmacists	Krska
Social workers	Sommers
<b>2. Financial</b>	
No study	
<b>3. Organisational</b>	
Structured visits and/or care plans	Eakin, Bognor, Boult, Katon, Krska
Structured telephone contact	Eakin
Enhanced multidisciplinary team	Boult, Katon, Lin, Sommers
<b>4. Patient oriented</b>	
Self management support	Eakin, Boult, Lorig
Individual patient programme	Bognor, Boult
Patient education	Katon
Problem solving therapy	Lin
Peer support	Lorig

# 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\*

\*Fortin and Smith. Improving the external validity of trials for people with multiple chronic conditions. Journal Co-Morbidity. 2013, Vol 2



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# 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



# 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



# 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.



# 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



# 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

## Acknowledgements:

Prof Martin Fortin

Prof Cynthia Boyd



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