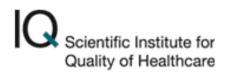# Using medical practice variation research for policy: a practical guide

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Background

• The Netherlands has seen an increase in medical practice variation research
• Applications are diverse and the validity of some methods and findings are debated

➢ Ambiguities with regard to methods and interpretation hamper implementation of relevant findings

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Objectives

To offer guidance

- Aimed at researchers
    - Offer a range of alternative methods, discuss pro- and cons

- Aimed at a larger audience (policy makers)
    - Introduce the scientific basis of practice variation research
    - Guide the interpretation of findings

➢ To make sure medical practice variation research helps in improving health care, thus creating actionable knowledge

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Methods

- Pragmatic literature search
  - Drawing on previous experiences
  - Seminal articles
  - Snowball search

- Comparison of prominent methodologies (country studies)
  - Atlas VPM, Darthmouth, Bertelmanns Stiftung, King's Fund, OECD

- Consensus procedure
  - WIC Berlin
  - Present draft guidance to stakeholders

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Methods (2): country studies

- Data
- Scope of topics
- Research period
- Definition of regions
- Unit of analysis
- Definition of indicators
- Standardization for ..
- Direct vs indirect standardization
- Statistical models
- Referral patterns and specialized care
- Representation and appraisal of regional variations

Methods (3)

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➢ Many different alternatives, what to make of it?

Results (1): how to define a region?
Aim: high internal consistency, all relevant citizens

- Patient origin method:
  - On the basis of health care use
  - + It follows health care use and providers of populations of interest
  - - Lots of data (and manipulation) are needed

- Geopolitical boundaries
  - On the basis of set organizational boundaries
  - + Makes sense to policy makers
  - - Geopolitical boundaries do not reflect health care markets, neither for citizens nor for providers

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Results (2): how to define a region?
Aim: high internal consistency, all relevant citizens

- Define virtual networks
    - On the basis of health care use
    - + Promising method, especially for chronic conditions
    - - We don't have experience with the method in the Netherlands

Preliminary recommendations
- Patient-origin method is valued over the geopolitical boundary method
- Geopolitical boundary method may be the best alternative in case you're interested in the role of the legislative agent itself
    - Create subregions within the organizational unit
- Evaluate the 'success' of your regions

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Results (3)

Frameworks for understanding and studying practice variation

- At least five were found in a recent literature review[1]
- Frameworks help building knowledge and draw new hypotheses

1 Framework of clinical decision making is the most prominent one
2 Alternative: sociological model

➢Be explicit about why you do(n't) incorporate which factors in your analysis

[1] Mercuri et al. 2011. Journal of evaluation in clinical practice.

Results (4)
Frameworks for understanding and studying practice variation

- Sociological model for understanding medical practice variation[1]
  1. Time
  2. Context
  3. Differences between patients and shared decision making

- Three mechanisms that explain medical practice variation
  1. Selection
  2. Gradual adaptation
  3. Circumstances

[1] Westert et al. 1999. Scand J Public Health

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Results (5)
Frameworks for understanding and studying practice variation

- Framework of clinical decision making[1]
  1. Variation in patient demand
  2. Variation in physician beliefs
  3. Variation of incorporation of patient preferences

- Three categories of care
  1. Effective care: underuse
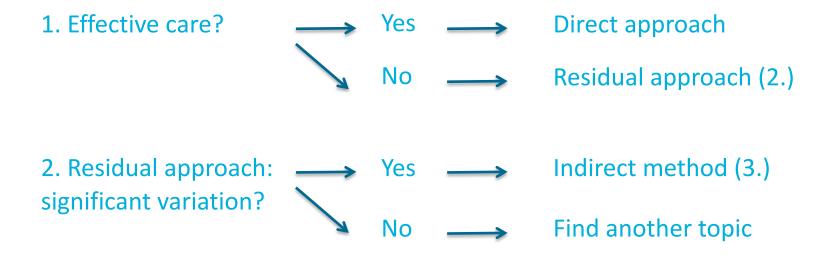 2. Preference sensitive care: misuse
  3. Supply sensitive care: overuse

[1] Birkmeyer et al. 2013. Lancet

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Results (6): three approaches

- Residual approach
    - Most prominent
    - Correction for need; residual variation is labeled unwarranted variation
    - To identify and describe variation -> guiding future research
- Indirect approach
    - Including (explanatory) additional factors or data in the model
        - Provider characteristics, PROM-data, patient preferences
- Direct approach
    - Care is evaluated on standards of care; data allow you to determine appropriateness

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Results (7): three approaches

1. Effective care? ——→ Yes ——→ Direct approach

    ——→ No ——→ Residual approach (2.)

2. Residual approach: ——→ Yes ——→ Indirect method (3.)
significant variation?

    ——→ No ——→ Find another topic

3. Indirect method: build and test alternative hypotheses,
either testing hypothesis related to the patient or provider

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Discussion

What topics should further be addressed?

- Magnitude of variation
- How to account for private providers who distort public picture?
- …

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