EPH Conf, Wien, 10.-12.11.2016

Modeling of health and disease in support of governance and decision-making – Conclusions

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1 (in reverse order) Results

(With Public Health largely being a culture of foresight):

Modeling of health and disease for quantifying health impacts of (future) policies & programs is the ***underrated kid on the block***

By simply ***not*** using this approach on a large scaler, we give away major opportunities for supporting health governance

Various steps ***can be*** taken to improve the situation (details below).

2 Quantification of health impacts

Reasons “pro” quantification (thanks to J.Mackenbach):

- Magnitude of health effects may decisively influence cost/benefit ratio of policies
- Comparison of different policies is facilitated by quantification
- Recommendations without quantification have difficulties to stand up in the policy arena

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However:

- Important aspects of health / determinants: not readily quantifiable?
- Some metrics problematic? (cf. „deaths averted“)
- Models liable to seem ill-founded, un-validated, opaque?

3 HIQ and modeling

The PH community appears divided into:

- "**advocates**" (sometimes with over-enthusiasm) and
- "**sceptics / critics**" (sometimes with refusal attitude), often seeing epidemiologic observation and analysis as straight-forward & reliable; modeling as shaky and unreliable.

Without subscribing to „unconditional advocacy", we hold that insisting on the sceptical view is too simple - it can result in „stealing" an important element from the Public Health toolkit.

To reach a balanced view requires efforts.

4 Steps taken

Multiple projects incl. (EC co-funded) EPHIA, ENHIS, RAPID, (UBA co-funded) Xprob

2010 HIQ workshop of modelers, model users, Düsseldorf

2011 HIQ workshop, Granada

2012 Paper in JECH: „Quant HIA – Taking stock and moving forward“ (based on the workshops, literature, discussions)

International toolmakers survey (13 groups responding on 17 tools)

Various conference presentations

2016 Paper in EIA Rev: „HIA – Survey on quantifying tools“ based on the survey results

2016 Nov: Colloquium at Bertalanffy Centre for the Study of Systems Science (BCSSS) (2 days ago)

5 Models in prelim grouping order

ECOSENSE	R. Friedrich	Env.Health
INTEGRA	D. Sarigiannis	Env.Health
EconDA; UKHF	A. Jaccard	Ex: Sugar drinks
MSLT	L. Veermann	Ex: Sugar drinks
IMPACT	M. O‘Flaherty	Personal risk f.
DYNAMO; LCDM	J. Hoekstra	Personal risk f.
DYNAMO adapt.	O. Mekel	Personal risk f.
OncoSim	M. Wolfson	Cancer control

6 Rudimentary typology

Topical domain, e.g. Environmental health & noxious agents; personal risk factors; disease control

Handling of **single vs. multiple** (risk) factor(s)

Modeling approach, e.g. **regression; microsimulation**; with implications for data needs and computing capacity

Level of **transparency** on modeling algorithms

Handling of **variation** (across subgroups), **uncertainty**, (**visual) output**...

etc.

7 Questions

- Avoiding both extreme positions (over-enthusiasm; strict refusal), **how can the “middle ground” of prudent usage be developed?**
- **Criteria for „Good modeling practice“ / Quality control?** Protection against errors and creative engineering?
- **End-user guidance** for choosing models and (co-exposure) scenarios? for checking and interpreting results?
- Is **more effective communication between modelers and end-users** the key?

8 (Once more): The results

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9 Conclusions

Steps towards tapping the potential of health impact modeling for Public Health more comprehensively:

- **Broadening the awareness** of existing modeling tools
- Considerung various topics and questions, **explaining the rationale, opportunities and limitations** to different target groups, incl. policy-makers; i.e. helping to identify situations in which health impact modeling can be deployed efficiently and successfully
- **Exemplifying "good practice" and providing support** for deciding on modeling; **choosing models** / interacting with modelers; adequately **dealing with outputs**

Possibly, from these Vienna discussions at BCSSS and EPH conf, some guidance materials will emerge.