



Towards a framework for evaluating and grading evidence in public health



Thomas Harder^a, Muna Abu Sin^b, Xavier Bosch-Capblanch^c, Bruno Coignard^d, Helena de Carvalho Gomes^e, Phillippe Duclos^f, Tim Eckmanns^b, Randy Elder^g, Simon Ellis^h, Frode Forlandⁱ, Paul Garner^j, Roberta James^k, Andreas Jansen^e, Gérard Krause^l, Daniel Lévy-Bruhl^d, Antony Morgan^h, Joerg J. Meerpohl^m, Susan Norris^f, Eva Rehfuessⁿ, Alex Sánchez-Vivar^o, Holger Schönemann^p, Anja Takla^b, Ole Wichmann^b, Walter Zingg^q, Teun Zuiderent-Jerak^r

^a Immunization Unit, Department for Infectious Disease Epidemiology, Robert Koch Institute, Seestrasse 10, 13353 Berlin, Germany

^b Robert Koch Institute, Berlin, Germany

^c Swiss Tropical and Public Health Institute, Basel, Switzerland

^d Institut de Veille Sanitaire, Paris, France

^e European Centre for Disease Prevention and Control (ECDC), Stockholm, Sweden

^f World Health Organization, Geneva, Switzerland

^g Centers for Disease Control and Prevention, Atlanta, USA

^h National Institute for Health and Care Excellence (NICE), London, United Kingdom

ⁱ Norwegian Institute of Public Health, Oslo, Norway

^j Liverpool School of Tropical Medicine, Liverpool, United Kingdom

^k Scottish Intercollegiate Guidelines Network (SIGN), Edinburgh, United Kingdom

^l Helmholtz Centre for Infection Research, Braunschweig, Germany

^m German Cochrane Center, Freiburg, Germany

ⁿ Institute of Medical Informatics, Biometry and Epidemiology, University of Munich, Germany

^o Health Protection Scotland (HPS) and the Scottish Health Protection Network (HPN), Glasgow, United Kingdom

^p Department of Clinical Epidemiology & Biostatistics and Medicine, McMaster University Health Sciences Centre, Hamilton, Ontario, Canada

^q Hôpitaux Universitaires de Genève, Geneva, Switzerland

^r Department of Thematic Studies–Technology and Social Change, Linköping University, Sweden

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ABSTRACT

The Project on a Framework for Rating Evidence in Public Health (PRECEPT) is an international collaboration of public health institutes and universities which has been funded by the European Centre for Disease Prevention and Control (ECDC) since 2012. Main objective is to define a framework for evaluating and grading evidence in the field of public health, with particular focus on infectious disease prevention and control. As part of the peer review process, an international expert meeting was held on 13–14 June 2013 in Berlin. Participants were members of the PRECEPT team and selected experts from national public health institutes, World Health Organization (WHO), and academic institutions. The aim

E-mail address: HarderT@rki.de (T. Harder).

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of the meeting was to discuss the draft framework and its application to two examples from infectious disease prevention and control. This article introduces the draft PRECEPT framework and reports on the meeting, its structure, most relevant discussions and major conclusions.

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1. Introduction

The Project on a Framework for Rating Evidence in Public Health (PRECEPT) has been funded by the European Centre for Disease Prevention and Control (ECDC) since 2012. Main objective is to define a framework for evaluating and grading evidence in the field of infectious disease prevention and control. As part of the peer review process, an international expert meeting was held on 13–14 June 2013 in Berlin. Participants were members of the PRECEPT team and selected experts from national public health institutes, World Health Organization (WHO), and academic institutions. The aim of the meeting was to discuss the draft framework and its application to two examples from infectious disease prevention and control, which were prepared in advance by team members.

PRECEPT was able to build on the work of an ECDC working group, which evaluated the methodology of the Grading of Recommendations, Assessment, Development, and Evaluation (GRADE) Working Group and proposed further discussion of GRADE for application in the context of public health, particularly regarding infectious diseases [1]. It was therefore decided that GRADE will be a key component of PRECEPT, and applying the method to interventional and non-interventional studies is being tested within the project.

According to GRADE, the quality of evidence indicates the extent to which one can be confident that the estimate of effect is correct [2]. GRADE assesses the overall quality of evidence supporting a recommendation across outcomes, which considers the quality rating of all outcomes critical for decision-making. One of four levels of evidence quality is assigned to the review results. Bodies of randomized controlled trials (RCTs) are initially graded as high quality of evidence, whereas bodies of observational studies are initially classified as low quality. Considering a set of criteria might lead to decreasing (downgrading) or increasing (upgrading) one's confidence by one or more levels based on the critical appraisal of the body of evidence related to the outcome under consideration [2].

After an introduction to the PRECEPT framework and the meeting structure, we report the most relevant discussions and major conclusions.

2. The draft PRECEPT framework: overview

The PRECEPT framework—as currently proposed—is intended to rate scientific evidence related to four domains of questions: disease burden, risk factors, diagnostics and interventions. The framework is scheduled into six consecutive steps, from question framing to evidence statement.

In step one, tools are provided to identify key questions relevant for decision-making. Drawing on systematic reviews performed in step two, guidance is provided on the choice of quality appraisal tools (QATs) for assessment of individual studies. An algorithm is given to match a given study design with an appropriate QAT (step three). The set of QATs suggested here has been identified during a review performed by the study team [3]. In step four, a generalized evidence grading based on GRADE is provided to rate the quality of the bodies of evidence. In this step, approaches previously discussed and proposed by the GRADE Working Group [4,5] or WHO [6,7] are applied. The latter is used by the WHO Strategic Advisory Group of Experts (SAGE) for the development of vaccination recommendations and includes a modification of the GRADE methodology which allows uprating of evidence quality in the presence of “consistency across investigators, study designs and settings” [7]. For qualitative studies, an approach under discussion by the GRADE Working Group is proposed [8]. The evidence appraisal process ends with the preparation of evidence profiles and summary of findings tables (see [9,10] for examples) (step five), followed by the preparation of evidence summary statements (step six) (Fig. 1). By applying this framework, the user should be able to evaluate and grade scientific evidence within the four domains described above in a transparent and reproducible way.

3. Structure of the meeting

Following presentations about the framework and on the application of GRADE to public health, two working groups (WGs) were formed to discuss the draft framework (WG1: from step “framing of questions” to “systematic review”; WG2: from step “quality appraisal” to “evidence summary”), guided by a set of prepared key questions. Participants also split into two WGs to test how different bodies of evidence from interventional as well as non-interventional studies can be appraised by the framework, using two case studies (WG3 and WG4).

4. Challenges in the application of GRADE to public health

In Randy Elder's keynote presentation, challenges when applying GRADE to public health were discussed. Two types of challenges were identified. The first one relates to scarcity of evidence from RCTs to address specific public health questions. The second one relates to validity, suggesting that for several public health questions GRADE assessments of evidence quality might be biased and underestimate the true quality of the evidence. For

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