Research in multimorbidity: dilemmas and challenges

Prof. François Schellevis MD PhD

NIVEL (Netherlands Institute for Health Services Research), Utrecht

& Dept. General Practice and Elderly Care Medicine / EMGO+

Institute, VU University Medical Center, Amsterdam
What I will talk about...

• Short history
• Current state of knowledge
• Research priorities
• Dilemmas and challenges
Take-home message

We realize that the prevailing single-disease approach in health care is not applicable any more for providing high quality of care to a substantial number of patients, but...
Take-home message

...we need more knowledge about what is best for the patient, for the professional and for the health care system
History: comorbidity

‘any distinct additional clinical entity that has existed or that may occur during the clinical course of a patient who has the index disease under study’

Feinstein, 1970
History: multimorbidity

‘the co-occurrence of multiple chronic or acute diseases and medical conditions within one person’

van den Akker et al, 1996
Current state of knowledge

What do we know?

• Multimorbidity of chronic diseases is the rule rather than the exception
• Multimorbidity has an important impact on
  • Quality of care (diagnostics & treatment)
  • Quality of life, morbidity and mortality
  • Health care organisation and costs
Current state of knowledge

http://pages.usherbrooke.ca/crmcspl-blog
Current state of knowledge

• Library of the International Research Community on Multimorbidity: list of publications: 42 pages

• Publication topics
  • Definition/Methodology/Measurement
  • Prevalence
  • Impact
  • Ideas for interventions: 1 page!
Of all 16 million Dutch inhabitants

47 million suffer from a serious illness
Current state of knowledge

Research in multimorbidity is beyond its infancy – time for the next phase!
Research priorities

1. How to prevent multimorbidity?
2. What is the optimal approach for providing multimorbid patients the best health care?
3. How to efficiently organise health care for multimorbid patients?
Prevention of multimorbidity

*Clues for prevention: the four C’s:*
- co-occurrence: ‘by chance’
- clustering: observed ≠ expected
- common cause
- complication: relation in time

Cluster multimorbidity

- **Statistical association:** $P(a+b) > \text{or} < (P(a) \times P(b))$
- **Examples:**
  - Parkinson’s dis * Stroke \hspace{1cm} \text{OR}=3.6
  - Migraine * Diabetes mellitus \hspace{1cm} \text{OR}=0.5 !!!
  - Chronic somatic * psychiatric \hspace{1cm} \text{OR}=1.5
  - Stroke * Dizziness \hspace{1cm} \text{OR}=1.3

Nuyen et al, 2006; Health Council, 2008; Maarsingh, 2011
Common cause multimorbidity

• Common (known) pathophysiology

• Examples

  *Smoking*: COPD + lung carcinoma + coronary heart disease
  *Obesity*: diabetes mellitus + osteoarthritis
  *Dopamin system*: depression + Parkinson’s disease
Complication multimorbidity

• Conditional association (incl. time relation)
• Examples
  - Diabetes mellitus → diabetic retinopathy
  - Stroke → epilepsy
Challenges in prevention research

• Associations → hypotheses for further aetiological research
• Large study populations and databases
• Innovative methodologies (e.g. ‘intelligent’ data mining)
Dilemmas in prevention research

• Relevance of etiological research: can multimorbidity be prevented?
• Prioritizing relevant combinations of diseases for prevention research
Research priorities

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"...Management of patients with several chronic diseases is now the most important task facing health services in developed countries ...."
Health care for multimorbid patients

Mrs. F

- 79 years old
- multimorbidity
  - osteoporosis
  - osteoarthritis
  - diabetes type II
  - COPD
  - hypertension

Boyd et al, JAMA 2005
Health care for multimorbid patients

**EBM treatment**

- 12 different drugs in 19 dosages at five moments a day
- 14 different non-pharmacological advices (rest, exercise, shoes, avoid exposure to allergens)
- Nutrition: reduce intake of Na, K, lipids, cholesterol, Mg, Ca, calories, alcohol
- At least 5 doctor visits per year

Boyd et al, JAMA 2005
Health care for multimorbid patients

• What is the evidence for the combined treatment of these five diseases?
• How feasible is this regime?
• Any room for living her own life?
Health care for multimorbid patients

Research priorities

• Integrating and tailoring single-disease evidence based guidelines
• Management of polypharmacy and non-pharmacological treatment
• Active role of patients, e.g. in priority setting
Challenges in research on health care for multimorbid patients

- Participation of multimorbid patients in clinical trials
- Innovative methodologies:
  - how to deal with heterogeneous study populations?
  - how to deal with individualized care?
Dilemmas in research on health care for multimorbid patients

- Development of (evidence for) guidelines for (all possible?) combinations of diseases
- Goal-oriented vs disease-oriented outcome measures
Research priorities

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Organisation of health care for multimorbid patients

Use of health care services:
‘...the more chronic diseases, the more different health care services are being used...’

Westert et al, Eur J Publ Health 2001
Organisation of health care for multimorbid patients

Diabetes mellitus patients: “risk” for specialized care in 1 year

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Struijs et al, BMC Health Serv Res 2005
Organisation of health care for multimorbid patients

*Focus groups of patients*
- Treatment (incl. advices) is not feasible
- Which caregiver is the expert?
- Need for information
- More attention for emotional impact
- Better coordination and communication

Heijmans et al, 2003
Organisation of health care for multimorbid patients

‘…New paradigms of care that acknowledge actual patterns of comorbidities as well as the need for close coordination between generalists and specialists require support…’

Starfield et al. 2003
Evidence about interventions (1)

Review on comprehensive care programs for patients with multiple chronic conditions:
• publications 1995-2011
• evaluation of 28 programs (42 papers)
• categorized according to elements of the Chronic Care Model (Wagner)

Bruin SR de et al, Health Policy 2012
Evidence about interventions (2)

- No effect of interventions on:
  - Cognitive functioning
  - Depressive symptoms
  - Functional status/Quality of life
  - Mortality
  - Caregiver burden

- Heterogeneity of programs

- More rigorous evaluations needed
Research on organisation of health care for multimorbid patients

Research priorities

• Care coordination and cooperation between health care providers
• Rigorous evaluation of care programmes, incl. cost-effectiveness
Challenges in research on the organisation of health care for multimorbid patients

- Health care system is disease oriented and not patient oriented
- Financing of health care fragmented
- Competition between health care providers
Dilemmas in research on the organisation of health care for multimorbid patients

• Health system characteristics determine care programs – this is an obstacle for international comparative studies
• Include social care in care programs?
• Patients, health care professionals and policy makers may disagree about optimal care arrangements
To conclude: three research priorities

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Thank you for your attention!