Harnessing the power of data to inform health and social policy: from Europe to Canada

Evidence-informed health policy: Which evidence? How to inform? Does it work? Learning from European experience

Reinhard Busse, Prof. Dr. med. MPH FFPH
FG Management im Gesundheitswesen, Technische Universität Berlin
(WHO Collaborating Centre for Health Systems Research and Management)

European Observatory on Health Systems and Policies
What is “evidence” for evidence-based health policy? Is it really the same as for evidence-based medicine?

Published literature + “Grey” literature

Summarized evidence

+ study data

1st task of Evidence-based health policy experts
What is “evidence” for evidence-based health policy? How is it supposed to influence policy-making?

2nd task of Evidence-based health policy experts

Active & adequate dissemination
What is “evidence” for evidence-based health policy? How is it supposed to influence policy-making?
What is “evidence” for evidence-based health policy? How is it supposed to influence results?
What is “evidence” for evidence-based health policy? The importance of a feed-back loop (& non-RCT evidence)

3rd task of Evidence-informed health policy experts
(CAVE: usually no control group → causal interference?)
What is “evidence” for evidence-based health policy? The importance of a feed-back loop (& non-RCT evidence)

Performance assessment as evidence ("evidence-generating health system")
The debatable WHO framework:
inputs = “building blocks”
→ “intermediate goals/ outcomes”
→ “overall goals / outcomes”
Both population health outcomes and responsiveness are the multiplicative effect of accessibility and quality: High accessibility but bad quality as well as low accessibility but high quality lead, on the population level, to inferior outcomes.
My combined performance framework
(incl. costs/efficiency and relationship to WHO dimensions)

Access(ibility) incl. financial protection

Equity

Quality (for those who receive services)

Population health outcomes (system-wide effectiveness)

Responsiveness

(horizontal/vertical)

Health insurance (public/private)

Geography (rural/urban)

Demographic characteristics

Socio-economic characteristics
My combined performance framework
(incl. costs/efficiency and relationship to WHO dimensions)

Access(ibility) incl. financial protection

Quality (for those who receive services)

Population health outcomes (system-wide effectiveness)

Responsiveness

Health system design, policy and context (governance, financing, workforce, technologies, service delivery...)

Burden of Disease (YLL + YLD = DALY)

Amenable to health care = “Need”

Not (yet) amenable to health care

Equity

Behavioural/ Metabolic/ Environmental
Non-health care determinants of health

Amenable to health care = “Need”

Need reduction through successfully addressing amenable causes

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Access(ibility)
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Quality
(for those who receive services)

Population health outcomes
(system-wide effectiveness)

Responsiveness

Costs/ expenditure, physical inputs and/or physical outputs

Health system performance

"TRIPLE AIM":
Access ↑
Quality ↑
Costs ↓

System efficiency/ cost-effectiveness
(i.e. population health and/or responsiveness per cost/input/output unit)

Health system design, policy and context
(governance, financing, workforce, technologies, service delivery …)
Balancing what we want/need to know with for what we have (valid/regular/representative) data

<table>
<thead>
<tr>
<th>Evaluation of data quality and accessibility</th>
<th>Grade 1 = Completely positively evaluated</th>
<th>Grade 2 = Mostly positively evaluated and no/only little effort for indicator calculation</th>
<th>Grade 3 = Mostly positively evaluated (as Grade 2), but significant efforts in calculation OR modestly positively evaluation but no/little effort in calculation</th>
<th>Grade 4 = Currently available data negatively evaluated OR no data available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator content evaluation (informative, sensitive to changes in the health care system, validity, interpretability)</td>
<td>Recommendation</td>
<td>Recommendation</td>
<td>Recommendation, improvement of database might be necessary</td>
<td>Recommendation to generate database</td>
</tr>
<tr>
<td>Grade 1 = Completely positively evaluated</td>
<td>Recommendation</td>
<td>Recommendation</td>
<td>Recommendation, improvement of database might be necessary</td>
<td>Recommendation to generate database</td>
</tr>
<tr>
<td>Grade 2 = Mostly positively evaluated, only slight limitations</td>
<td>Recommendation</td>
<td>Recommendation, if no better indicator could be identified</td>
<td>No recommendation</td>
<td>No recommendation</td>
</tr>
<tr>
<td>Grade 3 = Mostly negatively evaluated</td>
<td>No recommendation</td>
<td>No recommendation</td>
<td>No recommendation</td>
<td>No recommendation</td>
</tr>
</tbody>
</table>
Framework with number of indicators/ dimension, indicators (bold = headline), and data availability
Framework with number of indicators/ dimension, indicators (bold = headline), and data availability

A.1 Share of population covered by health insurance
A.2 Percentage of households experiencing high levels of/ catastrophic out-of-pocket health expenditures
A.3 Geographic distribution of doctors: Physicians density in predominantly urban and rural regions
A.4 Access to acute care
A.5 Access for terminal palliative care (waiting times and geographical access)
A.6 Reported waiting times for access to specialist care
A.7 Waiting times for elective surgeries
A.8 Number of people awaiting donor organs
A.9 Self-reported unmet need for medical care (total by reason: cost, waiting time, distance)

B.1 Life expectancy
B.2 Years lived with disability (YLD)
B.3 Years of life lost (YLL)
B.4 DALYs
B.5 Self-reported/perceived health state
B.6 Long-term activity limitations
B.7 Healthy Life Years (HLY)/ Distribution of (healthy) life expectancy
B.8 Prevalence of different smoking status
B.9 Obesity
B.10 People at risk of poverty
B.11 Air pollution
B.12 Physical activity
B.13 Supportive relationships

C.1 Total population
C.2 GDP per capita
C.3 Inequality of income distribution
C.4 Unemployment rate
C.5 Early leavers from education and training

D.1 Life expectancy
D.2 Years lived with disability (YLD)
D.3 Years of life lost (YLL)
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Q.1 Hospital Standardized Mortality Ratio (HSMR)
Q.2 30-day (in-hospital) mortality
Q.3 30-day emergency readmission rate
Q.4 Patients Treated at Stroke Unit
Q.5 Ambulatory Care Sensitive Conditions (ACSC) Hospitalization Rate
Q.6 Complications during/following surgery
Q.7 Complications during/following delivery
Q.8 Point-prevalence of hospital-acquired infections (% of patients hospitalised)
Q.9 Cesarean section rates
Q.10 Patient reported outcomes after treatment
Q.11 Inpatient suicide amongst patients with a psychiatric disorder
Q.12 Numbers of coercive measures per 1,000 psychiatric admissions
Q.13 Percentage of people treated successfully among laboratory confirmed tuberculosis (TB)
Q.14 Potentially inappropriate medication prescribed to seniors
Q.15 Percentages of patients experiencing medical, medication or diagnostic errors, self-reported
Q.16 Cancer 5-year survival rate
Q.17 Care in accordance with guidelines
Framework with number of indicators/ dimension, indicators (bold = headline), and data availability

P.1 Amenable mortality rate
P.2 Maternal mortality rate
P.3 Fetal mortality rate
P.4 Infant mortality rate
P.5 Birth weight distribution by vital status, gestational age, plurality
P.6 Incidence rate of selected infectious diseases
P.7 Vaccination coverage in children
P.8 Notified cases of selected infectious diseases, vaccine preventable
P.9 Screening rates for selected cancers (breast, cervical, colon)
P.10 Polypharmacy and excessive polypharmacy among the elderlies

R.1 Patient experience with ambulatory care
R.2 Percentages of patients perceiving problems with planning and co-ordination of health care
R.3 Patient experience with inpatient care
R.4 1st Death at preferred place or 2nd (second best) Death at usual place of residence (home or in residential care)
Gaps in data availability by performance dimension and need category

<table>
<thead>
<tr>
<th>Need Category</th>
<th>Access (9 Indicators)</th>
<th>Quality (17 Indicators)</th>
<th>Population Health outcome (10 Indicators)</th>
<th>Responsiveness (4 Indicators)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total (all need categories)</td>
<td>A.1, A.3, A.4, A.6, A.9</td>
<td>Q.15, Q.17</td>
<td></td>
<td>R.1, R.2</td>
</tr>
<tr>
<td>Being born healthy</td>
<td>A.2</td>
<td>Q.7, Q.8, Q.9</td>
<td>P.1, P.2, P.3, P.4, P.5</td>
<td>R.3</td>
</tr>
<tr>
<td>Staying healthy</td>
<td></td>
<td></td>
<td>P.6, P.7, P.8, P.9</td>
<td></td>
</tr>
<tr>
<td>Getting better</td>
<td>A.2, A.7</td>
<td>Q.1, Q.2, Q.3, Q.4, Q.5, Q.6, Q.8, Q.10, Q.13, Q.14, Q.16</td>
<td>P.1, P.10</td>
<td>R.3</td>
</tr>
<tr>
<td>Living with chronic illness or disability</td>
<td>A.2, A.7, A.8</td>
<td>Q.5, Q.8, Q.11, Q.12, Q.14</td>
<td>P.1, P.10</td>
<td>R.3</td>
</tr>
<tr>
<td>Being cared</td>
<td>A.2</td>
<td>Q.5, Q.8, Q.11, Q.12, Q.14</td>
<td>P.10</td>
<td>R.3</td>
</tr>
<tr>
<td>Coping with end of life</td>
<td>A.2, A.5</td>
<td>Q.8</td>
<td></td>
<td>R.3, R.4</td>
</tr>
</tbody>
</table>

→ High need to provide more (internationally comparable) data on a representative, regular basis
Framework including efficiency with number of indicators/dimension, indicators (bold = headline), and data availability
Framework including efficiency with number of indicators/dimension, indicators (bold = headline), and data availability

I.1 Total health care expenditure
I.2 Current health care expenditure (CHE) by financing scheme (ICHA-HF)
I.3 Current health care expenditure by function (ICHA-HC)
I.4 Current health care expenditure by provider (ICHA-HP)
I.5 Public expenditure for Long-term nursing care facilities for palliative care
I.6 Public (current) health expenditure as share of total government expenditure
I.7 Cross tabulation: (current) health expenditure by financing scheme and function (ICHA-HF x HC)
I.8 Cross tabulation: (current) health expenditure by financing scheme and provider (ICHA-HF x HP)
I.9 General government expenditure by function (COFOG): Spending on social protection as % of GDP
I.10 Share of hospital inpatient expenditures by main diagnostic category
I.11 Medical graduates
I.12 Nursing and midwife graduates
I.13 Practising physicians
I.14 Practising qualified nurses and midwives
I.15 Remuneration of health professionals: doctors (general practitioners and specialists, dentists) and nurses: ratio to average wage
I.16 Shortage of doctors: vacancy rate
I.17 Shortage of nurses: vacancy rate

L.1 Emergency Department admission rate
L.2 (Estimated) Number of consultations per doctor
L.3 Number of hospital discharges
L.4 Number of surgical operations and procedures
L.5 Average length of stay
L.6 Pharmaceutical consumption total and by selected groups
L.7 MRI/CT exams

E.1 Hospital expenditure per case
E.2 Share of generics in the total pharmaceutical market
E.3 Ambulatory surgery: Share of selected surgeries carried out as ambulatory cases
E.4 Changes of expenditure and utilization of ambulatory care (time trends)
E.5 Changes of expenditure, human resources and utilization in hospital care (time trends)
E.6 Changes of expenditures and consumption for/of pharmaceuticals (time trends)
E.7 Amenable mortality rate per total health care expenditure per capita (cross-sectional)
E.8 Amenable mortality rate per total health care expenditure per capita (incremental)
The access(ibility) component
(denominator: population/ persons with need)

Need (by socio-economic status, ethnicity/ migration status etc.)

coverage (financial issues)
availability of care
waiting, acceptability etc.

Population coverage
Content of the benefits basket
Cost-sharing arrangements
Geographical factors
Choice among available providers
Organizational barriers
Preferences

Unmet need
Realised access
Unmet need

x Quality = Outcomes (population health & responsiveness)
1st dimension/ population coverage: the importance is known usually by U.S. data; here: access problems in 2012

The access(ibility) component (denominator: population/persons with need)

- Experienced cost-related access problem
  - Uninsured: 63%
  - Insured all year: 27%

- Serious problems/unable to pay medical bills
  - Uninsured: 42%
  - Insured all year: 15%

- Spent $1,000 or more out-of-pocket
  - Uninsured: 39%
  - Insured all year: 42%

Source: 2013 Commonwealth Fund International Health Policy Survey in Eleven Countries.
2\textsuperscript{nd} dimension/ covered benefits also matter: e.g. gaps in dental care

Skipped Dental Care Because of Cost in Past Year

<table>
<thead>
<tr>
<th>Country</th>
<th>Covered in basic package</th>
<th>Complementary coverage high</th>
<th>Not covered</th>
</tr>
</thead>
<tbody>
<tr>
<td>NETH</td>
<td>11</td>
<td>21</td>
<td>28</td>
</tr>
<tr>
<td>UK</td>
<td>11</td>
<td>21</td>
<td>23</td>
</tr>
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<td>GER</td>
<td>14</td>
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<td>22</td>
</tr>
<tr>
<td>SWE</td>
<td>19</td>
<td>21</td>
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<tr>
<td>AUS</td>
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</tr>
<tr>
<td>SWIZ</td>
<td>21</td>
<td>22</td>
<td>32</td>
</tr>
<tr>
<td>NZ</td>
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<td></td>
</tr>
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</tr>
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Own elaboration based on data from 2016 Commonwealth Fund International Health Policy Survey in Eleven Countries.
Experienced cost-related access problem*

Spent US$1,000 or more out-of-pocket

Cap for cost-sharing
Cost-sharing uncapped

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<tr>
<th>Country</th>
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<th>Cost-sharing uncapped</th>
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<tr>
<td>UK</td>
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<td>33</td>
</tr>
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<td>CAN</td>
<td>17</td>
<td>25</td>
</tr>
<tr>
<td>FR</td>
<td>18</td>
<td>41</td>
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<tr>
<td>US</td>
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* Had a medical problem but did not visit doctor; skipped medical test or treatment recommended by doctor; or did not fill prescription or skipped doses because of cost.

Source: modified from 2016 Commonwealth Fund International Health Policy Survey in Eleven Countries.

Source: modified from 2013 Commonwealth Fund International Health Policy Survey in Eleven Countries.
Urban-rural discrepancies are vary drastically between countries – with definite scope to learn from another

The access(ibility) component (denominator: population/persons with need)
Waiting (here: >4 weeks for a specialist appointment) is a general problem, but some countries see changes and others not.

The access(ibility) component (denominator: population/persons with need)

Own elaboration, data: Commonwealth Fund International Health Policy surveys, 2005-2013; in 2016, the respective question asked for >2 months.
The quality component
(denominator: patients/persons receiving services)

6.2. Doctor providing easy-to-understand explanations, 2010 and 2016 (or nearest year)

Note: 95% confidence intervals have been calculated for all countries, represented by grey areas.
1. National sources.
2. Data refer to patient experiences with regular doctor.
Source: Commonwealth Fund International Health Policy Survey 2016 and other national sources.

6.3. Doctor involving patient in decisions about care and treatment, 2010 and 2016 (or nearest year)

Source: OECD, Health at a glance 2017,
Data: Commonwealth Fund International Health Policy Survey 2016 and other national sources.

Such evidence requires regular surveys for a representative sample of the population → currently not available!
How can we assess the effectiveness of ambulatory care?
A major patient-relevant outcome: Not being hospitalised in case of chronic conditions ("avoidable hospital admissions") – here: diabetes.
How can we assess the effectiveness of inpatient care?
AMI letality of inpatients ... during hospitalisation only

... and including the more relevant first 30 days

The quality component (denominator: patients/persons receiving services)

Such evidence requires consistent definitions – and data collection → currently not available!
Extending the time horizon to 5 years for cancer patients

- 10.9% die within 5 years
- 26.5% die within 5 years
How can we calculate the health system contribution to health (= population outcomes)?

- Deaths from certain causes that should not occur in the presence of timely and effective health care
- Introduced by David Rutstein in the 1970s (originally for quality assurance purposes)
- Walter Holland published European Community Atlas of ‘Avoidable Deaths’ in 1988; intends to provide warning signals of potential shortcomings in health care delivery
- Mackenbach et al. argue that associations between AVM and health care services are rather weak and inconsistent. Most health care measures only reflect quantity and not quality. Many studies use insufficient set of covariates.
- Nolte and McKee (2002) reviewed list of amenable causes of death
Applying the concept longitudinally ...
... and adding expenditure (→ efficiency)

Denmark = “winner”, but can its policies be therefore be considered “best practice”? And which component: hospital reform, eHealth …? Further evidence required … but currently Danish health policy is receiving lots of attraction!
What is the mission of the European Observatory on Health Systems and Policies?

Core Mission: to support and promote evidence-based health policy-making.

Comparative analysis of existing evidence

Bridge

Between policymakers and researchers

Developing practical lessons and options in health policy-making
Its partners
Its key principles to knowledge brokering

The European Observatory on Health Systems and Policies is a high-quality knowledge broker based on following principles:

- **Translate**: Reorganise the evidence in a way that appeals to policy makers and in a language they understand.
- **Trust**: High-quality evidence and a neutral stance recognising the real context and pressures of health systems.
- **Tailored**: To the specific needs of policy makers.
- **Timely**: Response to policy maker’s needs and requests.
Its range of face to face dissemination formats

Decision making proximity

Seniority of participants

- Conferences, Summer School
- Seminars
- Workshops
- Evidence briefings
- Policy dialogues
Policy dialogues

- Key strategic questions / demand driven
- Rapid response / adapted to policy cycle
- Target small group of senior policy makers
- Supported by evidence on alternative options
- Emphasis on implementation
- Informal character, Chatham House rules, neutral platform
The HiT are a flagship product, but my favorite activity are the policy dialogues.

Enjoy the anniversary and be prepared for the next 20 years, unknown future in Europe!

As the younger observatory that has been modeled on OBS, I have found the support from OBS fundamental in developing the APO.

The Venice summer school a way to close the gap between scientist and health workers involved in front line activities.

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Enjoy the anniversary and be prepared for the next 20 years, unknown future in Europe!
You give the baseline evidence to allow informed policy-making. It would also be nice in the future to include not only a government perspective, but to actively engage users of the health systems and other actors who impact on how policies are implemented in reality.

To be an agenda-setter in health policy with innovative and far-sighted studies.

Two books that inspired me for my PhD and in my professional life: "Health Policy and European Union Enlargement" (2004) and "Health Systems Governance in Europe: The Role of EU Law and Policy" (2010). They both present the challenges and opportunities in EU health policy and show that in health there are no borders. Continue the work and inspire future generations of policy makers!
In conclusion,

1. “Evidence-informed” health policy requires a broad understanding of “evidence”,

2. should be built on a framework designed around policy-makers’ needs (providing evidence on accessibility, quality, population-wide outcomes and efficiency/value-for-money),

3. requires better (valid, regular, representative, cross-national ...) data,

4. combining them in a useful manner (e.g. avoidable mortality vs. expenditure over time), and

5. a range of formats to reach policy-makers – and improve policies, and thus outcomes.