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Core competences of academic epidemiologists – an international effort

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Where's the epidemiologist in this picture?

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Beyond «topics» and «knowledge»

Core competence (CC):

The **knowledge**, **skills**, and **abilities** demonstrated by organization or system members needed **to perform specific functions** within organizations or professional practices.

(Birkhead GS et al., Public Health Reports, 2008)

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Structured process to develop core competences

20

Amsterdam

50 core competencies

80

Zurich

31 core competencies

You

Worldwide

Survey on relevance
of core competencies
+ Dissemination

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Process, phase 1

Definition of what constitutes „core“ competencies

Organizers brainstormed about attributes that make a competency core for epidemiologists (Outcome: they should be timeless, pervasive, unique, essential)

Brainstorming of current core competencies

Amsterdam Meeting January 2018: A small group of experts discussed about current 50 epidemiology core competencies (CCs) and rated them according to the criteria timeless, pervasive, unique, essential

Consolidation of core competency suggestions

Consolidation and reduction of the current 50 CCs of epidemiologists to current 20 CCs by the initial core team of epidemiologists

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Guiding principles for CC defintion

CCs should be

E S S E N T I A L

(can't do the job without it)

P E R V A S I V E

(used by many epidemiologists)

T I M E L E S S

(not bound to a specific time and place)

(U N I Q U E)

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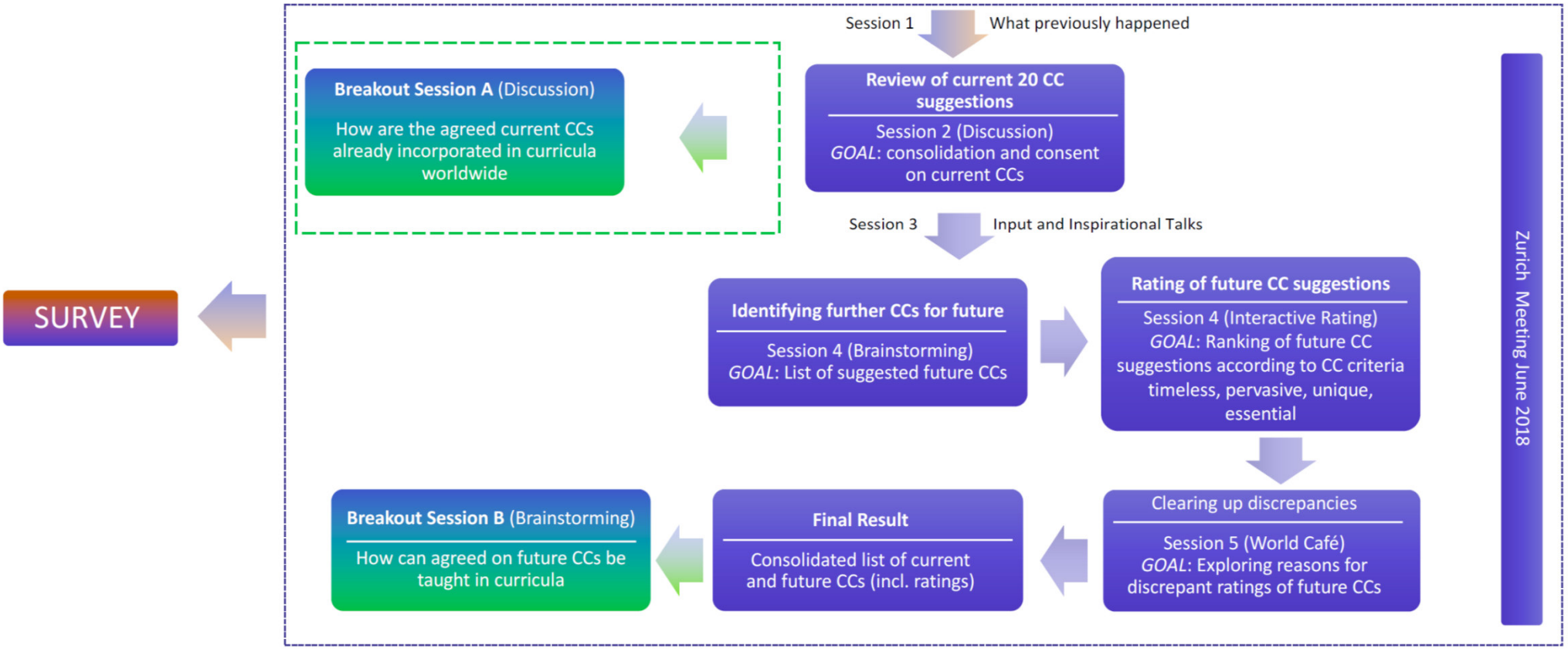
Process, phase 2



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DOMAIN 5

Overarching core competencies

DOMAIN 1

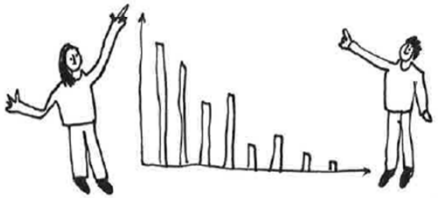
Development of scientific question

DOMAIN 2

Study planning

DOMAIN 3

Study conduct + analysis



DOMAIN 4

Communication + translation

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Intro to domains

Domain 1: Development of scientific question

A) Identification and framing of scientific question

Background: A relevant, clearly formulated scientific question is key for health research and the advancement of knowledge. Relevance is determined by the health needs and already existing evidence. Clarity of a scientific question is achieved if each component of the question, for example the population, exposure and outcome of interest, is explicitly defined so that the appropriate methods and the conduct of a study can be deduced accordingly (see Domains Study Planning and Study Conduct & Analysis).

Goal of core competencies of this domain: Epidemiologists need to understand the health needs and know the existing evidence in order to frame a scientific question that fills (some of) the evidence gap. The combination of core competencies in this domain enables Epidemiologists to frame relevant and clearly formulated scientific questions that address a health need.

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Example from domain 1

B4. Given the existing evidence, competency to describe the need for further research, both with respect to the specific scientific question and the methodological approach.

Explanations: Research needs can include entirely new scientific questions or address specific components such as the need to address a specific scientific question in a particular population or to include outcomes not sufficiently considered in previous research. Needs in terms of the methodological approach may refer to a specific study design that is needed to strengthen the evidence base or to specific methodological aspects (in terms of planning or analysis) in order to minimize biases of previous studies.

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Example from domain 2

C3. Competency to identify emerging technologies or methodologies in other fields and evaluate their utility for a specific study question.

Explanations: An epidemiologist needs to look more broadly at the science literature beyond the narrow scope of epidemiology or even the slightly larger arena of public health research. Many methods now considered common tools in epidemiological research were originally developed in diverse fields such as ecology, economics and computer science. The ability to extrapolate the utility of a new method or technology to health research is a valuable skill not only for the richness it brings to the field of epidemiology but also as a means to a more sustainable and adaptable career path as health trends and societal priorities shift.

Moreover, Epidemiologists may be called upon to appraise studies conducted with new data collection methods and/or analysis tools. Such an appraisal often includes judgments of the internal and external validity, and it is therefore a crucial skill for Epidemiologists to be able to apply and adapt these concepts to previously unfamiliar methods.

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Example from domain 3

E4. Competency to assess the data quality in newly collected data or existing databases and extract the data deemed sufficiently valid for answering a specific research question.

Explanations: The ability to assess data quality is a critical skill for an epidemiologist. Data quality goes beyond data entry errors to the underlying constructs of interest. A data element may have no obvious errors but may have been captured with an invalid instrument for the target population or with an assay that has poor reproducibility. Therefore an assessment of data quality must start with the construct of interest for the specific research question and establish that the measurement method was appropriate (accurate and precise within an acceptable tolerance) and the process of data collection yielded an acceptable error rate.

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Example from domain 4

G1. Competency to effectively communicate the results of health research to health care professionals, lay public and various media and thus contribute to debates concerning health and health care.

Explanations: Key stakeholders are virtually all individuals in society: taxpayers, patients, voters, but also health care professionals and decision makers (e.g. politicians, hospital managers). Each stakeholder group should be addressed through appropriate channels (newspaper, internet, talks) with stakeholder-specific messages, and ideally with inclusion of public relations specialists. This competency also refers to all kinds of media, each of which has different requirements. A possible role of Epidemiologists is not only to communicate their own findings but also to take stance on health-related questions in public debates. This includes a critical assessment of the validity of arguments in light of the existing evidence, as well as bringing new suggestions into debates.

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Example from overarching CCs

2. Competency to identify partners from various disciplines necessary to conduct health research, align partners' skills with research tasks, and act as a bridge between wide-ranging health and data disciplines.

Explanations: Epidemiologists should strive to build a bridge between different disciplines and professionals, for example by being able to understand and apply the vocabulary of other research disciplines. Epidemiologists should further be able to identify and align skills needed for successful study conduct. Partners may also come from outside the research world. For example, the increasing emphasis on patient involvement in studies (e.g. also within the frameworks of citizen science) requires interactions and communication with laypersons, as well as a sincere effort to align their interests and experiences with the research goals.

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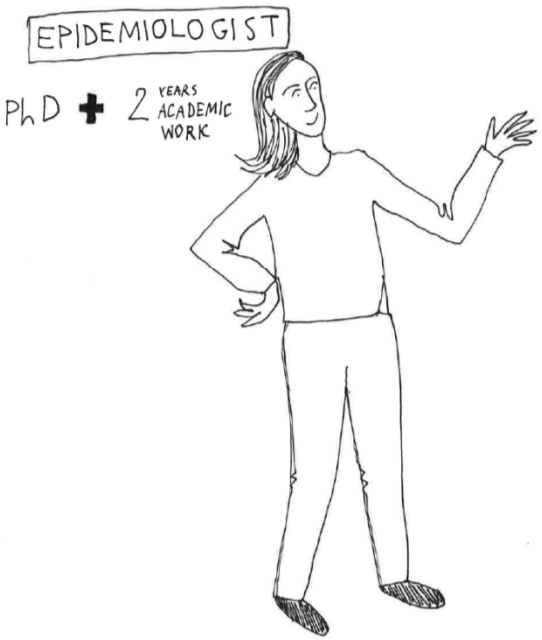
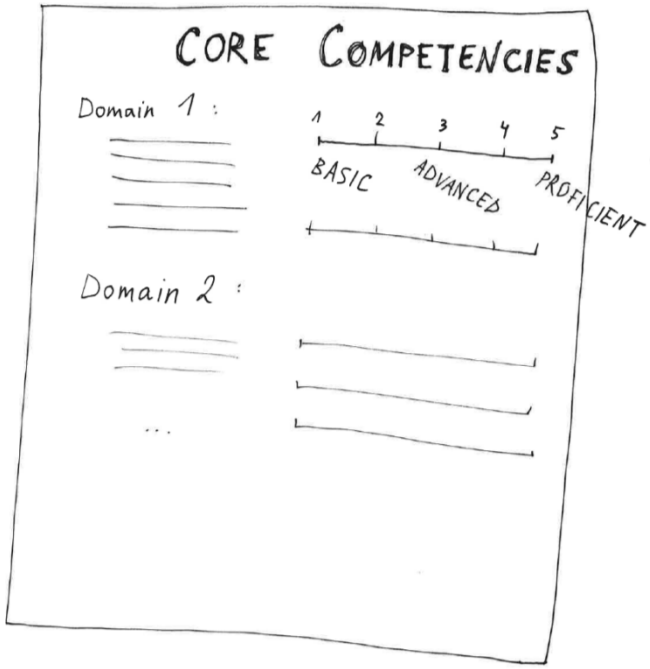
A survey for disssmination and some guidance





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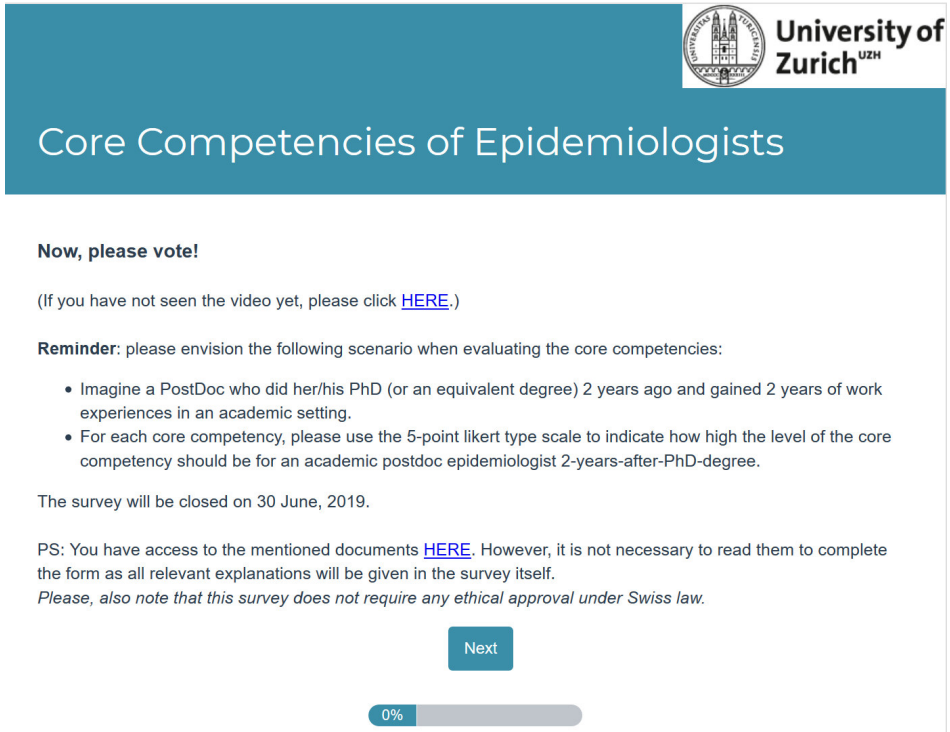
Please familiarize yourself with the CCs and complete the survey



https://www.surveygizmo.com/s3/4918689/CoreCompetenciesEpidemiologists

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Mark your calendars:

2nd International Meeting on Teaching Epidemiology

at the University of Zurich

January 21 / 22, 2020

Stay tuned for further information !

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