Evidence tables

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Why work on evidence tables?

- Need for a common definition
- Provides a real opportunity for joint working between guideline agencies and between G-I-N and other international groups
- Potentially could save significant duplication of effort across all guideline development agencies

Work so far…

1. **WG agreed definition of ETs at Lyon Conference 2005**
   - *Evidence tables are methodological and outcome summaries that present data from a number of related studies. These answer a well defined question in a consistent format and aim to demonstrate overall trends in the evidence and enable the process of making recommendations.*

2. **Development of a minimum data set for summarising studies that evaluate an intervention and a definitive template for describing them**
   - Presented in a workshop at the Toronto conference in August 2007.
   - Now accepted for publication by Quality & Safety in Health Care

Work so far…

3. **Development of a template for summarising studies addressing a diagnostic question and a definitive template for describing them**
   - The results of the evaluation study were presented at the Helsinki Conference in October 2008

4. **Development of draft templates for summarising prognostic and economic evaluation studies**
   - Discussed at the Chicago Conference 2010

Work so far…

5. Agreement of the specification for the registry of summarised studies to enable G-I-N members to share their work with others

- **GINDER: G-I-N Data Extraction Resource** (Accessible through the G-I-N website)
- Provides an online collaborative working space, which contains a registry of data extracted from individual studies, based on templates developed by the ETWG.
- Summaries can be linked with guidelines in the G-I-N library

6. Launch of GINDER

- Launched 29 August 2011
- Roll out:
  - Diagnostic studies -> as soon as testing is complete
  - Intervention studies -> later this year
  - Prognostic studies -> once template finalised
  - Economic evaluation studies -> once template finalised.

What we are doing now…

- **Developing a definite template for:**
  - summarising prognostic studies.
  - summarising economic evaluation studies

Members of the Core Group 2010-11

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Second draft template for prognostic studies

Ton Kuijpers
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Introduction

- Prognosis: foreseeing, predicting, or estimating the probability or risk of future conditions
- In medicine, prognosis commonly relates to the probability or risk of an individual developing a particular state of health (an outcome) over a specific time, based on his or her clinical and non-clinical profile

Introduction

- Outcomes are often specific events, such as death or complications, but they may also be quantities, such as disease progression, (changes in) pain, or quality of life

Introduction

Prognostic course studies

- Studies investigating the most likely course of a disease or complaints

Prognostic factor studies

- Studies investigating whether a single variable (such as a tumour or other biomarker) may be prognostic.

Outcome prediction studies

- Studies aimed at predicting outcomes from multiple variables.

Introduction

Example of a prognostic course study

- Estimate incidence and course of severity-graded low back pain episodes in adults.

Example of a prognostic factor study

- To identify individual, psychosocial, and workplace risk factors associated with the transition from acute to chronic occupational back pain.

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Introduction

Examples of outcome prediction studies

- Development and validation of a prediction rule that estimates the probability of complaints persisting for at least 6 months in patients presenting with non-specific neck pain in primary care

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Introduction

Consecutive phases in outcome prediction studies

- Development studies
- Validation studies
- Impact studies

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Introduction

Outcome prediction studies: development studies

- Development of a multivariable prognostic model, including
  - identification of the important predictors,
  - assigning relative weights to each predictor, and
  - estimating the model's predictive performance

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Introduction

Outcome prediction studies: validation studies

- Validating or testing the model's predictive performance *in new study participants*.

Outcome prediction studies: impact studies

- Quantifying whether the use of a prognostic model by practising doctors truly improves their decision making and ultimately patient outcomes

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Introduction

References

- Moons KG, Royston P, Vergouwe Y, Grobbee DE, Altman DG. Prognosis and prognostic research: what, why, and how? BMJ 2009;338:b375.
- Royston P, Moons KG, Altman DG, Vergouwe Y. Prognosis and prognostic research: Developing a prognostic model. BMJ 2009;338:b604..
- Altman DG, Vergouwe Y, Royston P, Moons KG. Prognosis and prognostic research: validating a prognostic model. BMJ 2009;338:b605.
- Moons KG, Altman DG, Vergouwe Y, Royston P. Prognosis and prognostic research: application and impact of prognostic models in clinical practice. BMJ 2009;338:b606.

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Evaluation study of draft prognostic template

- Objectives
- Methods
- Results
- Third draft

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Evaluation study of draft prognostic template

Objectives

To assess:

- the relevance of the items proposed in the template
- the clarity of the instructions for completing these items
- the validity of the data collection

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Evaluation study of draft prognostic template

Methods

- G-I-N members were invited to participate in the study
- They were requested to complete a questionnaire on the relevance/clarity of items and ease of completion, and
- To deliver copies of four study summaries according to the draft prognostic template and instructions given.

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Evaluated draft template

HEADINGS	DESCRIPTION
Bibliographic citation	Use Vancouver st yle (Authors. Title. Journal name. Publication Date; Volume (Issue):Page Numbers) Insert the link to the publication.
Sources of funding and competing interest	Report: ➢ The source of funding cited in the paper: give name(s) of organisation or corporation. Specify if possible the source type (public research funds, NGO, government, Academic/university healthcare industry or other) ➢ Competing interests: Write "Stated" or "Not Stated" and specify if any
Setting	Multicenter, Location/Country(ies), Healthcare se tting,
Objective(s) of the study	Report, as cited by author(s), the objective(s) of the study including both primary and secondary aims, if applicable.
Type of prognostic study	Specify whether the study is a prognostic course study, a prognostic factor (Explanatory) study, or an outcome prediction (Risk group) study)

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Evaluated draft template

METHODS	
Study design (cited by author or actual)	Specify the study design: cross sectional study, (prospective) cohort study, case control study, other (give details). Precise if it's the design cited by author(s).
Eligibility criteria	Describe the: ➢ Eligibility criteria i.e. inclusion-exclusion criteria, ➢ Methods of selection of participants, e.g. convenience sample, consecutive patients etc.
Study duration	Report periods of recruitment, exposure, and follow-up moments
Outcome events	Describe the outcome events identified by author(s), both primary and secondary ones.
Prognostic factors and potential confounders (applies to a prognostic factor study, or an outcome prediction study)	In case of a prognostic factor study: Describe the potential prognostic factors. In case of a central prognostic factor, describe the central prognostic factor and all potential confounders and effect modifiers
	In case of an outcome prediction study: Describe all potential prognostic factors

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Evaluated draft template

RESULTS	
Numbers	Report numbers of individuals at each stage of study: ➢ numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed ➢ Number of patients excluded and reasons (i.e. give reasons for non-participation at each stage)
Patients characteristics	Describe the actual population involved in the study: ➢ Give characteristics of study participants (e.g. demographic, clinical, social) and information on exposures and potential confounders ➢ Indicate number of participants with missing data for each variable of interest ➢ Report Follow-up time: average/ median and range if applicable
Outcome events data	Report numbers of outcome events or summary measures Report all available figures with 95% confidence intervals or other measures of dispersion such as standard errors (if confidence intervals aren't reported)
Effect size - prognostic factors (applies to a prognostic factor study, or an outcome prediction study.)	In case of a prognostic factor study: Report all available figures with 95% confidence intervals or other measures of dispersion such as standard errors (if confidence intervals aren't reported): ➢ Report unadjusted univariable estimates and their precision ➢ Report adjusted multivariable estimates and their precision Specify category boundaries when continuous variables were categorized
	In case of an outcome prediction study: - development of the model ➢ Report unadjusted univariable estimates and their precision ➢ Report adjusted multivariable estimates and their precision ➢ Report performance statistics of the model (AUC, expected / observed probability plots, Hosmer-Lemeshow goodness-of-fit H- or ? -statistics, negative / positive predicted values. - validation of the model ➢ Report performance statistics of the model (e.g. AUC, expected / observed probability plots, Hosmer-Lemeshow goodness-of-fit H- or ? -statistics, negative / positive predicted values.

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Evaluated draft template

CRITICAL APPRAISAL OF THE STUDY QUALITY	
Authors conclusion	Report the authors' conclusion
Validity of results	Discuss the validity of the results and potential bias present: ➢ Internal validity: study design appropriateness, sources of potential bias, use of inappropriate statistical analysis, interpretation of the results (taking into account the study hypotheses), multiplicity of analyses, comment on patients lost to follow-up (if applicable), etc. ➢ External validity: discuss the generalisability of the study results (e.g. setting, population involved, test used, how (over)optimistic the model performance is in predicting outcomes etc.) General comments, including own conclusion of the reviewer, if possible.
Other /Addendum Optional	Further calculations made by the reviewer

Evaluation study of draft prognostic template

Results

- People willing to participate; N=16
- Response; N=13
- Professions:
  - Clinical nurse specialist (n=1)
  - Medical specialist (n=3)
  - Researcher (n=4)
  - Pharmacist (n=1)
  - Technical analyst (n=1)
  - Information officer (n=1)
  - Systematic reviewer (n=1)
  - Epidemiologist (n=1)

Evaluation study of draft prognostic template

Results

- 100% of the respondents had already done critical reviews of the literature?
- Average time to read a paper and complete a summary was 130 min.
- 69% thought that completing the template for the 2nd, 3rd & 4th study was less difficult?

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Evaluation study of draft prognostic template

	Relevancy 1= strongly disagree 9= strongly agree	Understandability 1= strongly disagree 9= strongly agree	Difficulty in completing Percentage No answers
Bibliographic citation	8.5	8.8	92%
Source of funding and competing interest	8.6	8.6	92%
Setting	8.4	7.8	64%
Objectives(s) of the study	8.8	8.8	92%
Type of prognostic study	7.5	6.6	46%
Study design	8.2	7.8	77%
Eligibility criteria	8.7	8.3	75%
Study duration	8.4	8.0	83%
Outcome events	7.9	7.8	100%
Prognostic factors and potential confounders	8.4	7.5	77%
Numbers	8.4	8.3	75%
Patient characteristics	8.2	8.4	50%
Outcome events data	8.5	8.5	77%
Effect size – prognostic factors	8.5	6.5	40%
Critical Appraisal	7.5	8.2	-

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Evaluation study of draft prognostic template

	Were instructions clear and/or helpful in order to complete template? Percentage Yes answers	
	Helpful?	Clear?
Bibliographic citation	100	92
Source of funding and competing interest	100	83
Setting	92	92
Objectives(s) of the study	100	100
Type of prognostic study	75	50
Study design	83	58
Eligibility criteria	100	100
Study duration	100	92
Outcome events	100	100
Prognostic factors and potential confounders	100	83
Numbers	100	100
Patient characteristics	92	83
Outcome events data	100	83
Effect size – prognostic factors	92	75

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Evaluation study of draft prognostic template

Suggestions for additional items

- Appropriateness of statistics performed
- How were missing data handled
- Overall comment
- Level of quality of the evidence

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Proposed final template

HEADINGS	Instructions
Bibliographic citation	Use Vancouver style (Authors. Title. Journal name. Publication Date; Volume (Issue):Page Numbers) • Journal titles are abbreviated (to decipher abbreviations see: PubMed Journals Database <http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=journals>) • Only first words of article title and words that normally begin with a capital letter are capitalised. • First 6 authors are listed; thereafter add an et al. after the sixth author. Example: Gao SR, McGarry M, Ferrier TL, Pallante B, Gasparrini B, Fletcher JR, et al. Effect of cell confluence on production of cloned mice using an inbred embryonic stem cell line. Biol Reprod. 2003;68(2):595-603. Insert the link to the publication. Example: http://www.ncbi.nlm.nih.gov/pubmed/12533424
Sources of funding	Report the source of funding cited in the paper: • give name(s) of organisation or corporation. • Specify if possible the source type (public research funds, NGO, government, Academic/university healthcare industry or other)
Competing interest	Competing interests: Write "Stated" or "Not Stated" and specify if any
Setting	Multicenter, Location/Country(ies), Healthcare setting (primary, secondary, tertiary), workplace setting
Objective(s) of the study	Report, as cited by author(s), the objective(s) of the study including both primary and secondary aims, if applicable
Type of prognostic study	Specify whether the study is a prognostic course study, a prognostic factor (explanatory) study, or an outcome prediction (Risk group) study). The addendum at the end of document explains and illustrates the types of prognostic studies

Proposed final template

METHODS	
Study design	Specify what you think is the actual study design: cross sectional study, (prospective) cohort study, case control study, other (give details) Optional: If you think the actual study design differs from the one cited by the author(s), you could mention this
Sampling method	Methods of selecting study participants, e.g. convenience sample, consecutive patients etc.
Eligibility criteria	Describe the Eligibility criteria i.e. inclusion-exclusion criteria,
Follow-up moments	Report periods of recruitment and follow-up moments
Outcome measures	Describe the outcome measures identified by author(s), both primary and secondary ones. Example (see also study of Schellingerhout et al in addendum): Outcome measure is global perceived recovery, dichotomized into "recovered or much improved" and "persistent complaints".)
Prognostic factors and potential confounders (applies to a prognostic factor study, or an outcome prediction study.)	In case of a prognostic factor study: Describe potential prognostic factors mentioned in the paper. In case of a central prognostic factor, describe the central prognostic factor, all potential confounders and effect modifiers mentioned in the paper
	In case of an outcome prediction study: Describe all potential prognostic factors mentioned in the paper

Proposed final template

RESULTS	
Numbers	Report numbers of individuals: • numbers potentially eligible, • included in the study, • completing follow-up Optional: If available copy and paste flowchart from the paper
Patients characteristics	Describe the actual population involved in the study by giving characteristics of study participants: • demographic characteristics (age, sex, ethnicity, socio-economic status) and • relevant context-sensitive (e.g. stage of disease) characteristics
Outcome measures data	Report outcomes measures data and include all available figures with 95% confidence intervals or other measures of dispersion such as standard errors (if confidence intervals aren't reported) Example (see also study of Schellingerhout et al in addendum): Persistent complaints were reported by 43% of the patients in the development population after 6 months of follow-up
Effect size of prognostic factors (applies to a prognostic factor study, or an outcome prediction study.)	In case of a prognostic factor study: Report all available figures with 95% confidence intervals or other measures of dispersion such as standard errors (if confidence intervals aren't reported): • Report statistically significant unadjusted univariable estimates and their precision • Report statistically significant adjusted multivariable estimates and their precision Specify category boundaries when continuous variables were categorized
	In case of an outcome prediction study: - development of the model • Report statistically significant unadjusted univariable estimates and their precision • Report statistically significant adjusted multivariable estimates and their precision • Report performance statistics of the model (see addendum for relevant statistics) - validation of the model • Report performance statistics of the model (see addendum for relevant statistics)
Authors conclusion	Report the authors' conclusion

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Proposed final template

CRITICAL APPRAISAL OF THE STUDY QUALITY	
Validity of results	Discuss the validity of the results and potential bias present. Relevant issues are for instance: • how representative is the sample of patients? • was patient follow-up sufficiently long and complete? • were outcome criteria either objective or applied in a 'blind' fashion? If subgroups with different prognoses are identified, did adjustment for important prognostic factors take place? • how were missing data handled? • how precise are the prognostic factors estimated? • appropriateness of statistics performed? • overall comment (see for instance www.cebm.net)
Addendum (optional)	Further calculations made by the reviewer

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Evaluation study of draft prognostic template

- Specific items to be discussed
  - Type of prognostic study: useful item?
  - Prognostic factors and potential confounders: is it useful to mention all potential prognostic factors that have been investigated, or should we confine ourselves to mentioning statistically significant prognostic factors
  - Numbers: numbers potentially eligible; numbers included in the study; numbers completed follow-up. More numbers needed?

Evaluation study of draft prognostic template

- Item descriptions: clear enough?
- More items needed?
- Has the template unnecessary items?

Template for summarising economic evaluations

Evaluation study

- Invitation sent widely via G-I-N newsletter and to ten volunteers
- Six people expressed interest
- All sent four papers to extract into the template
- Four completed all four papers and provide 16 completed templates for the study
- Three people completed the questionnaire too

Results

- **Respondents found the following items difficult to complete:**
  - **Time horizon, discounting and sensitivity analysis**
  - **Overall summary measure of benefit. A suggestion was made that this item could ask for cost per effectiveness unit or cost per utility specifically**
  - **Two respondents wanted clarification of "method used to value benefit"**
  - **One respondent asked that a cost-effectiveness plane and cost-effectiveness acceptability curve be asked for in the results section**

Results 2 - suggestions

- **Respondents asked for a glossary to describe:**
  - **All types of analysis (CUA etc)**
  - **Discounting**
  - **Time horizon**
  - **Difference between utilities and benefits**
  - **Methods used to value benefit**
- **One respondent suggested that there is a major challenge in using economic analyses in other than the study country. An item on transferability or applicability was requested.**

Evaluation study draft

HEADING	DESCRIPTION
Bibliographic citation	Use style (Authors. Title. Journal name. Publication Date; Volume (Issue):Page (Numbers) Hyperlink to publication
Sources of funding and competing interests	Quote the source of funding if mentioned in the paper. If possible, specify the source type (public research funds, Government, NGO, academic/university, healthcare industry, other). Note: It is not necessary to report funding or conflicts of any secondary sources used in the analysis. Quote any declared competing interests, or write “None stated”

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METHODS	
Type of economic evaluation	Specify the form of economic evaluation being used (CUA, CEA, CBA, etc).
Viewpoint / costing perspective	State the viewpoint of the analysis.(eg. health system, payer or societal etc.)
Country/Countries	List the country/countries for economic evaluation
Time horizon	State the time horizon for both costs and benefits
Population	Describe the eligible population and the population used for effect/cost data
Interventions	Describe the alternatives being compared
Primary health outcome measure(s)	State the primary health outcome measure(s)
Overall summary measure of benefit (if used)	State the summary measure of benefit for CUA (eg. QALY or DALY etc.)

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Source of effectiveness estimates	Identify the source (meta analysis, RCT, etc.)
Methods used to value benefits	Identify the methods used (stated WTP, revealed WTP, conjoint analysis etc.)
Utilities and benefits	Specify where utilities or benefits came from (literature values, elicited in the study etc.)
Source of estimates of quantities of resources used	Describe the methods use to identify relevant resource use (survey, lit values, expert consultation, formal consensus methods etc)
Methods used to estimate unit costs	Describe the methods used to identify relevant unit costs (survey, lit values etc) Include cost year
Adjustment for inflation	Was adjustment for inflation performed if unit costs stemmed from different years?
Discounting	Was discounting performed? Were effects and cost discounted with the same rate(s)?
Approach to sensitivity analysis	Describe the methods used for sensitivity analysis (one way, two way, probabilistic etc)
Modelling and analysis	Detail any model used (Markov, Decision Tree, Discrete Event Simulation etc)

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RESULTS	
Costs and outcomes	Presented relevant costs and outcomes in both disaggregated and aggregated form (with confidence intervals, measures of significance)
Subgroup analyses	Were subgroup analyses performed? Are the based on the results of RCTs etc.?
Incremental analysis results	Present the results of IA
Sensitivity analysis results	Present the results of SA

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CRITICAL APPRAISAL OF STUDY QUALITY	
Authors conclusion	Report authors' conclusions verbatim
Validity of results	Comment on the strengths and weaknesses of the study. If weaknesses were identified were these likely to have made a difference to the results of the economic evaluation?
Other / addendum (optional)	

GINDER