KCE REPORT 212

Federaal Kenniscentrum voor de Gezondheidszorg
Centre Fédéral d'Expertise des Soins de Santé
Belgian Health Care Knowledge Centre

DISSEMINATION AND IMPLEMENTATION OF CLINICAL PRACTICE GUIDELINES IN BELGIUM

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HEALTH SERVICES RESEARCH

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LIST OF ABBREVIATIONS

ABBREVIATION	DEFINITION
AGREE	Appraisal of Guidelines Research and Evaluation instrument
AIIB – VUKB	Association des Infirmières Indépendantes de Belgique – Vereinigung Unabhängiger Krankenpflegerinnen Belgiëns
APB	Association Pharmaceutique belge – Algemene Pharmaceutische Bond
ASELF	Association Scientifique et Ethique des Logopèdes Francophones
AXXON	Physical therapy in Belgium
BACTS	Belgian Association for Cardio-Thoracic Surgery
BAPCOC	Belgian Antibiotic Policy Coordination Committee
BCFI – CBIP	Belgisch Centrum voor Farmacotherapeutische Informatie – Centre Belge d'Information Pharmacothérapeutique
BSC	Belgian Society of Cardiology
CEBAM	Belgian Centre for Evidence-Based Medicine
CI	Confidence Interval
CIPIQ-S	Collaboration internationale des Praticiens et Intervenants en Qualité dans le domaine de la santé
CLEAR	Common Language Evidence-based Advices and Recommendations
CNPQ/NRKP	National Council for Quality Promotion
CME	Continuous Medical Education
CPG	Clinical Practice Guideline
EBMeDS	Evidence Based Medicine Electronic Decision Support (System)
EBMPracticeNET	Electronic platform that disseminates guidelines validated by CEBAM (and in the future the Finnish Duodecim guidelines as well)
EFAD	European Federation of the Associations of Dieticians
EPOC	The Cochrane Effective Practice and Organization of Care Group
FARMAKA	Onafhankelijk Centrum voor Geneesmiddeleninformatie/Centre indépendant d'information sur les médicaments
GIN	Guidelines International Network
GRADE	Grading of Recommendations Assessment, Development and Evaluation

IQR	Interquartile range
K&G – ONE	Kind en Gezin – Office de la Naissance et de l'Enfance
KCE	Belgian Health Care Knowledge Centre
KNGF	Koninklijk Nederlands Genootschap voor Fysiotherapie
LOK – GLEM	Lokale Kwaliteitskringen – Groupes Locaux d'Evaluation Médicale
NHG	Nederlands Huisartsen Genootschap
NICE	National Institute for Health and Clinical Excellence
NIHDI – RIZIV – INAMI	National Institute for Health and Disability Insurance – Rijksinstituut voor Ziekte- en Invaliditeitsverzekering – Institut National d'Assurance Maladie-Invalidité
OR	Odds Ratio
RD	Risk Difference
SMD	Société de Médecine Dentaire
SPF – FOD - FPS	Service Public Fédéral – Federale Overheidsdienst- Federal Public Services
SSMG	Société Scientifique de Médecine Générale
SWOT	Strengths, Weaknesses, Opportunities and Threats
UPDLF	Union Professionnelle des diplômés en Diététique de Langue Française
VAD	Vereniging voor Alcohol- en andere Drugproblemen
VLOV	Vlaamse Organisatie van Vroedvrouwen
VVIZV	Vlaamse Vereniging Intensieve Zorgen Verpleegkundigen
VVP	Vlaamse Vereniging voor Psychiatrie
WCPT	World Confederation for Physical Therapy
WGK	Wit-gele Kruis van Vlaanderen
WVVK	Wetenschappelijke Vereniging van Vlaamse Kinesitherapeuten

SCIENTIFIC REPORT

The objective of this study is to identify the optimal dissemination and implementation strategies for clinical guidelines in order to propose avenues for improvement in Belgium.

Sections of the scientific report

This report has three parts:

- An overview of the systematic literature reviews on the efficacy of the strategies for guideline dissemination and implementation (chapter 1);
- A qualitative study to describe the landscape of guidelines in Belgium i.e. the different organizations and the links between them (chapter 2);
- The discussion of proposals to improve the future dissemination and implementation of guidelines in Belgium, with an involvement of representatives of major associations at stake (chapter 3).

Background: knowledge translation

Different concepts are used in the literature to describe the so called "knowledge–to-action gap" i.e. the translation of research findings (e.g. clinical guidelines) into practice. Graham et al.[1] made an overview of the different concepts of knowledge translation (only the keywords of the definition are presented):

- Knowledge translation: the exchange, synthesis and ethically-sound application of knowledge to accelerate the capture of the benefit of research through improved health, more effective services and products and a strengthened health care system;
- Knowledge transfer: a systematic approach to capture, collect and share tacit knowledge in order for it to become explicit knowledge. This concept is sometimes interpreted as the first step of disseminating knowledge to stakeholders and does not extend to the use of the knowledge;
- Knowledge exchange: interaction between researchers and decision makers. This term is now preferred by the Canadian Health Services Research Foundation and is a modified version from the knowledge transfer concept;
- Research utilization: focused on moving research findings into action, mainly used in nursing;

- Implementation: the execution of the adoption decision, that is the innovation or the research is put into practice. This term is more common in the United Kingdom and Europe;

  Implementation research has been defined as the scientific study of methods to promote the systematic uptake of clinical research findings and other evidence-based practices into routine practice to improve the quality and effectiveness of health care;
- Dissemination: the spreading of knowledge or research, such as is done in scientific journals and at scientific conferences, but with a general lack of emphasis on the development of knowledge or the actual uptake or implementation of the knowledge.

Next to these main terms, other terms are often also used in the context of knowledge-to-action, e.g. translational research, diffusion, continuing education, continuing professional development.

The authors further offered a conceptual framework about the knowledge-into-action process. The initial phase consists of knowledge creation whose last phase is the production of tools and products tailored to the user.

Knowledge action itself is a cycle around the creation phase, with activities needed for knowledge application: adaptation of knowledge to local context, barriers assessment, tailored interventions, monitoring and evaluation of knowledge use, further actions to sustain and improve it.

Scope of the report: focus on professional specific interventions

These phases of knowledge creation and translation apply to the practice guidelines as well.

- Knowledge creation and action were considered in the description of the Belgian landscape. The description includes the production or adaptation of guidelines, strategies to disseminate them and if possible to implement them in the practice of Belgian professionals;
- The literature review produced background information to highlight the Belgian situation and possible improvements. The focus was on professional interventions described in the EPOC taxonomy.[2] This taxonomy describes interventions to favour the uptake of guidelines by health professionals (including professional but also organisational, financial and regulatory interventions). The initial question of the Belgian Centre for evidence-based medicine (CEBAM) focused on interventions for professionals and furthermore the literature usually focuses on those interventions as well.[3]

1 OVERVIEW OF THE SYSTEMATIC REVIEWS ON GUIDELINE DISSEMINATION AND IMPLEMENTATION

This first section is an overview of the systematic literature reviews on the professional interventions for guideline dissemination and implementation to identify the most effective strategies for the knowledge transfer of clinical guidelines.

The researchers synthesized existing reviews given the high quality of the existing work and the huge number of primary studies (e.g. from the Cochrane Effective Practice and Organisation of Care Group, EPOC). The results are classified according to the EPOC taxonomy of professional interventions (see description in the synthesis).

1.1 Methods

1.1.1 Inclusion criteria

1.1.1.1 Type of studies

Systematic reviews, meta-reviews and meta-analyses published in English, French or Dutch between 2002 and 2012 were included.

1.1.1.2 Participants

We included studies involving qualified health professionals. Studies targeting patients only were excluded.

1.1.1.3 Interventions

Studies were included if they assessed the implementation of clinical practice guidelines by means of professional interventions listed in the EPOC taxonomy summarized in the synthesis.

Studies on the usability and effectiveness of specific devices (e.g. spirometers, electronic record systems) were excluded.

Reviews that did not specifically address the dissemination or implementation of guidelines were excluded as well. Yet some outstanding reviews on implementation strategies of medical knowledge in general (proposed by validators) were added in the discussion to put the results in perspective.

1.1.1.4 Outcome measures

Any objective measure of provider behaviour, clinical process change, compliance, performance indicators on process of care (including prescription behaviour) and indicators on patients' health outcomes were considered as suitable outcomes for the measurement of the effectiveness, efficacy or efficiency of guideline dissemination.

Cost–benefit and cost-effectiveness analyses were not excluded but studies that included only economic outcomes were discussed in the discussion section. Studies only reporting changes in the physician's knowledge or presenting only subjectively assessed outcomes (e.g. satisfaction) were excluded. Studies measuring effectiveness of strategies only by patient outcome (without link with physician's behaviour) were excluded.

1.1.2 Identification of studies

1.1.2.1 Search terms

The search strategy (available upon request) combined broad terms describing the problem under study (guidelines, practice guidelines, clinical guidelines, care pathways and management protocol) with those describing the dissemination intervention (diffusion of innovation, information dissemination, implementation uptake and dissemination) and the outcome (guideline adherence, decision making, physician practice pattern, behaviour outcome assessment, compliance and clinical competence). These terms were searched in title, abstract, keyword and MESH terms.

1.1.2.2 Databases

Electronic searches were undertaken in the following databases:

- Ovid MEDLINE(R) 1946 to November Week 2 2012;
- EMBASE (1980) to November Week 3 2012;
- CINAHL (1981) to November Week 3 2012.

The search prepared for Medline was translated to Embase and CINAHL.

Hand search was performed in the following databases:

- Cochrane Effective Practice and Organisation of Care Group reviews (2000) to November 2012;
- KCE reports database (2004) to November 2012.

1.1.3 Study selection

Results were merged and duplicates removed. The citations were screened by two researchers against the inclusion criteria (Anja Desomer-AD, Julien Piérart-JP). A third researcher (Dominique Paulus-DP) solved disagreements during the screening and extraction processes. Data extraction tables were used to extract data from references, aims and short description, methodological characteristics, intervention characteristics and results. A flow diagram describes this screening process (Figure 1).

1.1.4 Critical appraisal

The two researchers mentioned above (AD, JP) appraised the 22 selected reviews using the AMSTAR (Assessment of Multiple Systematic Reviews) tool (see appendix 1.1). For inter-tester reliability, a random sample of 6 studies was evaluated by both researchers. Discussions about these 6 dual-appraised reviews were solved by the third researcher (DP). The results of the quality appraisal are in appendix 1.2.

1.1.5 Data analysis and synthesis

The analytical framework of Grimshaw et al., 2004 is used to present a narrative review[4]. Meta-analysis techniques were not possible given high heterogeneity between studies: (1) complex presentation of effects calculated for single and up to 6 different interventions; (2) effects of multifaceted interventions (up to seven intervention combinations) compared to no intervention (i.e. usual care or control group that did not receive any interventions); (3) control groups that also received up to three interventions; (4) mix of dichotomous and continuous process/outcomes of care variables.

This review describes the following strategies:

- Audit and feedback;
- Distribution of educational materials (printed and electronic) and reminders;
- Educational meetings (including interprofessional education);
- Educational outreach visits;
- Local Opinion leaders;
- Multifaceted interventions.

The review considers the following comparisons:

- Single interventions:
  - compared with no intervention controls;
  - compared with intervention controls.
- Multifaceted interventions:
  - compared with no intervention controls;
  - compared with intervention controls.

1.2 Results

1.2.1 Search results

The search strategy yielded 1728 citations after removing duplicates (Figure 1). After screening, the following systematic reviews were included on:

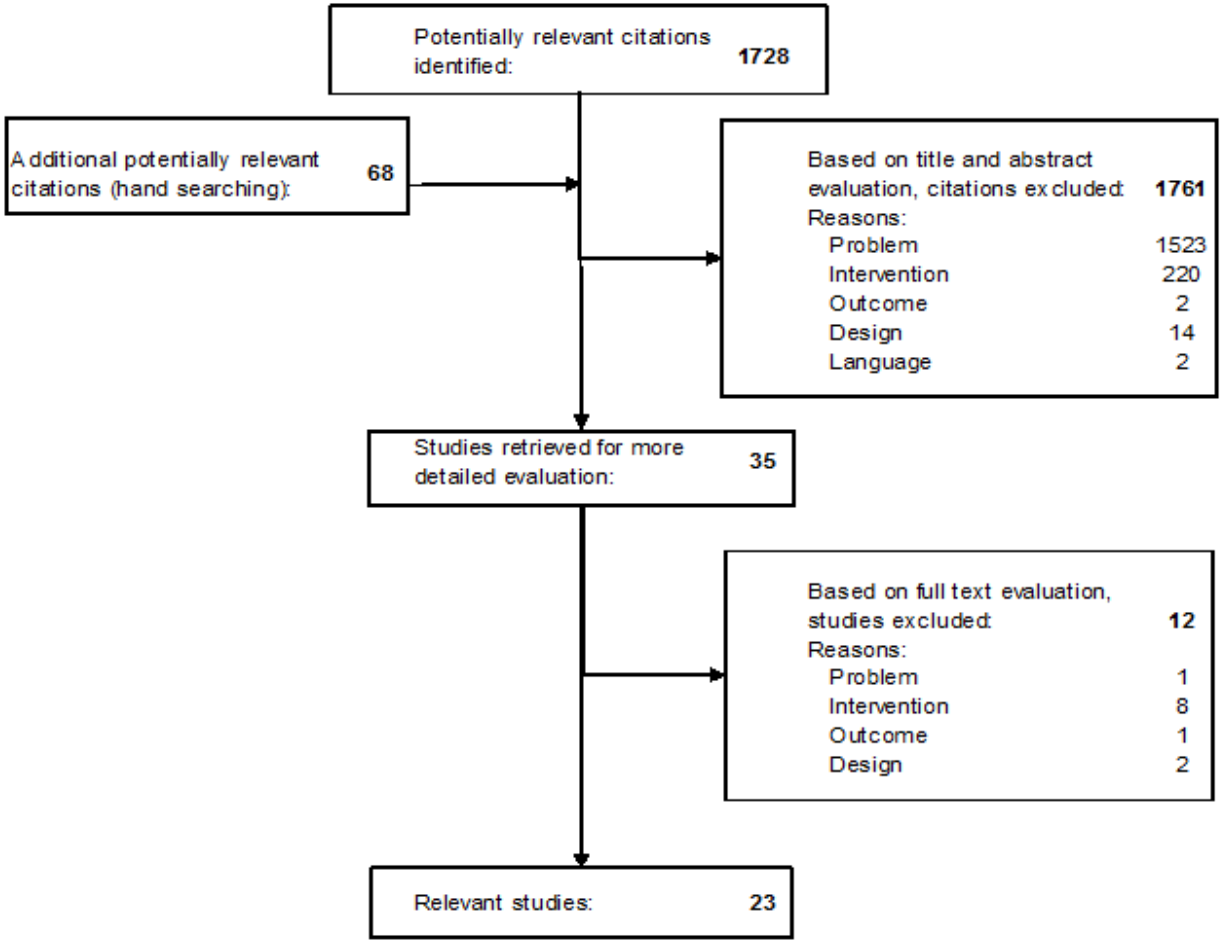
- Audit and feedback: Ivers 2012[5], Chaillet 2006[6];
- Distribution of educational materials and reminders: Giguère 2012[7], Damiani 2010[8], McGowan 2010[9], Shojania 2011[10], Medves 2010[11], Akbari 2011[12];
- Educational meetings and interprofessional education: Forsetlund 2012[13], Reeves 2009[14], Medves 2010[11];
- Educational outreach visits: O'Brien 2007[15];
- Local opinion leaders: Flodgren 2011[16];
- Multifaceted interventions: Grimshaw 2004[4], Prior 2008[17], Menon 2009[18], Van der Wees 2008[19], Brusamento 2012[20], Hakkenes 2008[21], Weinmann 2007[22], Chaillet 2006[6];
- Effect modifiers: Francke 2008[23], Baker 2010[24], Baskerville 2012[25].

One systematic review of economic evaluations was included in the discussion (Vale 2007[26]).

The researchers further added the conclusions of the KCE report on educational outreach visits[27].

The included studies are described per dissemination strategy and the data evidence tables are in appendix 1.3.

Figure 1 – Flow diagram



1.2.2 Methodological quality

The quality appraisal based on AMSTAR scores (see appendix 1.2) found that all but one systematic review were of high quality. Only the review of Dulko 2007[28] was excluded.

1.3 Effectiveness of professional interventions

The results of the literature search are presented per dissemination strategy. The description encompasses the definition (cf. EPOC taxonomy, see the synthesis), overall assessment and brief presentation of effect modifiers for each strategy under study. Each strategy is assessed as a single intervention and/or as a core component of multifaceted interventions.

A separate section (see 1.3.6) is dedicated to multifaceted interventions in which no core component could be identified. Also the reviews with no clear distinction between strategies are described in this section. This chapter concludes with the description of the barriers and facilitators for guideline dissemination (see 1.3.7) and with an overview of the main findings (see 1.4).

1.3.1 Audit & Feedback

1.3.1.1 Definition

The Cochrane review from Ivers 2012[5] defines audit and feedback as “any summary of the clinical performance of healthcare provider(s) over a specified period of time”. Audit and feedback (A&F), also known as “clinical performance feedback”, may include recommendations for clinical action and may be delivered in a written, electronic or verbal format.

Information on the theories that underlie the possible mechanisms behind each implementation intervention can be found in the full text of the Cochrane review.

1.3.1.2 Results of search strategy

The search strategy retrieved three systematic reviews on audit and feedback: Dulko 2007[28], Ivers 2012[5] and Chaillet 2006[6]. Dulko 2007[28] was excluded given the low quality (see appendix 1.2). This description is mainly based on the results of the Cochrane review of Ivers 2012[5] and completed where possible with the results of the review of Chaillet 2006[6].

1.3.1.3 Effectiveness of Audit & Feedback

This Cochrane review[5] focuses on feedback on clinical performance, excluding feedbacks for procedural skills, performance on tests or simulated patients interactions or other interventions from the EPOC categories. Audit and feedback had to be the essential element of a single or multifaceted intervention. The review considered the following comparisons:

- Any intervention in which audit and feedback is the single intervention or is the essential element of a multifaceted intervention, compared to usual care. Specific analyses focused on two types of comparisons:
  - Audit and feedback alone compared to no intervention;
  - Audit and feedback as the core feature of a multifaceted intervention compared to no intervention.
- Different ways of providing audit and feedback;
- Audit and feedback alone compared with audit and feedback combined with complementary interventions;
- Audit and feedback compared to other interventions.

Effectiveness of audit and feedback: overall assessment

The overall assessment first analyzed the effectiveness of audit and feedback without differentiation between single and multifaceted interventions (see also Table 1). It should be noted that most studies were found to have a high risk of bias.

- Increase in compliance with desired practice

For dichotomous outcomes the weighted median adjusted risk difference was +4.3% (IQR (Interquartile Range) 0.5% to 16%), based on 82 comparisons from 49 studies. For continuous outcomes the weighted median adjusted change relative to baseline control was +1.3% (IQR 1.3% to 23.2%), based on 26 comparisons from 21 studies.

- Changes in patient outcomes

A slight decrease in desired outcomes was found for dichotomous outcomes (-0.4% weighted median adjusted risk difference (IQR -1.3% to 1.6%) based on 12 comparisons from 6 studies). However there was an increase in desired outcomes for continuous outcomes (+17% weighted median adjusted change relative to baseline control (IQR 1.5% to 17%) based on 8 comparisons from 5 studies).

In studies evaluating audit and feedback in obstetrics (Chaillet 2006[6]), the majority of the included studies found a positive effect on the guideline implementation (in 9 of the 11 studies). However, in the description of the results no differentiation was made between single and multifaceted interventions and it was not clearly reported on which specific outcomes (practice or patient outcomes) the positive effect had place. Also the magnitude of effect was not precised, resulting in a more vague and general finding that some positive effect after an intervention with audit and feedback could be seen.

Effectiveness of audit and feedback as single intervention (compared to no intervention)

Audit and feedback as unique intervention seem to increase compliance with desired practice in comparison with no intervention. The results were positive for both dichotomous (+3.0% weighted median adjusted risk difference (IQR 1.8% to 7.7%) based on 32 comparisons from 26 studies) and continuous outcomes (+1.3% weighted median adjusted change relative to baseline control (IQR 1.3% to 11.0%) based on 14 comparisons from 13 studies).

Table 1 – Audit and feedback: summary of findings from Cochrane meta-analysis for the no-intervention comparison – description of outcomes adapted from Ivers 2012[5]

Outcomes	Adjusted absolute improvement (Risk difference) Median (Interquartile range)	Number of participants (studies)
Compliance with desired practice (dichotomous outcomes)	Median 3.0% (1.8% to 7.7%)	1617 health providers (14 trials) 759 groups of health providers (12 cluster trials)
Compliance with desired practice (continuous outcomes)	Median 1.3% (1.3% to 11.0%)	494 health providers (5 trials) 348 groups of health providers (8 cluster trials)

Effectiveness of audit and feedback as (core) component of a multifaceted intervention (compared to no intervention)

Audit and feedback as core of a multifaceted interventions seem to increase compliance with desired practice in comparison with no intervention. Results were positive for both dichotomous outcomes (+5.5% weighted median adjusted risk difference (IQR 0.4% to 16%) based on 50 comparisons from 32 studies) and continuous outcomes (+26.1% weighted median adjusted change relative to baseline control (IQR 12.7% to 26.1%) based on 12 comparisons from 11 studies).

Audit and feedback combined with complementary interventions (compared to audit and feedback alone)

The narrative review included 53 comparisons from 43 trials. The analysis revealed small and conflicting differences in desired practice for the combination with other interventions: reminders, other educational interventions, case management, financial incentives, patient-mediated interventions. Only an increase in desired practice was found in audit and feedback combined with educational outreach compared to audit and feedback alone.

Other interventions compared to audit and feedback

The narrative review included 22 comparisons from 20 trials. Conflicting results were found in the comparisons of audit and feedback with reminders, educational outreach, other educational interventions, case management, organizational interventions or patient-mediated interventions. No clear conclusion can be drawn on which intervention would be more effective compared to audit and feedback.

Characteristics explaining the heterogeneity (effect modifiers)

All 5 characteristics related to the intervention were significant for explaining the variation in effects: format ($p=0.02$), source ($p<0.001$), frequency ($p<0.001$), instructions for improvement ($p<0.001$), direction of change required (i.e. decrease of provider's behaviour, $p=0.007$). Also lower baseline performance was associated with greater effectiveness for the interventions ($p=0.007$). The clinical setting (outpatient versus inpatient versus mixed/other/unclear) had no influence on the effectiveness of audit and feedback. The kind of targeted behaviour had an impact on the effectiveness: for prescribing the effect of audit and feedback increased to a weighted median adjusted risk difference 13.1% (IQR 3% to 17%). The authors conclude that audit and feedback may be more effective when baseline performance is low, the source is a supervisor or colleague, it is provided more than once, it is delivered in both verbal and written format and when it included both explicit targets and an action plan.

1.3.1.4 Limitations of studies

- Publication bias
- Risk of bias
- Heterogeneity in results
- Low quality of studies (due to small sample sizes)

1.3.1.5 Conclusions

The conclusions on the effectiveness of audit and feedback as interventions to implement guidelines are based on one recent Cochrane review of high quality. Overall this intervention leads to small improvements in desired practice and to a lesser extent in patient's outcomes:

- Audit and feedback as single interventions lead to a (small) increase in desired practice in comparison with no intervention;
- Audit and feedback as core components of a multifaceted interventions produce a larger effect than when used as a single intervention. However there is uncertainty on which interventions should be best combined with audit and feedback.

As observed for academic detailing[27] the intervention is particularly effective for modifying prescription behaviour. Larger effects are observed when the intervention aims at decreasing a particular behaviour and when baseline performance is low.

The characteristics of an effective audit and feedback intervention include[5]:

- The involvement of a supervisor or colleague;
- A high frequency (up to monthly);
- A combination of verbally and written material;

- The inclusion of clear targets and a concrete action plan.

Yet these findings must be interpreted with caution due to the heterogeneity in interventions and results.

Key points for audit and feedback

- **A small increase in practice outcomes is observed in single interventions of audit and feedback (compared to no intervention).**
- **A larger effect is observed after a multifaceted intervention with audit and feedback as core component. However, there is no evidence on the interventions that should be best combined with audit and feedback.**

1.3.2 Distribution of educational materials and reminders

1.3.2.1 Definition

Educational materials

The EPOC taxonomy defines the distribution of educational materials as the distribution of published or printed recommendations for clinical care, including clinical practice guidelines, audio-visual materials and electronic publications (see http://epoc.cochrane.org/epoc-methods). Printed educational materials (PEMs) (e.g. clinical practice guidelines) can be delivered personally (i.e. addressed to a specific individual), through mass mailings or passively delivered through broader communication channels (printable documents on the internet, mass media) (Grimshaw 2004[4]). The advances in electronic technologies led the electronic educational materials become more widespread in clinical practice: the access to this information will influence its impact on the providers (McGowan 2010[9]).

Reminders

Reminders can be considered as an educational material adapted to the individual patient's encounter. The EPOC taxonomy classifies them in an apart category defined as "Patient or encounter specific information, provided verbally, on paper or on a computer screen, which is designed or intended to prompt a health professional to recall information". (See http://epoc.cochrane.org/epoc-methods).

Information on the mechanisms behind each implementation strategy can be found in the full text of the reviews. Only some brief concepts are mentioned in the discussion as plausible explanation for the found results.

This section on the distribution of educational materials is divided in printed educational materials, electronic educational materials in general (including internet-based learning) and reminders.

1.3.2.2 Results of search strategy

Six reviews were selected on educational materials and reminders: one review on printed educational materials (Giguère 2011[7]), two reviews on electronic educational materials (Damiani 2010[8] and McGowan 2010[9]), one review on reminders (Shojania 2011[10]) and two more general review (Medves 2010[11] and Akbari 2011[12]).

1.3.2.3 Effectiveness of printed educational materials

One review on printed educational materials (PEM) was selected: Giguère 2011[7] only found studies on PEM as a single intervention. No studies addressed the comparison of multifaceted interventions including PEM. The review included 45 primary studies (14 RCTs and 31 interrupted time series). An overview of the main findings is presented in Table 2.

Medves 2010[11] made no differentiation between studies using printed or electronic educational materials. Of the 59 included studies, 43 (73.3%) reported significant findings. Several limitations of the review of Medves 2010[11], such as the lack of detailed reported of the magnitude of effect and the lack of differentiating between single and multifaceted interventions hampers to draw a firm conclusion on the possible effect found in this review.

Akbari 2011[12] identified which interventions could change primary care outpatient referral rates or could improve referral appropriateness. Seven studies were found on the (passive) dissemination of guidelines by mail, including structured management sheets (in 5 of the 7 studies). The 2 studies which evaluated the passive dissemination of guideline without any additional decision-making tool (such as management sheets) observed no change in the quantity or the quality of referrals. The addition of structured management sheets led to an improved pre-referral management of patients (5 studies). Within these 5 studies, 2 studies incorporated the

dissemination of guidelines in a multifaceted intervention (combination with an educational meeting). In both studies a reduction in number of referrals was found, but it is more difficult to identify which aspect of the intervention contributed to the change in practice outcome. Overall, the authors concluded that referral guidelines are more likely to be effective if structured referral sheets are added.

Effectiveness of printed educational materials as single intervention

- Compliance with desired practice

A slight increase in compliance with desired practice was found for both dichotomous (+2% weighted median adjusted risk difference (IQR from 0 to 11%) and for continuous outcomes (+13% standard median effect size, range -16 to 36%). Overall, the time series regression analysis showed an improvement between the period before PEM and after PEM dissemination. This improvements ranges from a statistically significant for 27 of the outcomes, contradictory results for 11 outcomes (improvement and deterioration) and only one study showed a significant deterioration. At the time of the introduction of the PEM an overall improvement in professional practice outcome, with a standardized median change in level of 1.69 (range from -6.96 to 14.26) is shown.

- Patient outcomes

For patient outcomes the overall median standardised effect size was -0.14 across five continous outcomes. One included RCT (Jousimaa 2002[29]) did not find any significant difference between PEM and computerized guidelines.

Table 2 – Printed educational material: summary of findings from Cochrane meta-analysis for the no-intervention comparison – description of outcomes adapted from Giguère 2012[7]

Outcomes	Adjusted absolute improvement (Risk difference) Median (Interquartile range)	Number of participants (studies)
Compliance with desired practice (dichotomous outcomes)	Median 2.0% (0.0% to 11.0%)	294 937 patients (7 studies)
Compliance with desired practice (continuous outcomes)	Median 13.0% (-16.0% to 36.0%)	297 patients (3 studies)

Effect modifiers

The review considered the following possible effect modifiers:

- Source: source of information, endorsement, tailoring;
- Channel: mode of delivery, frequency of delivery, duration of delivery;
- Message: clinical area, type of targeted behaviour, purpose, level of evidence, educational component;
- Format: format, appearance, length.

However the small number of studies per category and the lack of variability prevented from drawing any conclusion on the association between these effect modifiers and the effectiveness of PEM to change the practice.

1.3.2.4 Effectiveness of electronic educational materials (other than reminders)

The two selected reviews on electronic educational materials handled different aspects of this dissemination strategy:

- McGowan 2010[9] assessed the accessibility to information: the results must be interpreted with caution, because only two studies were included in this review;
- Damiani 2010[8] compared computerized clinical guidelines with non-computerized clinical guidelines: 45 studies were included but the statistical analysis is of low quality. No comparisons were made between interventions and the authors did not differentiate between single and multifaceted interventions. Only an analysis of the variables that predict a positive impact of computerized clinical guidelines was performed.

Effectiveness of electronic educational materials compared with printed educational materials

The authors mentioned the study of Jousimaa 2002[29] already mentioned by Giguère 2011[7]: its objective was to compare the electronic retrieval of information versus PEM. In accordance with the results of above mentioned results of Giguère 2011[7] (see 1.3.2.3) this study found no statistically significant differences in professional behaviour outcomes.

Effectiveness of electronic educational materials as component of multifaceted intervention

One study compared the effectiveness of electronic educational materials as component of a multifaceted intervention (i.e. interactive workshops that addressed potential barriers) with standard access to the same electronic resource. Compliance with the guidelines improved in both groups but did not differ between intervention and control groups (p-value not mentioned).

Effectiveness of internet-based learning

This search for systematic reviews did not identify studies on internet-based learning. This may be explained by the recent development of this strategy.

One validator suggested to add a systematic review on the effect of Internet-based instruction for health professions learners (not guidelines specific[30]). Large positive effects on practice outcomes were found after internet-based instruction in comparison with no intervention. The effects were recorded for knowledge, skills, behaviours and patient care. However, the inconsistency across studies for all outcomes was large. Still the authors found heterogeneous and small effects when internet-based interventions were compared with non-Internet instructional methods, suggesting a similar effectiveness compared to traditional methods. These results could be useful for the dissemination of clinical practice guidelines but call for further specific research on guideline topic.

Effect modifiers of electronic educational materials

Damiani 2010[8] divided the studies' features into the following categories: general system feature, clinical-system interaction features, communication content features, auxiliary features and guidelines features. The features most used in computerized clinical guidelines were automatic provision of recommendation in electronic version as part of clinician workflow (electronic recommendation linked to patient charts), the degree of automation (user automatically receives prompts) and provision of the recommendation in different ways (reminders, alerts).

Backward logistic regression analyses were performed to evaluate the association of each feature with a possible positive effect. Three other variables (publication year, design of the study and quality of the study) were also considered in the analysis. This statistical procedure lacks transparency and the authors present a few positive results only, without referring to a table including all comparisons.

The authors of the review (Damiani 2010[8]) conclude that the use of computerized clinical guidelines, and in particular the automatic provision of recommendations in electronic form as part of the clinician workflow, seems to have a significant impact on the process of care. However, the results of this review must be interpreted with caution due to possible methodological flaws.

1.3.2.5 Reminders

According to the only selected review of Shojania 2011[10], the objective of reminders is to provide information to the healthcare professional in an accessible format at a particularly relevant time. Shojania 2011[10] defined three criteria for a reminder delivered at the point of care:

- Delivery via the computer system routinely used by the provider targeted by the intervention;
- Accessibility within the routinely used clinical information system;
- Target of the person responsible for the relevant clinical activity.

The following comparisons were based on the results of the 28 included studies:

- Reminder only versus no intervention;
- Reminder as component of multifaceted intervention versus multifaceted intervention without reminder.

Overall assessment of effectiveness of reminders in single or multifaceted interventions

- Compliance with desired practice (=process adherence)

Only a small improvement was found in the group with reminders: a difference of 3.8% (IQR 0.4% to 7.9%) in comparison with the control group. After addition of the studies without reported baseline adherence, the median improvements in process adherence slightly increased to 4.2% (IQR 0.8% to 18.8%) for all process outcomes.

- Patient outcomes (=clinical outcomes)

The clinical endpoints also showed a small improvement in the intervention group (median absolute improvement of 2.5% (IQR 1.3% to 4.2%)).

Effectiveness of reminders as single intervention

Based on the 18 comparisons, a median improvement in process adherence of 5.7% (IQR 2.0% to 24.0%) was found (see Table 3).

Table 3 – Reminders: summary of findings from Cochrane meta-analysis for the no-intervention comparison – description of outcomes adapted from Shojania 2009[10]

Outcomes	Adjusted absolute improvement (Risk difference) Median (Interquartile range)	Number of comparisons (studies)
Compliance with desired practice (dichotomous outcomes)	Median 5.7% (2.0% to 24.0%)	18 comparisons

Effectiveness of reminders as component of multifaceted intervention

Only a small median improvement of 1.9% (IQR 0.0% to 6.2%) was found in 14 comparisons. The effect of reminders as single intervention was even more pronounced than the effect of reminders as components in multifaceted interventions (p=0.04). A plausible explanation for this non-expected difference, is the possible ceiling effect in mulitfaceted interventions with reminders.

Effect modifiers of reminders

No significant effects were found in a number of characteristics of computer reminders on the degree of improvement after a reminder intervention. The analysed characteristics were: type of quality problem (underuse versus overuse versus a given process of care), patient specific reminder, provision of explanation for the alert, development in consultation of recipients, type of delivery. A trend towards a larger effect was found in reminders with a required active response (12.9%, IQR 2.7% to 22.7%) compared to no response required (2.7%, IQR 0.6% to 5.6%), but this trend could not be supported by a statistical difference (p=0.09). An additional analysis was performed on the differences between push (i.e. users automatically received the reminder) and pull reminders (users need to perform some action to receive it): better practice outcomes were achieved after push reminders.

1.3.2.6 Limitations of studies

Printed educational materials:

- Included studies with 90% physicians;
- Primarily in outpatient practices.

Electronic educational materials:

- Only 2 studies on accessibility;
- No patient outcomes mentioned;
- Questionable data analysis and Incomplete reporting.

Reminders:

- Heterogeneity of the interventions;
- Variable degree of reporting interventions, outcomes.

1.3.2.7 Conclusion

Effectiveness of educational materials as single intervention

Printed educational materials have a very small beneficial effect on professional practice: the clinical significance of these improvements is not known.

No change in professional behaviour was found with electronic educational materials compared with printed material. This result must be interpreted with caution as it is based on two studies only. The effectiveness of computerized clinical guidelines compared to other interventions remains doubtful.

Computer reminders achieved small improvements in process adherence e.g. for prescription behaviour changes.

Effectiveness of educational materials as component of multifaceted intervention

There is no data on the effectiveness of PEMs as component of multifaceted interventions. One study on electronic educational materials as component of multifaceted intervention concludes that the effect on professional behaviour is similar to the effect of electronic material as a single intervention.

A paradoxical effect was noted for the reminders: their impact as single intervention was even more pronounced than the effect of reminders as components in a multifaceted intervention.

Effect modifiers

No firm conclusions can be drawn on the impact of the characteristics of PEM on its effectiveness. There is insufficient evidence to conclude that a specific feature of computerized material would influence its effectiveness: only electronic recommendations linked to patient records could have a positive impact.

In interventions with reminders, no significant associations were found between the characteristics of the reminder and their impact. Only a larger (but non-significant) effect was found for reminder interventions which required an active response from the physician.

Key points for educational materials

- **Printed educational materials as single interventions have a very small effect on professional practice: the clinical significance of this effect is not known. There is a lack of data on the effectiveness of printed educational materials as components of a multifaceted intervention.**
- **Electronic educational materials produce similarly a small effect, either when used as single interventions or when embedded in multifaceted interventions.**
- **Reminders have a higher impact on clinical practice than printed or electronic educational materials. Their effect within multifaceted interventions seems smaller than their effect as single interventions.**

1.3.3 Educational meetings (including interprofessional education)

1.3.3.1 Definition

The Cochrane review from Forsetlund 2012[13] defines educational meetings and workshops as follows: educational meetings may include courses and workshops in various formats, with interactive or didactic (lecture-based) sessions. Interprofessional education (see definition in 1.3.3.3) is classified in this report under the category of educational meetings.

Information about theories and the mechanisms behind each intervention can be found in the full text of the review: this discussion only mentions brief concepts as plausible explanations for the results.

The search strategy retrieved two systematic reviews on educational meetings:

- Forsetlund 2012[13] (an updated version of O'Brien 2001 and 2008) (continuing education meetings and workshops);
- Reeves 2009[14] (interprofessional education).

In addition, one more general systematic review, covering different dissemination strategies, was found and added in the results sections where possible (Medves 2010[11]).

1.3.3.2 Effectiveness of educational meetings

Forsetlund 2012[13] examined the effects of education meetings on professional practice and patient outcomes and investigated factors that might influence their effectiveness. They included RCTs involving health professionals in postgraduate training in activities such as conferences, lectures, workshops, seminars, symposia or courses.

The review reported statistically significant results for the following comparisons:

- Any intervention in which educational meetings are a component compared to no intervention (overall assessment);
- Educational meetings as single intervention compared to no intervention;
- Educational meetings as single intervention compared to other interventions;
- Educational meetings as component of a multifaceted intervention compared to educational meetings alone.

Effectiveness of educational meetings: overall assessment

The effectiveness was assessed by comparing both single and multifaceted trials in which educational meetings were a component compared to no intervention (80 trials in total).

- Increase in compliance with desired practice

For dichotomous outcomes the weighted median adjusted risk difference was 6% (IQR 1.8% to 15.9%), based on 36 comparisons from 30 trials. For continuous outcomes, the median percentage change was 10% (IQR 9% to 24%), based on 8 trials with baseline data.

- Changes in patient outcomes

Improvement in desired outcomes was found for dichotomous outcomes (3% weighted median adjusted risk difference (IQR 0.1% to 4.0%) based on 5 trials) and for continuous outcomes (4% of median percentage change (IQR 0% to 11%) based on 9 comparisons from 8 studies).

Medves 2010[11] reported significant findings in 47 (74.6%) of the 63 studies found on educational meetings. The lack of details on the magnitude of effect in this review made it difficult to compare these results with the results of the review of Forsetlund 2012[13].

Effectiveness of educational meetings as single intervention compared to no intervention

- Increase in compliance with desired practice

Educational meetings compared to no intervention seem to increase compliance with desired practice. Results were positive for dichotomous outcomes (+6% weighted median adjusted risk difference (IQR 2.9% to 15.3%) based on 21 comparisons from 19 trials) and continuous outcomes (+10% weighted median adjusted risk difference (IQR 8% to 32%) based on 5 comparisons from 5 trials) (see Table 4).

- Changes in patient outcomes

A median improvement of 3.0% (IQR -0.9% to 4.0%) was observed for dichotomous patient outcomes based on 3 trials. For continuous patient outcomes the weighted median adjusted risk difference was 8% (IQR 0% to 12.0%) based on 6 trials.

Table 4 – Educational meetings: summary of findings from Cochrane meta-analysis for the no-intervention comparison – description of outcomes adapted from Forsetlund 2012[13]

Outcomes	Adjusted absolute improvement (Risk difference) Median (Interquartile range)	Number of studies (comparisons)
Compliance with desired practice (dichotomous outcomes)	Median +6.0% (2.9% to 15.3%)	19 (21 comparisons)
Compliance with desired practice (continuous outcomes)	Median 10.0% (8.0% to 32.0%)	5 (5 comparisons)

Effectiveness of educational meetings as single intervention compared to other interventions

Two trials in the review of Forsetlund 2012[13] compared to educational meetings with an office meeting to improve services for early detection of cancer and with an educational outreach visit respectively. Decrease in compliance for the educational intervention group was observed in the two comparisons, respectively -8.0% and -1.4% of the adjusted risk difference.

Effectiveness of educational meetings as component of a multifaceted intervention compared to educational meetings alone

Only one study in the review of Forsetlund 2012[13] compared one-day small group discussions combined with an office system and facilitator with one-day small group discussions only. For the multifaceted intervention group, there was a 12% adjusted relative percentage increase in compliance with desired practice.

Characteristics explaining the heterogeneity (effect modifiers)

In this Cochrane review, the 36 comparisons from the 30 trials were included in univariate meta-regression analyses. The four most statistically significant explanatory factors (P< 0.03) were:

- attendance at the meetings (P<0.01): higher attendance at educational meetings was associated with larger adjusted risk differences (RD);
- interactive versus didactic meetings (P= 0.03): mixed interactive and didactic education meetings were more effective than interactive/didactic meetings alone;
- complexity of the targeted behaviour (P= 0.02): the more complex the behaviour, the smaller the effect;
- seriousness of the outcome (P= 0.02): the more serious the outcome, the greater the effect on the targeted behaviour.

1.3.3.3 Effectiveness of interprofessional education

In the updated version of a previous Cochrane review (Reeves 2009[14], previous review of Zwarenstein 2000), interprofessional education is defined as any type of educational, training, teaching or learning session in which two or more health and social care professions are learning interactively to improve interprofessional collaboration and/or health/well being of patients/clients. The increasing need for multidisciplinary collaboration leads to an increasing interest in this kind of educational encounters (as stated by the stakeholders, see chapter 3).

In the review only comparison with no education intervention was found (based on 6 studies). Comparisons to other educational interventions could not be retrieved in the primary studies.

In this review the providers' performance indicators are defined as process outcomes (e.g. skills development, changes in practice style, interprofessional collaboration, teamwork) and the patient outcomes are described as clinical outcomes (health status measures, disease incidence, duration or cure rates, mortality, complication rate, satisfaction etc).

Only two studies assessed the effectiveness of interprofessional education in a single intervention: the results are included in the overall assessment of effectiveness.

Effectiveness of interprofessional education in single or multifaceted interventions: overall assessment

- Compliance with desired practice (process outcomes)

In the majority of the studies an improvement is seen in patient care and in collaboration between health professionals. More details on the heterogeneity in results are explained in the comparisons as single and multifaceted intervention. Three studies reported that the gains were sustained over time, ranging from 8 to 21 months.

- Patient outcomes

Patient satisfaction improved after an interprofessional educational intervention.

Effectiveness of interprofessional education as single intervention compared to no intervention

Within the 6 included studies, two studies (both RCTs) compared an interprofessional education (a communication skills training program or interactively seminars on recognition and management of depression in primary care). Both studies found no improvement, neither in patient satisfaction scores after the communication skills training program nor in improved recognition of depressive symptoms by the clinicians.

Effectiveness of interprofessional education as component in multifaceted interventions

In 4 of the 6 included studies, interprofessional education is one of the components of a multifaceted intervention. Other interventions were team restructuring, tools (posters, cue cards and questionnaires), audit and feedback and consumer-directed interventions. All four studies showed a (significant) improvement in the intervention group compared to the control group both in practice (change in behaviour) as in patient outcomes (patient satisfaction).

Effect modifiers

Due to the heterogeneity in study designs, no clear conclusions can be drawn on which factors affected the change in practice or in patient outcomes. The mechanisms behind the efficacy of this intervention remain unclear and need further investigation in more rigorous studies.

1.3.3.4 Limitations of studies

Many studies had a high risk of bias (20/81 studies) and moreover:

- only a small amount of studies (30) provided data that could be included in meta-regression analyses;
- interventions were inadequately described in many studies.

1.3.3.5 Conclusions

These conclusions of the effectiveness of educational meetings are based on one Cochrane review whose search strategy ended in 2007 (Forsetlund 2012[13]). As stated by the authors, "the nature of educational meetings is highly variable in terms of content, the number of participants, the degree and type of interaction, length, frequency, and the targeted practices"[13]. The effect of educational meetings as single intervention or within multifaceted interventions showed a positive effect on professional practice. However the improvements in desired practice and in patient outcomes are small.

A multifaceted intervention with interprofessional education showed improvements in practice and patient outcomes in contrary to interprofessional education as single intervention (based on the review of Reeves 2009[14]). However, the efficacy of this intervention remains unclear due to the heterogeneity between studies and their methodological limitations (small number of studies, different formats of educational interventions, different number of participants between interventions, etc.). The mechanisms of how interprofessional education can affect change remains unclear.

Key points for educational meetings and interprofessional education

- **Educational meetings as single intervention compared to no intervention showed some small improvements in practice outcomes. This effect was not recorded when educational meetings were compared with other interventions.**
- **Educational meetings have a higher impact when included as a component of a multifaceted intervention.**
- **Interprofessional education did not produce any improvement in practice and patient outcomes. However, a multifaceted intervention with interprofessional education showed improvements in practice and patient outcomes.**

1.3.4 Educational outreach visits (academic detailing)

1.3.4.1 Definition

The Cochrane review on this topic (O'Brien 2007)[15] defines educational outreach visits (EOV) as "a trained person from outside the practice setting who meets with healthcare professionals in their practice settings to provide information with the intent of changing their performance. The information given may include feedback about their performance. The intervention may be tailored based upon previously identified barriers to change. The person delivering the EOV may be from the same organisation, if it is a multi-site organisation, but not from the same practice site." Educational outreach visits are also referred as "university-based educational detailing", "academic detailing", "practice facilitation" and "educational visiting".

More information about theories and the mechanisms behind this intervention can be found in the full text of the review.

1.3.4.2 Results of search strategy

The search strategy retrieved one Cochrane systematic review on educational outreach visits that updates the former version of O'Brien 1997 (O'Brien 2007[15]) and a more recent KCE report dedicated to the impact of academic detailing on primary care physicians (search until 2009)[27]. An additional review was recommended by a validator (Qureshi 2002[31]) but the search strategy is outdated compared to the two included reviews and all primary studies mentioned in the review of O'Brien 2007[15]. Therefore the results are only mentioned in the section on the overall assessment.

1.3.4.3 Effectiveness of educational outreach visits

The Cochrane review only includes RCTs with measures of professional performance in a healthcare setting or healthcare outcomes. Few studies documented statistically significant changes in patient outcomes: their details will be found in the full text of the review. The review considers the following comparisons:

- Effectiveness of any intervention with EOVs as component: overall assessment;
- EOV as single intervention versus no intervention;
- Multifaceted intervention with EOV as component compared to another intervention;
- Any comparison of different types of EOVs.

Effectiveness of any intervention in which EOVs were a component (including educational materials for all comparisons) compared to no intervention (including educational materials): overall assessment

- Increase in compliance with desired practice

For dichotomous outcomes, the weighted median adjusted risk difference was 5.6% (IQR 3% to 9.0%), based on 34 comparisons (from 28 trials). For continuous outcomes, effects were greater than for dichotomous outcomes. The median percentage change increased up to 21% (IQR 11% to 41%), based on 18 comparisons (from 17 trials). These results are in line with the review of Qureshi 2002[31]: a positive effect was found but the impact varied greatly between studies. Both authors also questioned the clinical relevance of these small and varying changes in effect.

In the KCE report on academic detailing, the majority of the studies showed positive effects: in 55% (in 42 of the 77 studies) a positive effect was found, in 32% (in 25 of the 77 studies) mixed results were found including both positive as no effect. Only 10 of the 77 studies showed no effect of the intervention.

- Changes in patient outcomes

In fourteen trials patient outcomes were reported, but only a few studies (exact number of studies not specified in the review) reported patient-level improvements. In the majority of the studies the lack of power made it difficult to detect an important difference at patient level.

No patient outcomes were reported in the studies included in the KCE report.

Effectiveness of EOVs as single intervention compared to no intervention

- Increase in compliance with desired practice

For dichotomous outcomes, the weighted median adjusted risk difference was of 5.0% (IQR 3.0% to 6.2%), based on 18 comparisons (16 trials). Once again, for continuous outcomes effects were greater than for dichotomous outcomes with a median of 23% (IQR 12% to 39%), based on 15 comparisons (from 14 trials) with baseline data (see also Table 5).

- Changes in patient outcomes

The two trials reporting patient outcomes did not find any improvement.

Table 5 – Educational outreach visits: summary of findings from Cochrane meta-analysis for the no-intervention comparison – description of outcomes adapted from O'Brien 2007[15]

Outcomes	Adjusted absolute improvement (Risk difference) Median (Interquartile range)	Number of studies (comparisons)
Compliance with desired practice (dichotomous outcomes)	Median 5.0% (3.0% to 6.2%)	16 trials (18 comparisons)
Compliance with desired practice (continuous outcomes)	Median 23.0% (12.0% to 39.0%)	14 trials (15 comparisons)

Effectiveness of any intervention in which EOVs were a component (compared to another intervention)

- Increase in compliance with desired practice

These comparison interventions included audit and feedback and reminders. The narrative review included 12 comparisons (from 8 trials) where EOVs appeared to be slightly more effective than audit and feedback alone.

- Changes in patient outcomes

One trial in the review found an improvement in blood pressure control after clinicians received an EOV including audit and feedback and a reminder (RD 5.9%, 95% CI -0.3 to 12.2).

The review in the KCE report revealed that the majority of the multifaceted interventions and single interventions produced positive effects (in 86% and 93% of the studies respectively). Multifaceted interventions have a consistent positive effect for improving physicians' prescribing, whereas a moderate positive effect was found on other measures.

Comparisons of different types of EOVs

- Increase in compliance with desired practice

The narrative review did not conclude anything about these 6 studies evaluating different types of visits in head-to-head comparisons: EOVs given individually versus EOVs given to a group, case studies versus statistical information, EOV plus telephone support compared to EOV alone, comparison of different types of visitors.

- Changes in patient outcomes

No patient outcomes were reported in the review.

Characteristics explaining the heterogeneity (effect modifiers)

The meta-regression produced limited results concerning effect modifiers possibly because of a small amount of comparisons (31) and a large number of explanatory factors (8) (targeted behaviour, baseline compliance, number of clinicians included at each visit, number of visits, complexity of behaviour, seriousness of outcome, risk of bias, contribution of educational outreach visits as components of intervention). The targeted behaviour (prescribing compared to other behaviours) was the only factor for which the estimate (-7.08) was statistically significant (P= 0.002).

The KCE report on academic detailing[27] and this Cochrane review concluded that there is a small but consistent effect for improving physicians' prescribing behaviour whereas the effect on other professional behaviours is more variable.

1.3.4.4 Limitations of studies

The number of included was low, with high risk of bias, with limited attention for patient outcomes.

1.3.4.5 Conclusions

The conclusions are drawn upon one Cochrane study updated in 2007[15] and the more recent KCE report on academic detailing[27]. Educational outreach visits (with or without the addition of other interventions) seem to be effective in improving practice but the size of the effect if usually small. There is furthermore a variability of the effects according to the outcomes under study. The modification of prescription behaviour is more successful than changes in other behaviours.

Key points for educational outreach visits

- **Small improvements in practice outcomes were found after educational oureach visits with or without additional interventions.**
- **The effect of these visits on patient outcomes is not demonstrated; only very few studies reported these outcomes.**
- **Educational outreach visits as a component of a multifaceted intervention have a consistent positive effect on prescribing behaviour of physicians.**

1.3.5 Local opinion leaders

1.3.5.1 Definition

The Cochrane review from Flodgren 2011[16] mainly cites the work of Rogers to define an opinion leader (Rogers 1995): "an individual who is able to influence other individuals' attitudes or overt behaviour informally, in a desired way with relative frequency, and who are at the centre of interpersonal communication networks". The underlying theories are developed in the review.

1.3.5.2 Results of search strategy

The search strategy retrieved only one systematic review on local opinion leader (Flodgren 2011[16]) which is an extension of the earlier review by Doumit et al. (Doumit 2007). This review added the specific aim to investigate the role of a multidisciplinary opinion leader team compared to a single opinion.

1.3.5.3 Effectiveness of local opinion leaders strategy

This Cochrane review (with narrative reviews) included RCTs evaluating the effectiveness of local opinion leaders and described the following comparisons:

- Effectiveness of opinion leaders: overall assessment;
- Effectiveness of local opinion leaders compared to no intervention;
- Effectiveness of local opinion leaders alone compared to a single intervention;
- Effectiveness of local opinion leaders with one or more additional intervention compared to the one or more additional intervention(s) only;
- Effectiveness of local opinion leaders as part of multifaceted interventions (opinion leaders + at least one more intervention) compared to no intervention.

Effectiveness of opinion leaders: overall assessment

- Increase in compliance with desired practice

The overall assessment analyses the effectiveness of opinion leaders with or without other interventions compared to no intervention or other intervention.

For (presumed) dichotomous outcomes, the weighted median adjusted risk difference was 12% (range from 6 to 14.5%) based on 17 comparisons (from 15 studies) (see Table 6).

- Changes in patient outcomes

No results in patient outcomes were mentioned in the review.

Table 6 – Opinion leaders: summary of findings from Cochrane meta-analysis for the overall assessment – description of outcomes adapted from Flodgren 2011[16]

Outcomes	Adjusted absolute improvement (Risk difference) Median (Interquartile range)	Number of participants (studies)
Compliance with desired practice (dichotomous outcomes)	Median 12.0% (6% to 14.5%)	748 + 20 settings (15 studies)

Effectiveness of local opinion leaders compared to no intervention

The narrative review included 5 trials with four of high risk of bias.
The median adjusted risk difference was very limited.

Effectiveness of local opinion leaders alone compared to a single intervention

The narrative review included 2 trials (one with high risk of bias) comparing interventions with opinion leaders to standardized lectures and audit and feedback. An increase in compliance with desired practice was noted (median adjusted RD of +0.14)

Effectiveness of local opinion leaders with one or more additional intervention compared to the one or more additional intervention(s) only

The narrative review included 4 trials (three with high risk of bias). An increase in compliance with desired practice was noted (median adjusted RD +0.10).

Effectiveness of local opinion leaders as part of multifaceted interventions (opinion leaders + at least one more intervention) compared to no intervention

The narrative review included 7 trials with a 10% absolute improvement in performance for the local opinion leader intervention when combined with other interventions (e.g. audit and feedback, chart reminders, educational meetings, academic detailing).

Characteristics explaining the heterogeneity (effect modifiers)

Three characteristics might explain the effectiveness of opinion leaders:

- the methods used by researchers to identify opinion leaders;
- the use of a multidisciplinary opinion leader team versus single opinion leader to deliver the intervention;
- the methods used to deliver education and the frequency of opinion leader involvement.

Limitations of studies

Most included studies had a high risk of bias with furthermore:

- Results not appropriately analysed;
- Activities of opinion leaders not clearly described;
- Questionable identification methods of local opinion leader.

Conclusions

The authors of the Cochrane review demonstrated an overall positive effect of opinion leaders, although the results varied across trials and also within trials where multiple outcomes were assessed. Quality of trials and high risks of bias remain major issues.

Key points for opinion leaders

- **Interventions with opinion leaders improve the compliance with desired practice but data are lacking on the comparison with other dissemination interventions.**
- **The modalities of the interventions involving opinion leaders (e.g. intensity, content) to produce optimal effects are unknown.**

1.3.6 Effectiveness of professional interventions in multifaceted interventions

1.3.6.1 Definition

In multifaceted interventions, different dissemination strategies are combined in order to multiply the effect of each single dissemination strategy.

1.3.6.2 Results of search strategy

The structure of this section is slightly different from the previous sections.

- First this chapter summarizes the results of these previous sections where a given intervention was included in multifaceted interventions;
- Second, this section summarizes the results of 3 additional reviews of reviews on the efficacy of EPOC interventions (Grimshaw 2004[4] and Prior 2008[17]). The third review (Bloom 2005[32]) was recommended by one of the validators;
- Finally, reviews that focus on specific groups of health professionals are also discussed in this section (Hakkenes 2007[21], Menon 2009[18], Van der Wees 2008[19], Chaillet 2006[6], Weinmann 2007[22] and Brusamento 2012[20]): most of them put emphasis on multifaceted interventions.

1.3.6.3 Effectiveness of multifaceted interventions: summary of findings of the previous sections

Multifaceted interventions appeared to be more effective than single interventions for audit and feedback, educational meetings, interprofessional education, educational outreach visits and opinion leaders. In contrast, the interventions with reminders showed a more pronounced effect in single interventions compared to multifaceted interventions. No data were found on the effectiveness of printed educational materials in multifaceted interventions. Overall, the optimal combination of dissemination strategies is unclear: no firm conclusion can be drawn on the best modalities (e.g. components, frequency) of a multifaceted intervention improve the effect of a clinical guideline.

1.3.6.4 Effectiveness of multifaceted interventions: insights from 3 reviews of literature reviews

First extensive publication on that topic from Grimshaw 2004[4]

This review from 2004[4] identified 235 studies on dissemination strategies with a majority of the studies (73%) on multifaceted interventions. Some improvements in the process of care could be found after the use of educational materials, audit and feedback and reminders as single interventions compared to no intervention. Inconclusive results were found

for the other single interventions. More improvements were found with multifaceted (versus single) interventions but the effective components could not be identified.

- Multifaceted interventions versus no-intervention control group

A total of 117 studies evaluated 68 different combinations of interventions in different care settings (primary care, mixed setting, inpatient, ambulatory care setting, long-term care setting, emergency setting, specialist outpatient clinic and military medical centre). They targeted different behavioural changes (general management, prevention, prescribing, test ordering, procedures, financial management and referral). The number of combined interventions ranged from 2 up to 7. The majority of the studies showed an improvement in performance, both in process and outcome measures. The heterogeneity in results hampered to draw any firm conclusion on the efficacy of multifaceted interventions. Some studies showed only a small improvement, questioning the clinical significance of these improvements in performance.

- Multifaceted interventions versus intervention control group

A total of 61 studies evaluated 58 different combinations of interventions in different care settings (primary care, ambulatory care, inpatient settings, mixed settings and emergency setting). They targeted different behavioural changes (general management, prevention, prescribing, test ordering and discharge planning). The number of combinations of interventions ranged from 2 up to 6. Results were similar to those found in the comparisons with no intervention: a trend towards an improvement in performance across the included studies, both in the process and in the outcome measures. The level of evidence is low, due to heterogeneity in results, ranging from no difference to small and greater differences within and across studies.

The authors conclude that across all comparisons multifaceted interventions do not appear to be more effective than single interventions and the effects of multifaceted interventions do not seem to increase with the number of component interventions. The authors conclude that there is a lack of evidence to support decisions about which guideline dissemination strategy or combination of strategies are more likely to be efficient in improving care.

Review from Prior 2008[17] on dissemination strategies for clinical guidelines

Prior et al.[17] identified 33 reviews on this topic (search till 2007). They found that most primary studies included in the identified reviews were of low quality (inadequate sample size and power, inadequate statistical analysis, baseline differences between intervention groups). Multifaceted interventions were supported by the largest body of evidence and resulted consistently in significant improvement in guideline compliance and behavioural change (effect ranged up to 60%). However the studies indicating a positive effect of multifaceted interventions could not identify which and how many components were optimal. Some improvements were even seen in studies using ineffective dissemination strategies. The authors found the following strategies to be effective (without differentiating between single or multifaceted interventions): decision support systems, educational meetings, educational outreach visits, patient-specific interventions (designed to influence practitioner behaviour via information provided to patients) and reminders. Traditional educational strategies and passive guideline dissemination were found to be ineffective.

General review of Bloom et al. on continuing medical education

One validator suggested adding the review of Bloom 2005[32] to get an overview of interventions of continuing medical education that are effective to improve the physicians' practice and patient outcomes. Didactic techniques and printed educational materials showed no or small effects on practice outcomes whereas interactive programs exhibited moderate to high effects. These interactive programs included audit and feedback, reminders, academic detailing, educational outreach programs and local opinion leaders. The effects on patient outcomes were less pronounced but a similar pattern was noticed: the amount of interactivity of the dissemination strategy determined the size of the impact. The authors concluded that continuing medical education alone is insufficient to change clinical practice behaviour and resulting patient health outcomes: different strategies should be combined to increase the effect.

1.3.6.5 *Effectiveness of multifaceted interventions for specific groups of health professionals*

- Dissemination of guidelines on the management of chronic diseases in primary care

Brusamento 2012[20] focused on the effectiveness of strategies for guidelines on the management of chronic diseases in primary care in EU member states (21 studies). The authors found slightly greater improvements with multifaceted interventions compared to single interventions. Overall, the studies were of poor quality and a variation in effect size was found between the included studies. Only eight studies reported patient outcomes and two of them only showed a significant improvement. Five studies showed improvement in practice outcomes, but not in patient/health outcomes. Due to the variety in effects and inconsistency in results, the authors could not identify which strategy was the most appropriate to facilitate the use of guidelines on the management of chronic diseases.

- Dissemination strategies in allied health professions

Hakkenes 2007[21] included 14 studies and found small improvements after single interventions (6 studies). Educational interventions, including distribution of educational materials and educational meetings were the most frequently used. The multifaceted interventions (7 studies) were not more effective than single intervention strategies. The improvements were noted for practice outcomes but not for patient outcomes.

- Multifaceted interventions for rehabilitation clinicians with educational meetings as core component

Two reviews (Van der Wees 2008[19] and Menon 2009[18]) analysed the effect of multifaceted interventions including educational meetings (with opinion leaders or experts) as core component. The comparators were (passive) dissemination of guidelines or standard in-service educational meetings. Both authors focused on strategies specific for rehabilitation clinicians (e.g. physiotherapists). Both reviews found only 5 publications, describing 3 separate randomised trials. The effect on professional practice was evaluated by the adherence to the recommendations of the guidelines (low back pain or whiplash guidelines). Heterogeneous results were found between the studies, but overall some improvement in professional practice was noted after a multifaceted intervention with educational meetings as core component. The two trials which evaluated the effect on patient outcomes did not find any difference between the intervention and the control groups.

- Dissemination strategies for healthcare teams and team-based practice

Medves 2010[11] found overall significant changes in knowledge, practice and patient outcomes in 64 of the 88 included studies. The most common reported dissemination strategy was the distribution of educational materials. The majority of the studies (44/60, 73.3%) reported significant findings. But the direction of the significance (positive or negative association between dissemination strategy and outcome) was not explained in the review. The authors concluded that multifaceted interventions, without specification of components, are more appropriate in multidisciplinary settings.

- Dissemination strategies in psychiatry

Weinmann 2007[22] reviewed 18 studies (search until 2006). Heterogeneous results were found for practice outcomes (no effect in half of the studies, significant in 7 out of 18 studies). Multifaceted interventions were associated with the best practice outcomes. In the 13 studies that reported patient outcomes, only 4 studies found significant improvements with better results for multifaceted interventions. The authors suggest that multifaceted interventions should include one of the following components: ongoing support or feedback, use of specific psychological models to overcome obstacles, social marketing techniques.

- Dissemination strategies in obstetrics

Chaillet 2006[6] included 9 studies on multifaceted interventions: all of them showed their efficacy for changing behaviours. The combination of strategies in the context of obstetrics seems more effective than a single intervention. However, the efficacy depended on the components of the multifaceted strategy: educational strategies seemed to be the core component to improve users' knowledge of guidelines and feedback increased the effects of a multifaceted intervention. The authors recommend the use of multifaceted strategy with audit, feedback and opinion leaders as core components to achieve a change in behaviour.

1.3.6.6 Characteristics explaining the heterogeneity (effect modifiers)

As stated above, Grimshaw 2004[4] concluded that the efficacy of multifaceted interventions did not increase with the number of component interventions.

Brusamento 2012[20] identified one study which assessed barriers to implementation of clinical guidelines. Lack of time, knowledge, financial incentives and reluctance to change prescription routine were the most common identified barriers. Also the baseline compliance may influence the success of guideline uptake: if the baseline compliance is high, the effect of the dissemination strategy will be limited.

Other factors, for example social and/or demographic barriers may hamper or facilitate the effect of a dissemination strategy (Prior 2008[17]): younger clinicians would be more likely to adapt their practice behaviour.

In the evidence report of Marinopoulos 2007[33] (suggested by one of the validators) the influence of characteristics of the audience and external factors on continuing medical education was described. Related to the characteristics of the audience, such as age, gender and race, no definitive conclusion could be reached due to the heterogeneity of the educational interventions and characteristics examined. The small number of studies on external factors and its related lack of adequate power hampered to draw definitive conclusions on the influence of external factors on the effectiveness of continuing medical education.

Conclusions

Most reviews that focused on one EPOC interventions or that focused on specific groups of health professionals concluded that multifaceted interventions produce a larger effect than single interventions. An exception is the reminder that seems more effective in single interventions. These results are in line with the effects of multifaceted interventions highlighted in the review of Prior 2008[17]. Grimshaw in 2004[4] was more cautious on the effectiveness of multifaceted interventions.

However there is a lack of evidence on which would be the crucial components or optimal combination of strategies that would most likely improve the adherence to guidelines. Moreover, the ideal number of interventions to be included in multifaceted interventions cannot be defined.

Key points for multifaceted interventions

- **As stated in previous sections, audit and feedback, educational strategies and/or opinion leaders have a greater impact on the practice in multifacted interventions than in single interventions. Reminders seem to be more effective as single interventions.**
- **Three reviews of systematic reviews end up with slightly different conclusions on the effectiveness of multifaceted interventions. Grimshaw (an older review, published in 2004) concluded that multifaceted interventions did not appear to be clearly more effective than single interventions. More recent reviews concluded that a dissemination strategy should be multifaceted with active participation of the participants.**
- **Authors agreed that the optimal number and nature of the component interventions were unclear.**

1.3.7 Barriers and facilitators for guideline dissemination and implementation

A literature review on effects modifiers and barriers was out of scope of this study. Yet interesting information was found on that topic and is displayed below in order to inform decisions on dissemination strategies:

- the results of a meta-review on the topic[23];
- a summary of the information found in the reviews specific for each strategy.

1.3.7.1 Barriers and facilitators: results from search in literature

The meta-review of Francke 2008[23] summarized the potential barriers and facilitators for successful dissemination of clinical guidelines. Based on the results of 12 systematic reviews (including Grimshaw 2004[4]) the following characteristics were identified:

- Characteristics of the guidelines

  The most frequently reported factor (also by the Belgian stakeholders in chapter 3) is the complexity of the content. Guidelines that are easy to understand, easy to be tried out, that do not require specific resources have greater chance of being used in clinical practice. Less frequently described factors are a preference for evidence-based guidelines (compared to guidelines with no clear scientific basis) and the active participation of the target group and experts during development.

- Characteristics of the dissemination strategies

  As stated above, Grimshaw 2004 was more cautious about the effectiveness of multifaceted interventions than authors of more recent reviews. Most of them found a higher impact when combining different strategies. Another factor related to the effectiveness of dissemination strategies is their closeness to clinical decision-making, resulting in a better integration in the process of care delivery.

- Characteristics of the professionals

  The adoption of guidelines is also determined by the (lack of) awareness, the (limited) familiarity with and the (lack of) agreement with the guidelines. In addition, age and/or experience are potential facilitators/barriers: young or less experienced professionals are more likely to adopt a guideline.

- Characteristics of the patients

  Two main barriers for the implementation of a guideline are also the patient's resistance and complex needs of patients with co morbidities.

- Environmental characteristics

  Potential influencing factors are: (limited) time, (limited) personnel resources, work pressure and (negative) attitude or (limited) support from peers or supervisors.

These results must be interpreted with caution due to the lack of data of high quality: only 2 of the 12 reviews included by Francke 2008[23] were scored as high quality studies.

An additional systematic review and meta-analysis (Baskerville 2012[25]) on practice facilitation within primary care settings found an overall effect size of 0.56 (95%CI 0.43 to 0.68) in favour of practice facilitation (p<.001). Primary care practices are 2.76 more likely (95%CI 2.18 to 3.43) to adopt evidence-based guidelines through practice facilitation. No relationship between duration of intervention and effect size was found. Other effect modifiers increased the effect of practice facilitation interventions: tailoring to the context and needs of the practice (larger effect size of 0.62, 95%CI 0.48 to 0.75, p=.05), number of practices per facilitator (a negative association with effect size, p=.004) and intensity of intervention (positive association with effect size, p=.03).

Dijkstra 2006[34] (suggested by one of the validators) adjusted in his review on dissemination strategies for guidelines in hospitals for co-operating interventions components in a multifaceted intervention. The effects of educational materials, reminders and feedback remained statistically significant but the effects of educational meetings and patient-mediated interventions disappeared. The revision of professional roles and organisational interventions appeared to be strong components in the intervention strategies. For inpatient care, the academic hospitals showed greater improvements compared to community general hospitals, whereas for outpatient care, the community hospitals performed better. The results may be biased due to the small number of studies and the limited organisational data within the studies. On organisational level, the barriers and facilitators for effective interventions are still unclear.

1.3.7.2 Barriers and facilitators: analysis from effect modifiers of each EPOC intervention

The first sections on the effectiveness of the dissemination strategies concluded that their effect depended on the direction of change required, the baseline performance and the demographic characteristics:

- If the recommendations of the guideline are in line with the clinical practice of the physician, he will be more convinced to adopt them, in contrast to situations where a more radical change in behaviour is expected;
- When a physician is already well performing according the recommendations, only small effects of the dissemination strategies will be noted;
- The younger or less experienced he is, the higher adoption rate. Also the effect of an intervention will be increased if a supervisor or colleague is involved in the audit and feedback.

Other effect modifiers found in the section on distribution of educational materials emphasised the potential positive effects of electronic dissemination strategies: automatic provision of recommendations integrated in clinical work process, high degree of automation and different ways of electronic dissemination (alerts, reminders etc). Also the requirement of an active response to a (electronic) reminder (and the so-called push reminders) could increase the degree of improvement in clinical care. The effect of an education meeting can be increased by higher attendance rates, a mix of interactive and didactic, the non-complexity of targeted behaviour and the seriousness of the outcome.

Finally, a significant effect modifier is the type of targeted change: educational outreach visits, for example, have a potential impact on physicians' prescription behaviour but smaller and less consistent changes are found for other desired practice changes.

1.3.7.3 Effectiveness of tailored interventions to overcome the identified barriers to change

Baker 2010[24] reviewed 26 studies that compared tailored interventions with control groups (no intervention or intervention not tailored to the identifed barriers). Tailored interventions follow an investigation into the factors that explain current professional practice and any reason for resisting change. Tailored interventions are similar to the marketing strategy defined by the EPOC taxonomy (see synthesis). The authors found that they are more likely to improve professional practice compared to no intervention or passive dissemination of guidelines (OR (Odds Ratio) 1.52, 95% CI 1.27 to 1.82) but evidence is lacking on the most effective approach to identify the barriers and to select the most appropriate interventions.

1.3.7.4 Conclusion

Several factors play a role in the dissemination and implementation of clinical guidelines:

- the characteristics of the message (a.o. clear, understandable);
- the active participation of the clinician (development, dissemination);
- the combination of dissemination strategies;
- the link with clinical work: messages tailored to the clinical situation, electronic dissemination strategies integrated in the work process of the clinician.

This overview of literature focused on the effectiveness of different dissemination strategies and it is possible that specific reviews on these effect modifiers were missed. The focus on barriers and effect modifiers would require a specific search strategy, complemented with interviews with the end users of the clinical guidelines (cf. KCE recommendations in the synthesis).

Key points for facilitators and barriers

- **The following factors may be facilitators or barriers for the dissemination and implementation of a clinical guideline: characteristics of the guidelines, characteristics of the dissemination strategy, characteristics of the professionals, patients and environment.**
- **Taking into account these factors may improve the dissemination and implementation i.e. multifaceted interventions with different strategies, tailored to the characteristics of the clinicans and the patients.**
- **Electronic dissemination strategies have the advantage to be incorporated in the work process of the clinicians and to combine different strategies as for example reminders, electronic educational materials.**

1.4 Literature: summary of the main findings

1.4.1 Overview of the results

The Table 7 is an overview of the efficacy of the different EPOC interventions, found in the included reviews.

Table 7 – Overview of included SRs on the overall effectiveness of EPOC professional interventions

EPOC intervention	Included SRs	Number of included studies	Main conclusion	Limitations of evidence
Audit & Feedback	Ivers 2012[5] Chaillet 2006[6]	140 33 Total of 173	• Practice outcomes: small improvements • Patient outcomes: minimal discernible effect in dichotomous outcomes, small positive effect in continuous outcomes • Other: a larger effect is obtained when audit and feedback are core components of a multifaceted intervention.	• Heterogeneity in results • Low quality of studies (small sample sizes)
Distribution of printed educational materials	Giguère 2011[7] Medves 2010[11] Akbari 2011[12]	45 88 Total of 133	• Practice outcomes: a small beneficial effect but with unknown clinical significance • Patient outcomes: range from small negative effect to no differences • Other: no data on effectiveness of multifaceted interventions	• Heterogeneity of interventions • Variable degree of reporting interventions and outcomes • Focus on physicians and outpatient practices
Distribution of electronic educational materials	Damiani 2010[8] McGowan 2009[9]	45 2 Total of 47	• Practice outcomes: no effect • Patient outcomes: no effect • Other: no difference between single and multifaceted interventions	• Only 2 primary studies in review • Low quality of studies
Reminders	Shojania 2011[10]	Total of 28	• Practice outcomes: small improvements • Patient outcomes: small improvements • Other: the effect of reminders is more pronounced in a single intervention compared to its effect as component of a multifaceted intervention	• Heterogeneity of interventions • Variable degree of reporting interventions and outcomes

EPOC intervention	Included SRs	Number of included studies	Main conclusion	Limitations of evidence
Educational meetings	Forsetlund 2012[13] Medves 2010[11]	81 63 Total of 144	• Practice outcomes: small improvements • Patient outcomes: small improvements • Other: effects similar to other types of continuing medical educations (such as audit and feedback or educational outreach visits).	• High risk of bias • Inadequate descriptions of interventions in many of included studies
Interprofessional education	Reeves 2009[14]	Total of 6	• Practice outcomes: small improvements • Patient outcomes: small improvements • Other: effect is more pronounced in multifaceted interventions	• Few studies • Heterogeneity in results • No clear description of interventions
Educational outreach visits	O'Brien 2007[15] KCE-report 2010[27]	69 77 Total of 146	• Practice outcomes: small improvements • Patient outcomes: only a few studies reported slam improvements • Other: effect is more pronounced in continuous practice outcomes	• Only a few studies on patient outcomes • Low quality of primary studies
Local opinion leaders	Flodgren 2011[16]	Total of 18	• Practice outcomes: overall positive effect but variation within and across studies • Patient outcomes: not reported • Other: similar improvements found in single and multifaceted interventions	• No patient outcomes reported • activities of opinion leaders not clearly described
Multifaceted interventions in EPOC interventions	Ivers 2012[5] Chaillet 2006[6] Giguère 2011[7] Medves 2010[11] Damiani 2010[8] McGowan 2009[9] Shojania 2011[10] Forsetlund	140 33 45 88 45 2 28	• Practice outcomes: multifaceted interventions are more effective than single interventions • Patient outcomes: not reported • Other: no data on effectiveness of printed educational materials in multifaceted interventions, reminders as single intervention more effectives than in multifaceted intervention	• Combination of strategies not clearly described • Lack of data on patient outcomes

EPOC intervention	Included SRs	Number of included studies	Main conclusion	Limitations of evidence
	2012[13] Reeves 2009[14] O'Brien 2007[15] Flodgren 2011[16] KCE-report 2010[27]	81 6 69 18 77 Total of 632		
Multifaceted interventions in synthesis reviews	Grimshaw 2004[4] Prior 2008[17]	235 33 Total of 268	• Practice outcomes: positive improvements versus no difference between single and multifaceted interventions • Patient outcomes: not reported • Other: modalities of multifaceted interventions unclear	• Lack of data on patient outcomes • Combination of strategies not clearly described
Multifaceted interventions for specific health professionals	Brusamento 2012[20] Hakkenes 2008[21] Medves 2010[11] Weinmann 2007[22] Chaillet 2006[6]	21 14 88 18 33 Total of 174	• Practice outcomes: multifaceted interventions are more effective than single interventions • Patient outcomes: not reported • Other: one review found no difference between single and multifaceted interventions for allied health professionals	• Lack of data on patient outcomes • Combination of strategies not clearly described

1.4.2 Effect of computerized decision-making systems (reminders) on clinical practice: insight from other reviews

The results on the effectiveness of reminders focus here on the dissemination of clinical guidelines. However, more literature is available on the computerized clinical decision support systems (e.g. reminders). A selection of 6 systematic reviews on this topic can be seen as a source of inspiration for the overall effectiveness of this dissemination strategy. Six domains of clinical practice were covered: preventive care (Souza 2011[35]), chronic disease management (Roshanov 2011[36]), diagnostic test ordering behavior (Roshanov 2011[37]), acute care management (Sahota 2011[38]), drug prescription (Hemens 2011[39]) and drug monitoring (Nieuwlaat 2011[40]). For the outcomes on clinical practice, an improvement was found in more than half of the included RCTs (ranging from 52% to 63%).

For specific topics a clear effect was demonstrated, e.g. the monitoring of vitamin K antagonists, monitoring of glycemia. The patient outcomes were not frequently assessed (in about one third of the RCTs).

When these outcomes were assessed, only very limited improvement was found (between 15 and 30% of change i.e. in a few RCTs). The authors mentioned the number of included RCTs with an effect on outcomes but the size of improvement and in particular the clinical significance were not further detailed.

1.4.3 Other interventions for guideline dissemination

Next to the professional interventions, described in this part of the report, other interventions, such as financial, patient, organizational and regulatory interventions, are also included in the EPOC taxonomy.

Within the financial interventions a distinction is made between:

- provider interventions, including fee-for-service, prepaid, capitation, provider salaried service, prospective payment, provider/institution incentives, provider/institution grant/allowance, provider/institution penalty, formulary;
- patient interventions: premium, co-payment, user-fee, patient incentives, patient grant/allowance, patient penalty.

Within organisational interventions a distinction is made between:

- provider orientated interventions: revision of professional roles, clinical multidisciplinary teams, formal integration of services, skill mix changes, continuity of care, satisfaction of providers, communication and case discussion;
- patient orientated interventions: mail order pharmacies, presence and functioning of adequate mechanisms for delaing with patients' suggestions and complaints, consumer participation in governance of health care organisations.

Structural interventions include: changes to setting/site of service delivery, changes in physical structure/facilities/equipment, changes in medical record systems, changes in scope/nature of benefits/services, presence and organisation of quality monitoring mechanisms, ownership/accreditation/affiliation status of hospitals/other facilities, staff organisation.

A regulatory intervention is defined as any intervention that aims to change health services delivery or costs by regulation or law. An overlap with organisational and financial interventions is possible. Within the regulatory interventions the changes in medical liability, management of patient complaints, peer review and licensure are included.

Within the scope of this report, the focus was on the effectiveness of professional interventions. However, for specific policy recommendations, is this scope of this literature overview too narrow and an overview of the literature including all EPOC interventions would be preferred. Nevertheless the more specific focus on professional interventions, this overview of literature gave a first impression of the potential barriers, facilitators and dissemination strategies which are useful for the Belgian health services.

1.4.4 Limitations of findings

The introduction mentioned the limitation of the scope to professional interventions. The most recent interventions (e.g. internet-based learning) were not included given the lack of reviews on this topic.

The sections above emphasized further the low quality of the studies included in the selected systematic reviews.

Two further points should be mentioned as well:

- Potential bias due to overlap of primary studies in different reviews

The review of the literature was restricted to an overview of systematic reviews, without additional search for primary studies. The lack of data extraction on the level of each included primary study per review could bias the results. Some primary studies included in different reviews may result in a potential overestimation of the power of the original authors' conclusions (Bloom 2005[32]).

- Lack of information on the cost of dissemination strategies

This report focused on the efficiency of EPOC strategies compared to each other for the dissemination of guidelines. However, the economic outcomes were not taken into account. Two authors found inconclusive results on that topic. Grimshaw 2004[4] noted that the lack of economic evaluations of high quality resulted in a paucity of data on the cost and efficiency of guideline dissemination strategies. Vale 2007[26] also reviewed the economic evaluations of dissemination strategies (search until 1998). None of the 63 included studies gave accurate information on costs related to guideline development and dissemination. Therefore no clear conclusion can be drawn on the cost-effectiveness of dissemination strategies.

Key points for the interpretation of the results

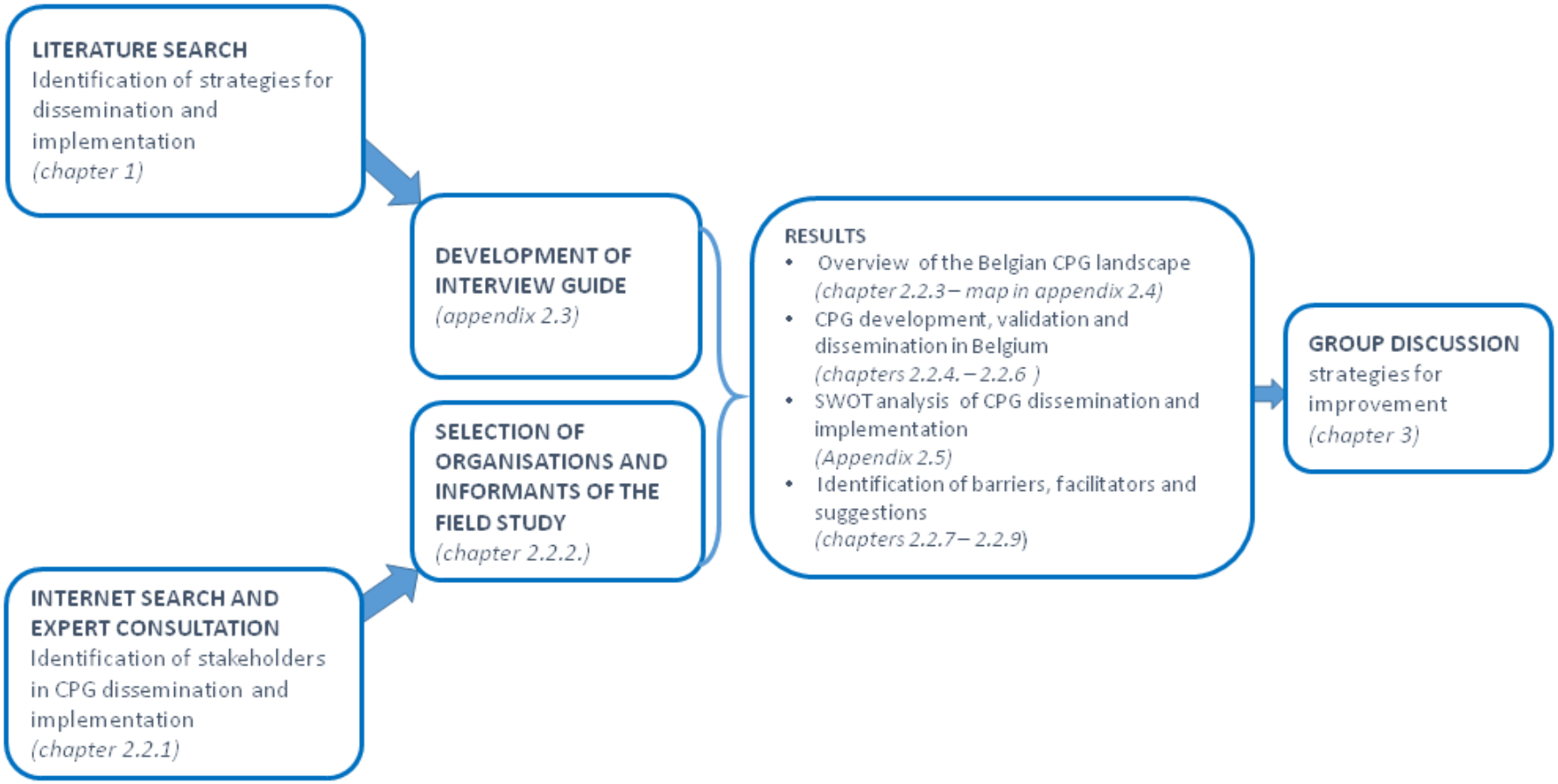
- **The systematic reviews included in this review focused on professional interventions, mostly studied in the literature.**
- **These reviews are of high quality but all authors emphasized the need to interpret the results with caution given the low quality of constituent studies.**
- **A major caveat is the interpretation of the results in terms of changes in clinical practice: numerous studies conclude to a statistically significant change whilst the clinical relevance and the impact on patient outcomes remain questionable.**

2 THE BELGIAN LANDSCAPE OF CLINICAL PRACTICE GUIDELINES

The previous chapter provided an overview of the systematic reviews on the efficacy of CPG (Clinical Practice Guidelines) dissemination and implementation strategies.

The figure below (Figure 2) shows the structuring of the main parts of the study i.e. between the literature review (chapter 1), the description of the Belgian landscape (this chapter) and the discussion about avenues of improvement (chapter 3).

Figure 2 – Structuring of the main parts of the study



This second chapter describes the Belgian landscape of CPG with the following objectives:

- to describe the different organizations and the links between them;
- to identify the strategies used for CPG dissemination and implementation in Belgium (see results in sections 2.2.3 to 2.2.9);
- to describe the stakeholders' experiences in a SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis (see Appendix 2.5).

Financing and development of guidelines are included in the description of this landscape as they strongly influence the dissemination and implementation strategies.

2.1 Methodology

2.1.1 General design

First, the research team drafted an inventory of the main stakeholders involved in CPG financing, development and dissemination. Based on this inventory, a first map of the Belgian CPG landscape was drawn, visualizing the connections between them.

Second, the identified stakeholders were asked to complete a mail questionnaire to identify strategies for CPG development and dissemination. They further reflected on these strategies during semi-structured interviews. The results of these interviews allowed creating SWOT analyses about CPG development and dissemination in Belgium. The SWOT analyses and the map of the CPG landscape were refined with the interviewees' comments.

Finally, the research team wrote six statements for the improvement of CPG dissemination in Belgium for discussion with 2 groups of stakeholders (see next chapter).

2.1.2 Research population

2.1.2.1 Identification of organizations

Health care professionals who are actively involved in CPG financing, development and dissemination were eligible as respondents. Commercial stakeholders, such as pharmaceutical companies and for profit publishers were excluded because the focus of this research was dissemination of evidence based guidelines with a scientific purpose with the only objective to improve the quality of care.

The researchers first created a non-exhaustive list of the main stakeholders in CPG development and dissemination in Belgium) (appendix 2.1). This list does not include organizations who give informative advice to end users as for example the Superior Health Council or Flemish agency for Care and Health.

The list was completed by a member of CEBAM (Belgian Centre for Evidence-Based Medicine), by KCE researchers, by colleagues from the Federal Public Services (FPS/SPF/FOD) and from the National Institute for Health and Disability Insurance (NIHDI/RIZIV/INAMI).

The organizations were contacted by email in order to collect basic characteristics:

- Involvement in CPG financing, development and dissemination;
- Targeted health care profession(s);
- Language of the CPG;
- Average number of CPGs per year;
- Cooperation with other stakeholders.

2.1.2.2 Selection of a sample of organizations

In a second step, 28 stakeholders' organizations were purposively selected for participation to the interviews. The selection was based on the following characteristics: language, types of health professions (e.g. general practitioners, specialists, nurses, midwives, physiotherapists, and paramedics), types of activities (e.g. health professionals associations, academic detailing, and financing organizations) and volume of activities (absence versus high activity related to the dissemination of guidelines).

The team selected medical and paramedical professionals, representatives of professional organizations, health authorities, sickness funds, university colleges and universities. The organisations indicated the person to interview according to the expertise in guidelines. Respondents were invited by phone or by email. If an appointment for a face-to-face interview was too difficult, a telephone interview was proposed as an alternative.

2.1.3 Identification of strategies for CPG dissemination

Before the interviews, each participant received an e-mail questionnaire to provide information on the organization he/she represented and the strategies for CPG dissemination used by the organization. The questionnaire is added in Appendix 2.2. The participants returned the completed questionnaires before the interview so that the interviewers could complete or deepen the information during the encounter.

2.1.4 Interviews

Semi-structured face-to-face interviews with the thirty selected stakeholders were performed between March and April 2013, on the time and location most suitable for the interviewees. Native speaker-researchers (CD and SS) interviewed in the participants' native language (French or Dutch). The interview guide (in French and Dutch in appendix 2.3) was based on the EPOC [The Cochrane Effective Practice and Organization of Care Group] taxonomy of professional interventions (see the synthesis) and on the findings from the literature review (see chapter 1).

The development process of guidelines (including validation) was included as it has an impact on CPG dissemination.

The following topics were addressed:

- if applicable, the method(s) of development and validation of CPG;
- the interventions for dissemination used by the organization;
- the experience on the efficiency and efficacy of these interventions;
- the difficulties and opportunities to improve CPG dissemination;
- the cooperation with other stakeholders.

The interview data were analyzed by thematic analysis. The researchers independently analyzed the first two interviews for crosschecking and intermediate adaption of the script. After their consensus on a codebook, the audio and text codification was used for further analysis. Coding was checked after five extra interviews to assure consensus on emerging codes. Using constant comparisons, codes were grouped into categories and subcategories. Field notes, taken during the interviews, were used to complete the image of the categories. The narrative report was illustrated with key text fragments. The analysis was regularly discussed by the whole research team. The quotes (in French and Dutch) are only mentioned in the French and Dutch version of this report.

2.1.5 Map of the CPG landscape in Belgium

Each interview started with the question for interviewees to show the position of their organization in the landscape of CPG in Belgium on a map (see appendix 2.4). All comments on the proposed landscape were collected and used to refine the figure. After amendments, the interviewees were asked by mail to evaluate this landscape again and the researchers further refined the map to include their proposals.

2.1.6 SWOT analysis

Strengths, weaknesses, opportunities and threats (SWOT analysis) for CPG development, dissemination and adherence to CPG were derived from the analysis of the interviews. Interviewees received the SWOT analysis by email to validate the results of the interviews and to report points of disagreement or incompleteness. Their final input was used to finalize the SWOT analysis (see appendix 2.5).

2.2 Results

2.2.1 Inventory of the stakeholders

First, the research team gathered information on Belgian organizations involved in the financing, developing or dissemination of CPG. The exhaustive inventory of CPG stakeholders classifies the stakeholders into four groups: medics, paramedics/midwives/physiotherapists, authorities and others (see appendix 2.1).

This inventory was the basis to select the stakeholders for the interviews and to draw a first draft of the map of the Belgian CPG landscape (see appendix 2.4).

2.2.2 Selection of the interviewees

Table 8 summarizes the main characteristics of the interviewees, representing a selection of the large number of CPG stakeholders in Belgium. The information was gathered from one or two persons representing the organization (detailed information about the interviewed organizations, see appendix 2.6).

Table 8 – Overview of the main characteristics of the interviewed organizations

Group	French speaking organization	Dutch speaking organization	National organization
Medical professions	SSMG Société Scientifique de Médecine Générale http://www.ssmg.be	Domus Medica General practitioners Flanders http://www.domusmedica.be	Belgian Association for Cardio-Thoracic Surgery http://www.bacts.org
		Vlaamse Vereniging voor Psychiatrie (VVP) http://www.vvp-online.be	Belgische Vereniging voor Dermatologie en Venerologie http://www.dermanet.be
			College of Geriatrics (FOD/SPF) http://www.health.belgium.be/eportal/Healthcare/Consultativebodies/Doctorscolleges
			College of Radiology (FOD/SPF) http://www.health.belgium.be/eportal/Healthcare/Consultativebodie

Group	French speaking organization	Dutch speaking organization	National organization
			s/Doctorscolleges College of Oncology (FOD/SPF) http://www.health.belgium.be/eportal/Healthcare/Consultativebodies/Doctorscolleges
Other health professionals	Union Professionnelle des diplômés en Diététique de Langue Française (UPDLF) http://www.updlf-asbl.be/dieteticien/	Vlaamse Organisatie van Vroedvrouwen (VLOV) http://www.vlov.be	AXXON Kinesitherapie België http://www.axxon.be
	AIIB-VUKB Association des Infirmières Indépendantes de Belgique http://www.aiib-vukb.be	Wit-Gele Kruis van Vlaanderen http://www.witgelekruis.be	
	Association Scientifique et Ethique des Logopèdes Francophones (ASELF) http://aself.be/	Vlaamse Vereniging Intensieve Zorgen Verpleegkundigen (VVIZV) http://www.vvizv.be/nl/home	APB Algemene Pharmaceutische Bond/Association Pharmaceutique Belge www.apb.be
Authorities			Belgian Antibiotic Policy Committee (within the FOD/SPF) http://www.bapcoc.be Direction générale de l'Organisation des Etablissements de soins (DG1 - FOD/SPF) http://www.health.belgium.be/eportal/Aboutus/ourorganization/DGforHealthCareFacilitiesOrgan/index.htm DG2 : Direction générale Soins de Santé primaires et Gestion de Crise http://www.health.belgium.be/eportal/Aboutus/ourorganization/DGforPrimaryHealthCareandCrisi/index.htm KCE: Belgian Health Care Knowledge Centre

Group	French speaking organization	Dutch speaking organization	National organization
			https://kce.fgov.be NIHDI (RIZIV/INAMI): National Institute for Health and Disability Insurance http://www.riziv.be/homenl.htm http://www.inami.fgov.be/homefr.htm
Others	Collaboration Internationale des Praticiens et Intervenants en Qualité Santé (CIPIQ-S) http://www.cipiqs.org	Kind & Gezin http://www.kindengezin.be	BCFI/CBIP Belgisch Centrum voor Farmacotherapeutische Informatie http://www.bcfi.be Christelijke Mutualiteit http://www.cm.be CEBAM Belgian Centre for Evidence Based Medicine Belgian Branch of the Dutch Cochrane Centre http://www.cebam.be/nl/Paginas/default.aspx EBMPracticeNET http://www.ebmpracticenet.be/Pages/default.asp FARMAKA Independent Centre for Drug Information http://www.farmaka.be

2.2.3 Various perceptions of the Belgian landscape of guidelines

The participants had different reactions on the map that was proposed by the researcher. Some participants did not change or add much, sometimes declared that they had no (clear) view on who is (or not) involved in CPGs in Belgium. Others had a broader vision and changed the map by adding organizations, drawing arrows between organizations or commenting on organizations that should not be there according to them. A few interviewees started drawing a new map, suggesting a different approach of visualizing the landscape. The team gathered this information in one document but the final result may still be not exhaustive as it depends from the suggestions of the interviewees.

2.2.4 Guidelines development in Belgium: definition, methods and perception of the strategies

2.2.4.1 Definition of clinical practice guidelines

The official definition of CPG (see synthesis) is: "systematically developed statements to assist practitioner decisions about appropriate health care for specific clinical circumstances" (Institute of Medicine Committee on Clinical Practice Guidelines, 1992[41]). However interviewees had different views on that topic. Some interviewees (for instance Domus Medica) considered a CPG as the product of a strict methodology. Other organizations put emphasis on the practical use of these tools, with less attention for the development methodology. Finally, some organizations as for instance the Belgian Centre for pharmaceutical Information (BCFI/CBIP) do not name their product "clinical practice guidelines", the border is difficult to define.

> *Ik heb altijd gesteld dat transparantiefiches een ideaal instrument zijn om te gebruiken bij de ontwikkeling van richtlijnen, als ondersteuning omdat daar ook constant wordt geupdated. De bedoeling van transparantiefiches is niet van een duplicaat te zijn van guidelines.*

2.2.4.2 Choice of the guideline topic

Topics for CPG were chosen using different approaches. CPG developers chose a subject either themselves, occasionally influenced by RIZIV/INAMI or FOD/SPF (e.g. for the KCE, the general practitioners (GP) associations, the pharmacists' association). The National Council for the Promotion of Quality (CNPQ/NRKP) can play a role to suggest topics to the developers (e.g. to the KCE with the aim to use later the evidence for developing feedbacks). Sometimes the developers perform a survey among users to identify fields of priority (e.g. College of Geriatrics, pharmacists, CIPIQ-S (Collaboration internationale des Praticiens et Intervenants en Qualité dans le domaine de la santé)).

Interviewees also reported on the use of local consensus processes in order to chose a topic. It is an interesting and practical approach based on the participation of the professional users in the guideline development, which could lead to a higher level of adherence according to the interviewees. This user's participation, in counterpart, could be difficult as the professional users are mostly volunteers.

> *On peut choisir les sujets mais ils doivent être approuvés, il y a toute une méthodologie pour choisir les sujets, suivant la prévalence, l'urgence etc., mais ils [SPF] doivent être d'accord évidemment.*

> *Nous avions interrogé les infirmiers en soins à domicile, … pour leur demander quels seraient les sujets qu'ils verraient aborder, quels sont leurs besoins en termes de contenus via un questionnaire structuré; nous avons aussi recoupé cela avec différents rapports de santé publique pour obtenir les problématiques de la première ligne, en termes de prévalence au niveau des soins primaires*

2.2.4.3 Authors of clinical practice guidelines

The affiliations of authors are important for the quality of the guideline. Authors often work for the organization (e.g. Wit-Gele Kruis, Kind & Gezin, Domus Medica) or for academic institutions (e.g. authors from the BAPCOC-Belgian Antibiotic Policy Coordination Committee). They are often academics, PhD or Master students. Many participants declared that for the selection of authors "everyone knows someone".

> *Maar ik denk dat er toch bij de meeste auteurs een link is met een wetenschappelijke instelling zoas Domus Medica, hetzij met een academische instelling zoals een van de vakgroepen huisartsengeneeskunde. Heel vaak doctorandi, zeker bij een eerste aanbeveling.*

> *We proberen ook via professor X nogal es gemakkelijk een thesisstudent mee te hebben die daar dan een masterthesis van maakt, want die hebben veel tijd om de wetenschappelijke kant te doen : enquête, analyse, data uitschrijven,…*

Difficulties related to the authorship

The obstacles frequently reported were time constraints, poor financial resources and lack of motivation due to the complexity and burden of the development procedure. Some interviewees stated that CPG development is quite a challenge and a learning process one has to go through. BAPCOC reported that authors are often inexperienced and many of them do not participate more than once due to the heavy procedure of developing CPG. Even if it is paid, it is insufficiently recognized.

> *Ah oui, c'est très difficile de trouver des auteurs, c'est un travail hyper exigeant et très frustrant hein.*

> *Dus auteurs vinden is doorgaans niet zo een heel groot probleem. Ze gaandeweg blijven motiveren om die moeilijke methodologie toch te blijven waarmaken is een ander verhaal soms.*

2.2.4.4 Methods of CPG development

Development and/or collaboration

In general, the guidelines developers can be subdivided into two groups.

- Organizations that develop guidelines (BAPCOC, Wit-Gele Kruis, College of Geriatrics, College of Oncology, Domus Medica, BCFI/CBIP, Kind & Gezin, SSMG, nurses (CIPIQ-S), KCE, pharmacists (APB), FARMAKA).
- Organizations that collaborate with other ones that develop guidelines (physiotherapists (AXXON), midwives (VLOV), intensive care nurses (VVIZV), psychiatry association (VVP).

> *Wij ontwikkelen zelf geen richtlijnen maar gaan op zoek naar samenwerkingsverbanden. Bvb met het KCE hebben wij samengewerkt voor de richtlijn laagrisicobaring. Dan worden er onderzoeksvoorstellen ingediend, dus wij doen dat ook elk jaar : onderzoeksvoorstellen inleveren, en dan worden we uitgenodigd als stakeholder. Dus we gaan op die manier meewerken aan de richtlijn.*

Some illustrations of international collaborations are:

- the adaptation of Finnish Duodecim CPG by EBMPracticeNET: EBMPracticeNet also participates in a consortium (Austria, Norway, Finland) to update guidelines;
- the use of French CPG for Medical Imaging by the College of Medical Imaging;
- European guidelines for dieticians by UPDLF (Union Professionnelle des diplômés en Diététique de Langue Française);
- BICEP (Belgian Interuniversity Collaboration for Evidence-based Practice): this collaborating centre of the Joanna Briggs Institute (JBI) is committed to produce high quality systematic reviews related to nursing subjects. JBI is an international not-for-profit institute that collaborates internationally with over 70 centres across the world. Their mission is to provide health professionals with the best available evidence to inform their decision-making at the point of care.

Development methods

Two types of methods are reported as broadly used to develop CPG:

- A strict, predesigned method (e.g. KCE, Domus Medica, SSMG, CIPIQ-S, BAPCOC, BCFI, APB). The interviewees stated the importance to strive to find the highest possible level of evidence from the literature (e.g. with the use of validated search strategies). Some developers mentioned the explicit use of tools to define that level of evidence (e.g. GRADE [Grading of Recommendations Assessment, Development and Evaluation]) and the quality of the evidence reporting (e.g. AGREE-Appraisal of Guidelines Research and Evaluation instrument) strategies;
- A literature search combined with expert opinion and/or on a consensus model (e.g. dermatologists), especially when few studies are available on the topic.

> *… et là, il n'y avait pas suffisamment de preuves scientifiques, de publications etc., donc là c'était important quand même d'avoir une méthodologie, ça s'appelait une méthodologie de consensus, avec le questionnaire Delphi.*

> *Ce qu'on fait régulièrement, c'est se baser aussi sur des guidelines qui existent, parce que ça peut nous aider, mais dans lesquels on a de temps en temps aussi des opinions d'experts qui sont le niveau le plus haut qu'on peut attendre … je pense que c'est surtout intéressant de les avoir sur des choses où on n'est pas tous d'accord, …dans les cas où il n'y a vraiment rien comme évidence.*

> *Voor de lokale richtlijnen gebruiken we meestal een consensusmodel. We gaan de literatuur nakijken, we gaan dan samenzitten met degenen die verantwoordelijk zijn binnen een bepaald tumortype multidisciplinair en we kijken dan naar de input van die verschillende spelers om dan tot een consensusmodel te komen. Wat betreft de nationale richtlijnen gebruiken we een beetje de methodologie die nu door het KCE wordt gebruikt. Die toch op bepaalde momenten wat afwijkt van degene die men lokaal gebruikt omdat men bepaalde criteria gaat… welke bronnen men gaat gebruiken. En soms merk je dat bepaalde evidentie die als onderzoeker of als clinicus aanvaard is, plots uit die richtlijnen valt omdat die niet in het lijstje van de te bevragen bronnen valt. En dan is het toch wel belangrijk dat er getoetst wordt met de experten of dat klinische realiteit is. Dus er zijn twee modellen.*

Expert consultation

Anyhow, all organizations consult experts at some point in the development process (or at the end) either to add their individual opinion or in search of consensus of opinion.

> *Donc là nous adaptons les guidelines sur base des commentaires… on fait une recherche complémentaire, … qu'il faut compléter, notamment l'aspect remboursement, analyse de coût etc. … on corrige… et on les invite à une réunion de consensus, … on l'adapte en fonction des résultats de la réunion de consensus, … c'est la version qui va partir.*

Difficulties related to the development of guidelines

Interviewees experienced several difficulties concerning the development. They stated that the workload is demanding, the procedure often long lasting, resulting in old data when published, and the development process (too) rigid. Other difficulties experienced are lack of time, manpower and financial resources. Many CPGs are developed by professionals on top of their work and during free time.

Some participants report a lack of qualitatively good literature in their field (Wit-Gele Kruis, Dermatologists) but other ones describe an excess of literature.

> *Gebrek aan degelijke literatuur, het gaat vaak om beschrijvende reviews van bestaande praktijksituaties, weinig harde evidentie om te zeggen da's een goed praktijkvoering. Gebrek aan mankracht, mensen die dat allemaal up-to-date houden. We doen dat allemaal met eigen middelen, enkele mensen die daarvoor een deel van hun tijd vrijgesteld kunnen worden.*

2.2.4.5 Testing CPG for feasibility

All interviewees acknowledged the importance to test a guideline amongst end users, either in clinical settings or in Continuous Professional Development groups. Yet most organizations experienced a lack of time and resources to do so. The College of Geriatrics, Domus Medica, SSMG, APB and CIPIQ-S test their CPGs for feasibility on the field, for example in geriatrics wards, or submit them in LOK/GLEM groups (Lokale Kwaliteitskringen/Groupes Locaux d'Evaluation Médicale - mandatory small groups for quality assessment for physicians).

> *… quand on a fini les guidelines, on va dans les GLEM pour l'exposer, pour voir si elles sont applicables, …, alors on met bien à part la littérature dit ça et les GLEM on dit ça quoi,…, donc je vais dire qu'elles sont pas seulement scientifiquement rigoureuses, mais elles sont validées sur le terrain.*

2.2.4.6 Updating the CPG

Participants reported the importance of a regular updating of their CPG. However, this is sometimes impossible due to a lack of manpower, financial means and lack of dedicated time within the organization. The same reasons are mentioned for adapting CPG to the local situation e.g. adapting Dutch NHG (Nederlands Huisartsen Genootschap) guidelines to the Flemish context.

2.2.4.7 Collaborations with other CPG stakeholders

Interviewees talked about various types of collaboration: with other CPG developers but also with people disseminating, implementing or financing CPG.

In general, the participants emphasized the multidisciplinary aspect of collaboration. Collaborations could be non-structural, based on coincidence (sporadic sharing of interest for a topic) or structural (e.g. BAPCOC & Domus Medica, Wit-Gele Kruis & CIPIQ-S, Domus Medica & SSMG, RIZIV/INAMI & FOD/SPF, EBMPracticeNET & Werkgroep Eerstelijnsrichtlijnontwikkelaars) (See maps of the Belgian Landscape, appendix 2.4).

Participants reported these collaborations in general as positive and fruitful. Many thoughts were dedicated to future collaborations in demand, e.g. VLOV, Physiotherapists & EBMPracticeNET, VVP & Trimbosinstituut Netherlands, dieticians & doctors & nurses.

Collaborations could be national or international:

- Nationally, some CPG developers collaborate with other developers (e.g. within Werkgroep Eerstelijnsontwikkelaars, Domus Medica & BAPCOC; CIPIQ-S with Domus Medica and SSMG). Collaborations are also established with universities, professional organizations, LOK/GLEM's, patient organizations, informal caregivers, CEBAM (as methodological expert), federal institutions like FODSPF, RIZIV/INAMI, KCE or with disseminators like EBMPracticeNET. A remarkable observation was that Flemish organizations more often collaborate with international organizations, rather than with French-speaking Belgian organizations (e.g. VVP & Trimbosinstituut Netherlands). The interviewees suggested that this was more explained by a similar culture than the language.
- International collaborations are e.g. between Flanders (Domus Medica) & The Netherlands (NHG), between Belgium (KCE) & UK, within a network of professional organizations (e.g. AXXON & World Confederation for Physical Therapy; UPDLF & European Federation of the Associations of Dietitians), within a network of centres that promote evidence (Belgian Interuniversity Collaboration for Evidence-based Practice (BICEP) & Joanna Briggs network).

> *Met de andere richtlijnen-ontwikkelaars was daar tot nu wat minder samenwerking behalve met verpleegkundigen, die toch regelmatig al betrokken geweest zijn. De rest eerder toevallig, dat die eens meewerken. Bvb iemand van FARMAKA maar da's dan niet omdat die bij FARMAKA werkt maar omdat die dan dat onderwerp goed kent. Dus die samenwerking is veel minder structureel. We hebben wel ook samenwerking met het NHG waarbij we ook de overeenkomst hebben om elkaars richtlijnen als expert te lezen. Dat is standaard procedure.*

Difficulties related to collaborations between CPG stakeholders

The participants noted some difficulties within collaborating organisations. Language was reported as an obstacle, just as organizational and structural differences between e.g. the Belgian and Dutch health care system (for instance for GPs). One interviewee described collaboration as a constant "dragging and pulling". Furthermore forcing one's opinion on the partner, a top-down approach, agenda's that do not match and an unorganized way of collaborating and financial expectations were reported. Some interviewees (e.g. physiotherapists) noted that they had to make some efforts in order to be heard as a professional group among other CPG stakeholders.

> *Dat gaat meestal over dat iemand het laken van zijn organisatie teveel naar zich toe wil trekken, zowat de belangen van zijn organisatie te hard wil in de verf zetten.*
>
> *Als we niet onze stem verheffen, dan vergeten ze ons. Artsenorganisaties, en da's wel positief geëvolueerd, hebben hun eigen verleden, hebben hun eigen invulling, alleen moet ik eerlijk zeggen : zij sturen de gezondheidszorg in België. En kinesitherapeuten worden vaak vergeten.*

Facilitating factors related to collaborations between CPG stakeholders

Interviewees reported following aspects to facilitate the collaborations: good agreements, win-win situations, collaboration with organizations experienced in developing evidence-based CPG, needing each other as partners and sharing a common concrete objective.

> *Noodzaak tot het in huis halen van expertise. Je hebt elkaar nodig om kruisbestuiving te hebben.*
> *Langs de andere kant zijn er ook persoonlijke contacten die goed liggen.*

Key points for the perception of stakeholders (definition, development and collaborations):

- **Participants` views on how to define a CPG differ;**
- **Topics for CPG are either chosen by the organization itself (occasionally influenced by the financing organizations) or by the end users (health care professionals);**
- **Organizations develop CPG either themselves or in collaboration with other CPG developers or focus on the translation/adaptation of CPG;**
- **CPG are either developed in a strict, predesigned way or based on a literature search in combination with expert opinion/consensus model;**
- **Belgian organizations acknowledge the importance of testing, updating CPG and/or adapting CPG developed abroad. However, most of them experience a lack of time and resources;**
- **Collaborations between stakeholders vary: with CPG developers of another discipline, with disseminators, with various financing institutions;**
- **Collaborations are national or international, either non-structural, based on coincidence or structural. They are in general experienced as positive but difficulties occur as well.**

2.2.5 Validation of CPG: from consensus to official procedure

The term "validation" can refer to a validation of the methodology and/or to a validation of the content. This term means that the CPG meets certain quality criteria (methodology) and that it is recommended to be used by health care workers in clinical practices (methodology and content).

Two types of procedures could be identified:

- Informal procedure: organizations rely on a consensus model, expert opinion/consensus and/or testing for feasibility (e.g. Wit-Gele Kruis, College of Geriatrics, College of Oncology, BCFI, College of Medical Imaging, APB).
- Formal validation by CEBAM (Belgian Centre for Evidence Based Medicine): organizations follow a strict development method with a formal validation of the methodology and content by CEBAM (e.g. Domus Medica, SSMG, CIPIQ-S, BAPCOC, KCE).

CEBAM validates approximately five guidelines each year since 2002. Most of the CPG validated by CEBAM were developed by the GPs' organizations (Domus Medica, SSMG) and BAPCOC. CEBAM also now validates CPGs developed by KCE.

Pharmacists mentioned that some parts of their CPG were too specific to be validated by CEBAM. EBMPracticeNET, a dissemination platform linked to CEBAM, declared they only disseminate CPGs that passed the CEBAM validation procedure.

> *… on a eu des contacts avec le CEBAM parce qu'on voulait savoir si c'était envisageable que les guidelines soient validés ou approuvés, avec un petit cachet CEBAM, mais on a réalisé tous les deux, pas seulement l'APB mais le CEBAM aussi, que l'aspect "soins pharmaceutiques" était tellement spécifique que c'était difficile d'appliquer les méthodologies que le CEBAM appliquait pour valider cette partie-là, et c'est pour ça que ça ne s'est jamais fait.*

> *Valideren in de puur zuiver wetenschappelijke zin van het woord : neen. Het valprotocol is uitgetest geweest naar haalbaarheid maar da's niet echt een validatie. Omdat we daar geen mogelijkheden voor hebben. We zijn geen wetenschappelijke groep he. We moeten aan kwaliteitsverbetering doen maar we hebben daar geen personeel voor (voor validatie).*

A remarkable observation is that some organizations never heard about CEBAM. CEBAM itself made it clear that for a better, more EBM approach of CPG development in the future, a CEBAM validation should function as a condition to receive public funding.

Difficulties related to formal validation procedures

Organizations practicing a more informal way of validation acknowledged the value of a formal validation but reported a lack of time and financial resources as obstacles. In general, a formal validation means excessive paperwork for the interviewees and various procedures, which took a lot of time. Many participants consider a formal validation as a slow process. Authors have to cope with numerous (rounds of) remarks on their work, which is experienced as demotivating.

> *Er is geen formele validatie he. Dat zou ideaal zijn maar dat zou het proces natuurlijk gigantisch vertragen he.*

Opportunities related to formal validation procedures

Some developers considered the CEBAM validation as a quality label. Interviewees found important that scientists and governmental institutions could rely on this information. Domus Medica also mentioned the interaction with CEBAM on methodological support and on resolving points of discussion.

> *Pour le gouvernement, c'est important de savoir que la recommandation est une recommandation de qualité.*

> *Door validatie door eigen experten intern, zijn de richtlijnen praktisch zeer bruikbaar. Omdat het door experten wordt gevalideerd die echt in het veld staan.*

To facilitate a validation process, the interviewees suggested a clear definition of CPG (cfr. BCFI). They declared that the validating institution should be independent and the validation instrument generally accepted (e.g. AGREE). Organizations who have their CPGs validated should be rewarded (e.g. accreditation) according to several participants.

Key points for the validation of guidelines:

- **The term "validation" refers to the validation of the content and/or of the methodology. The procedure can be:**
  - **formal: by an external body like CEBAM, with a focus on the validation of the methodology;**
  - **informal (consensus model, expert opinion, testing on the field): usually mentioned as more directed to content validation.**
- **A formal validation procedure is perceived as a quality label. Obtaining this quality label requires many resources and is not feasible for some organisations.**
- **The topic of the CPG may influence the feasibility and importance of the validation.**

2.2.6 Dissemination of CPG: many strategies in Belgium

This section presents the strategies mentioned by the interviewees along with their advantages and disadvantages. These strategies are classified according to the EPOC taxonomy (see the synthesis' introduction).

Most organisations disseminate with paper documents and/or website. Other strategies sometimes complete the dissemination process.

For a schematic overview of strengths, weaknesses, opportunities and threats of each EPOC intervention in Belgium, see appendix 2.5.

2.2.6.1 Distribution of educational materials

The EPOC taxonomy refers to educational materials as the "distribution of published or printed recommendations for clinical care, including clinical practice guidelines, audiovisual materials and electronic publications. The materials may have been delivered personally or through mass mailings. Paper and electronic documents are considered as educational materials".

Paper documents

- Advantages

The dissemination with paper documents was not questioned, most interviewees mentioned it first. Quoted advantages were the habit and the pleasure to manipulate paper documents and the possibility to read them anywhere, without any additional device. Interviewees reported that the use of a standardised format helps the user to keep them in sight and find them easily when needed.

- Different formats

Guidelines are presented to the professionals through different kinds of paper documents: brochures, leaflets, pocket documents as well as articles in periodicals, professional journals and newsletters. These documents are sent to the professionals by post, either with the financial help of national institutions (FOD/SPF Public Health, RIZIV/INAMI), or with support of their professional association.

The interviewees did insist on the practical use of these documents. Even if the presentation of the whole CPG is necessary as a reference document, it seems of equal or even greater importance to the participants to provide synthesised, clear and practical information. This could be preferably presented in separated documents like pocket documents, charts or algorithms that can be easily handled at the point of care.

The interviewees emphasized the clarity of the information i.e. essential and short messages and a vocabulary adapted to the target group.

> *… des Pocket guidelines, qui sont des éléments distribués, qui sont très pratiques pour la dissémination et qui reprennent essentiellement tous les tableaux, les figures, il y a une petite note etc., …et c'est*

aussi le fait que le médecin puisse le mettre dans son tablier, il l'utilise dans son tour de salle et c'est assez pratique.

je pense que c'est important d'avoir des choses qui sont faciles à lire, qui ne prennent pas plus que 2 ou 3 pages, je pense qu'il faut les grands messages pour les gens qui sont plus impliqués, qu'ils peuvent relire, par exemple

Additional documents for patients or their care givers were also quoted by the interviewees i.e. to help the communication. They are provided to the beneficiaries during the encounter.

Il a accès à différentes brochures qui viennent de ces bonnes pratiques pharmaceutiques sur les BPCO, le dépliant sur l'asthme, et ça c'est synthétique, c'est une à deux pages, mais c'est destiné au patient en fait, il peut l'imprimer et donner au patient, sur les médicaments

Electronic documents

CPG are also presented under electronic format on governmental or professional association websites. Applications for new electronic devices such as smartphones or tablets are developed as well. Electronic mails were also mentioned.

Some interviewees mentioned EBMPracticeNET as a disseminator of electronic CPG and considered this organization as the first step towards a common dissemination platform. EBMPracticeNET is an initiative of the NIHDI to gather all Belgian organisations involved in evidence-based medicine and to develop a national electronic point-of-care information service. The website provides Belgian healthcare professionals with a database of Belgian CPG (validated by CEBAM) and international CPG, links to other EBM information and a clinical decision support system, which is linked to electronic health records.

The platform ""Wetenschap en Praktijk" is another example of initiative that gathers stakeholders interested in the development and dissemination of evidence for nursing practice. The website (www.portal4care.be) displays guidelines from various organisations to promote evidence-based nursing practice in Belgium.

- Advantages

The choice of using the electronic format to disseminate CPG was not questioned by the interviewees; they see it as a common way of proceeding in addition to paper documents or alone. Quoted advantages were the increasing habit to use computers and related devices. According to the participants it is fast, easy to use and attractive to more and more people, especially the younger ones.

The small cost of producing and disseminating the electronic material makes them a good alternative to paper documents, according to the interviewees. Websites are an easy and cheap way to reach many people.

However, disseminators seemed to prefer to reach one specific target group. The mailings present the disadvantages of wrong addresses as for the post. Registration to access information on specific websites is one mean but this may be an obstacle for the user. A link with the electronic patient record (medical or pharmaceutical) can give a direct access to the appropriate CPG information in relation to symptoms, diagnosis, treatment and prevention (cf. reminders). The interviewees who use it (e.g. EBMPracticeNET) or would like to use it (dieticians, nurses) think that the reminders are precious tools with many opportunities.

C'est important pour nous de suivre les travaux d'EBMPracticeNET, on trouve que c'est vraiment quelque chose de crucial dans la dissémination et dans l'utilisation des recommandations par les professionnels de la santé, premièrement pour les médecins, mais on espère que le dossier informatisé sera élargi à d'autres professionnels, ça sera utilisé aussi par cette voie-là. Donc ça c'est certainement un élément très important

Nous collaborons notamment avec EBMPracticeNET, nous sommes membres maintenant pour essayer de voir avec eux comment on pourrait diffuser sur format électronique, d'une part les guidelines, et quel support on pourrait mettre en place pour le développement de plateformes e-Learning. Ce sont vraiment deux choses différentes.

Ivm die decision support : het is nu in voege in 1 pakket, in Sosoeme. In 2010 is er een eerste pilootstudie geweest waar er gepeild is naar de perceptie van de gebruikers van die Ebmeds-tool. Daar was er een groep van early adopters die er heel positief over was en dan een

andere groep van respondenten waar je je kunt voorstellen dat die daar nog niet zo'n interesse in hadden. Nu in juni start er een nieuwe pilot binnen H1 waar er een 500-tal artsen te maken zullen krijgen met dat decison supportsysteem. Per pilot en de ervaring die we daarbij opdoen, breiden we het dan uit naar andere venders. Er is in BE nog een weg te gaan rond het gecodeerd invoeren van informatie in dossiers. Ook langs de kant van de producenten en voor de disseminatoren is het belangrijk dat er informatie goed gecodeerd wordt om die nadien goed te kunnen ontsluiten.

Over decision support : Ik denk niet dat artsen daar al klaar voor zijn. En waarschijnlijk heeft dat ook te maken met de aard van het gezondheidssysteem waarbij je betaald wordt per prestatie en niet voor de kwaliteit van zorg.

- Different formats

Concerning the content of this material, interviewees also mentioned the importance to propose and present various levels of information (CPG itself, synthesis, decision algorithms). They declared that this is facilitated by the technological properties of the material: use of links to present the CPG in a progressive way, use of links to redirect towards complementary documents and possibility of downloading documents for patients. Printing the documents was also mentioned as a favourable aspect for those who prefer to manipulate paper documents.

- Some problems with electronic dissemination

The problem of mailing lists has been mentioned above. Moreover, not all professionals use electronic devices, especially during home visits and unexpected failures are an additional threat.

Il y a beaucoup de gens qui restent "papier" et je ne suis pas sûr que cette révolution informatique va se faire aussi facilement, et pour tous les médecins, qui sont sur le terrain, qui font des visites à domicile, qui font des consultations, qui ont l'informatique qui tombe en panne… quand vous avez les papiers vous pouvez toujours retrouver les choses

The access to the correct and useful information requires skills, time and energy. The electronic systems become more and more powerful and the huge amount of information is a threat. Interviewees stated that the disseminator has to be cautious when selecting the information and presenting it in a logical way (e.g. following the clinical reasoning process). The availability of a good search tool is needed. The presentation of the information in a common format avoids downloading different kinds of software. The centralisation of all CPG and CPG-related information on a common platform was described as a need to increase the GCP accessibility.

Regular updating of the information is a final important point.

… on les met aussi à disposition au niveau du logiciel d'exploitation de l'officine, lié ou couplé vers les médicaments qui sont utilisés dans le cadre du thème des guidelines

2.2.6.2 Educational meetings

The term "educational meetings" refers, in the EPOC taxonomy, to "healthcare providers who have participated in conference, lectures, workshops or traineeships". Face-to-face meetings and e-learning modules are within this section because both strategies answer to this definition.

Face-to-face meetings

The educational meetings reported by the interviewees are:

- meetings or conferences where a session is devoted to CPG-related presentations;
- seminars organised around one CPG;
- formal training within the framework of continuous medical education (e.g. LOK's/GLEM's).

The choice of this strategy is guided by the opportunity to get "accreditation" points.

- Advantages

Participants mentioned as advantage of these meetings the dissemination of the EBM-approach among large scientific, professional and educational communities. GCP developers (SSMG for example) prepare modules with ready-to-use materials, activities and questions. These standardised, reproducible presentations assure a good quality of disseminated information, according to participants.

> *On avait fait des modules de présentation, donc qui étaient associés, une espèce de power point pour pouvoir les présenter dans les dodécagroupes, avec plusieurs questions, des activités et des présentations spécifiques; les animateurs des dodécagroupes qui cherchent de la matière pouvaient accéder à ce type de modules pour présenter les RBP.*

> *La dissémination pour moi c'est par le dossier informatisé, et par les cours, et dans les GLEM ; il faut peut-être imposer dans les GLEM, débattre dans les GLEM des recommandations… obliger comme l'éthique… c'est la seule façon de pouvoir introduire ça dans les mentalités.*

> *In het begin werd dat gedaan nav een persconferentie. Ik moet zeggen dat dat meestal ontgoochelend is. Ten tweede bestaat er een website, zowel van het FOD als van het College waar men de richtlijnen kan terugvinden. En ten derde denk ik dat het ook belangrijk is om de richtlijnen die in het publicatiecomité zaten, te gebruiken wanneer men voordrachten geeft, zodat die richtlijnen kenbaar worden gemaakt. Er is geen specifieke reden, ik denk dat dat gewoon gezegd is van « dit zijn de kanalen waar we het makkelijkst zoveel mogelijk mensen kunnen bereiken ».*

- Disadvantages

The main disadvantage mentioned is the time spent in these meetings. They bear a large cost for organisers and attenders. According to interviewees, attenders should benefit of an educational leave and be replaced in their job. This is not easy to achieve for self-employed professionals.

> *… c'est sur les heures de travail, elles doivent prendre parfois congé pour pouvoir y aller, l'hôpital n'envisage pas toujours de donner un certain nombre de congés ou d'heures de repos par rapport à ça, ou bien elles doivent venir mais elles doivent faire des rapports et ça les ennuie, donc il y a quand même à un certain moment une sorte de… elles ne sont pas poussées vraiment vers la formation continue. Ou alors elles peuvent y aller mais on leur fait bien comprendre que (ça j'ai quelques cas en tête) leur service ne se fait pas pendant ce moment là, et qu'elles doivent reprendre tout le service après…*

> *'t Is allemaal nogal klassiek zo : een avond zitten luisteren naar een spreker. In het beste geval een workshop waar iets gedemonstreerd wordt. Ik denk dat de mogelijkheden eindeloos zijn maar het moet ook haalbaar zijn.*

E-learning modules

Advantages mentioned by the respondents are that professionals can choose the place and time to connect as well as the information collected and the duration of the session. It is attractive to young people. Possibility to evaluate and provide feedback to the trainee was also mentioned.

However, interviewees quoted also obstacles such as lack of personal relationships and face-to-face meetings, inducing difficulties regarding control and motivation. The low cost of use was usually put in the balance with the high cost of development.

> *… l'année dernière nous avons demandé au SPF de pouvoir mener une recherche sur l'intérêt de l'e-Learning et sur la diffusion électronique des guidelines, parce que nous étions convaincus que la démarche e-Learning pouvait être complémentaire à la prise de connaissance des recommandations. … on voit chez les jeunes que là, clairement, il y a un créneau qu'on doit aller chercher, tout en complétant de compléments peut-être toujours à mettre à disposition sur des sites web etc.*

2.2.6.3 Local consensus processes

EPOC taxonomy describes consensus processes as follows:“participating providers are included in discussion to ensure that they agreed that the chosen clinical problem was important and the approach to managing the problem was appropriate”.

The interviewees did not mention this strategy although it is used by the NIHDI (but probably not considered as a strategy to disseminate CPG).

2.2.6.4 Educational outreach visits

This dissemination strategy consists of “a trained person who meets with providers in their practice settings to give information with the intent of changing the provider’s practice. The information may have included feedback on the performance of the provider(s)” (cf. EPOC taxonomy).

Only a few interviewees reported the use of this strategy but several participants also did mention it as an opportunity for the future. Interviewees described outreach visits as an efficient and effective way to reach physicians since it is a one-on-one encounter with the emphasis on personal, individual contact. The fact that this strategy is being used by the pharmaceutical industry is an argument to copy this strategy for the dissemination of guidelines. It could be used in a more systematic approach and applied to a broader field as for instance diagnosis, prevention and behavioral therapy, according to an interviewee. Outreach visitors could also use these visits to advertise e.g. CEBAM Digital Library for Health.

> *Voor richtlijn X heb ik zelf dat getracht via educational outreach. Farmaka was toen in zijn kinderschoenen. Dat ging rond X en op basis van evidentie leek dat de meest doelmatige, efficiënte manier om dat te doen.*

2.2.6.5 Local opinion leaders

EPOC defines it as the ‘use of providers nominated by their colleagues as ‘educationally influential’. The investigators must have explicitly stated that their colleagues identified the opinion leaders’. In some cases, interviewees mentioned that some professionals were trained for the new CPG and afterwards explained to their colleagues.

> *…ce qu’on fait de temps en temps ce sont des formations locales, on fait une sorte de trainer-trainer system, on a fait … comme ces gens-là ont eu une formation plus importante, alors ils sont responsables de disséminer l’information chacun dans son groupe*

Participants stated opinion leaders are better known by colleagues than an external trainer; this could increase the credibility and adherence to CPG. The interviewees mentioned that the process in cascade has the advantage to multiply the number of informed professionals but it might be a challenge to maintain the accuracy of the information.

> *…il y a eu des formations de formateurs GLEM, des facilitateurs au niveau du GLEM via Domus et SSMG*

> *De strategie van een goed document dat gedragen wordt door een groep of 1 persoon-expert die binnen het psychiatrische landschap als deskundig wordt ervaren. Kennis van zaken en een praktische deskundigheid. Naast de inhoud van het document is het ook belangrijk wie daarmee naar buiten komt en de perceptie van de collega’s tov die persoon.*

2.2.6.6 Patient-mediated interventions

This strategy consists in ‘new clinical information (not previously available) collected directly from patients and given to the provider e.g. depression scores from an instrument’ (EPOC). The interviewees did not report the use of this strategy.

2.2.6.7 Audit and feedback

This strategy is defined in the EPOC taxonomy as the provision of 'any summary of clinical performance of health care over a specified period of time. The summary may also have included recommendations for clinical action. The information may have been obtained from medical records, computerized databases, or observations from patients'.

The interviewees mentioned rarely feedback on clinical performance linked to CPG. They mentioned feedback as an opportunity to promote the culture of quality of care. The professional's reflection is guided through a quality assurance cycle. The personal profile compared to what is recommended offers a way to discover the CPG and to reflect on his own practice. It is an individual approach that is quantifiable and answers "why" and "how" questions.

> *… c'est un avenir de la médecine que, progressivement, les cliniciens revoient leur façon de travailler en fonction d'éléments extérieurs. Il y a une recommandation qui dit on dépiste ou on ne dépiste pas entre tel et tel âge et on peut leur dire : dans votre patientèle, on peut leur dire qu'il y a cinquante pourcents de votre population qui a fait son dépistage, qui n'a pas fait, etc. Ca leur permet de s'inscrire dans un cercle de développement qui fait que l'objectif à un an ou à deux ans c'est de faire mieux.*

> *…gewoon feedback geven van je voorschrijfgedrag/ geneesmiddelen/ klinisch onderzoek. Daarnaast wat uitleg waarom iets teveel of te weinig is … Ook het gevoel « zou dat wel kunnen helpen » dus uiteindelijk een papier dat je naast je neer kan leggen. Maar dat blijkt te werken. Zeker als je dan nog eens, en dat heeft de overheid ook gedaan, mensen verplicht om persoonlijke voorschrijffeedback rond antibiotica te bespreken.*

Sense of control and obligation were quoted as disadvantages.

2.2.6.8 Reminders

This consists in 'patient or encounter specific information, provided verbally, on paper or on a computer screen, which is designed or intended to prompt a health professional to recall information. This would usually be encountered through their general education; in the medical records or through interactions with peers, and so remind them to perform or avoid some action to aid individual patient care. Computer aided decision support and drugs dosage are included'. (EPOC)

The interviewees insisted on the insertion of reminders within multiple approaches to provide information. Besides repetition, little notes or adverts are occasionally mentioned as reminders by interviewees. Letters or small inserts in periodicals remind readers to look for a new publication concerning a CPG. Using the electronic technology, they are inserts in website.

In the most sophisticated form, they are associated with the electronic patient record, appearing at a regular pace following a predetermined calendar or associated with specific diagnosis or treatment. This strategy is currently under development by EBMPracticeNET.

According to the interviewees, the quality of these reminders is shortness and clarity. They also insisted on the importance of this strategy to reach the individual professional: it should be the most frequently consulted medium by the target population.

The interviewees quoted as possible disadvantage a negative perception of control, as for the feedbacks.

2.2.6.9 Marketing

The EPOC definition of this strategy is the "use of personal interviewing, group discussion ("focus groups"), or a survey of targeted providers to identify breaks to change and subsequent design of an intervention that addresses identified breaks". The interviewees did not report the use of this strategy.

2.2.6.10 Mass Media

This strategy is defined, in the EPOC taxonomy, as "the varied use of communication that reached great numbers of people including television, radio, newspapers, posters, leaflets, and booklets, alone or in conjunction with other interventions and targeted at the population level".

Interviewees evoked using general press, television and social networks to reach a large population for topics of broad interest such as prevention or public health messages. An advantage is that patients and professionals receive the same message: this could trigger a discussion between them.

> *…je pense qu'on peut très bien digérer les guidelines et en parler dans Le Soir, dans La Ligue, dans l'Echo, dans Le Vif, et même dans La Meuse, à condition que vous présentez bien les choses, et je pense que c'est un moyen pour que le patient discute avec son médecin « ah vous me parlez de cette option là, d'accord, et celle là docteur ? », ça agace souvent les médecins ça, mais pourquoi pas. Je pense que les médias peuvent avoir un rôle intéressant à jouer ; avec toute l'information qu'on a maintenant grâce à internet et toutes les nouvelles technologies d'accès à internet, je pense que ça peut être intéressant.*

However, the interviewees mentioned as a disadvantage the uncertainty about who gets reached.

2.2.6.11 Multifaceted intervention

While describing the dissemination process, the interviewees always mentioned the use of more than one EPOC strategy. Most organisations disseminate CPG using paper publication and a website. The other EPOC strategies are not so commonly used.

> *… oui, ils ont ça dans leur boite aux lettres, et à côté de ça on le publie sur le site internet, sur le home-page, on le met dans notre newsletter, et on fait référence dans nos autres périodiques et là on fait aussi un petit article pour dire « regardez bien votre boite aux lettres, cette recommandation, ou cette directive vont arriver, lisez-les svp »*

> *20 000 brochures diffusées, un courrier de l'INAMI, des infos via les associations professionnelles, des présentations à des congrès, des articles qui ont été publiés dans des revues professionnelles essentiellement…*

> *… nous essayons de l'intégrer dans le cursus des écoles … Il faut informer nos membres …nous avons différents canaux … les brèves, … notre revue scientifique ... Nous avons notre journée d'étude … Il y a également des formations qui existent …*

> *We gebruiken een combinatie van allerlei methodes, zo ook vormingen door referentievpk. Zij zijn verantwoordelijk voor disseminatie zoals ze dat noemen, zij moeten dat uitdragen. Da's hun opdracht wel wat.*

Many organisations use various routes to reach the target population but there is often a lack of clear strategy.

> *Ce qui marche le mieux c'est la combinaison de plusieurs stratégies; on ne peut pas se contenter d'une seule voie !*

> *In het begin werd dat gedaan n.a.v. een persconferentie. Ik moet zeggen dat dat meestal ontgoochelend is. Ten tweede bestaat er een website, zowel van het FOD als van het College waar men de richtlijnen kan terugvinden. En ten derde denk ik dat het ook belangrijk is om de richtlijnen die in het publicatiecomité zaten, te gebruiken wanneer men voordrachten geeft, zodat die richtlijnen kenbaar worden gemaakt. Er is geen specifieke reden, ik denk dat dat gewoon gezegd is van « dit zijn de kanalen waar we het makkelijkst zoveel mogelijk mensen kunnen bereiken ».*

Key points dissemination strategies in Belgium:

- **Most organisations use paper and electronic based publications. Other strategies sometimes complete the dissemination process;**
- **Educational meetings refer to face-to-face meetings (conferences, seminars, formal trainings) and e-learning modules (a new way to disseminate guidelines);**
- **Interviewees did not report much about educational outreach visits or feedbacks as dissemination strategies; they still mentioned them as interesting strategies;**
- **Reminders can be useful strategies if short, clear and delivered in a good format, just in time;**
- **Mass media such as general press, television and social networks can be used for topics of broad interest like when informing patients.**

2.2.7 Difficulties to disseminate and implement CPG

Obstacles specific to each strategy have been described in the previous sections. This section highlights difficulties independent of the choice of strategy.

Cost of dissemination

Cost of dissemination is by far the most cited obstacle, except for electronic dissemination. The costs include materials for dissemination, post as well as human resources to provide information and training. Reproduction of paper documents such as educational material, supports to educational meetings, reminders are also very expensive, according to the participants.

Electronic documents are a good alternative though not yet always used. Moreover, it was mentioned that computers or other electronic devices are sometimes not available for health professionals during their work.

Global lack of dissemination plan

Not having a specific, well-stated dissemination plan was reported as a difficulty. Some organizations seem not to have thought about developing dissemination plan, others had a plan but lacked of time and/or financial resources to implement it.

> *Ik denk dat er geen echte strategie is…, geen echt beleid, en het nog te fragmentarisch is.*

Ignorance of the Belgian landscape

Another difficulty reported by interviewees is the lack of overview of the Belgian dissemination landscape. Many organizations disseminate guidelines but few seem to know “who is doing what”. Participants stated that this results in a lot of work that is, unnecessarily, being done twice (or even more).

> *Goh, het is niet echt samenhangend, het is niet echt gefragmenteerd. Er is heel veel maar we weten het niet. Het is zo jammer dat we het niet weten van elkaar en dat we het niet openstellen op een nationale website.*

Reaching the target population

Reaching the target population is always a challenge according to the interviewees. On one hand they say that this is related to organizational difficulties (old list of addresses, heterogeneity of the target population). On the other hand, this would be due to a lack of knowledge about the evidence-based approach: the target population is not aware of the importance of the scientific basis of the guidelines and therefore not sensitive to it.

> *Dans les freins, dans les limites, c’est certainement l’hétérogénéité et la multiplication des intervenants et de nos interlocuteurs au niveau du domicile*

Image of the developer and/or of disseminator

An obstacle often quoted by the interviewees is the image that the professional has of the CPG developing and/or disseminating organization. In this respect, interviewees state that professionals' associations would have a more positive impact on professionals than governmental institutions, which represent for the professionals a form of control and power. Suspicion of economic-oriented goals of public institutions was also mentioned.

> *Je me demande dans quelle mesure l'identité et la perception de l'acteur producteur ou du disséminateur de guideline est à prendre en compte.*

> *… oui alors on pensait, à un moment, que ça serait le CNPQ (Conseil National de Promotion de la Qualité) au sein de l'INAMI …Et alors ouvrir ce CNPQ à d'autres professions, parce que pour le moment c'est juste des médecins … Cependant, il faut peut-être remettre en doute l'indépendance de ce CNPQ parce qu'ils sont liés avec l'INAMI, ce n'est pas normal. Parce que financièrement c'est l'INAMI qui a les sous … Oui donc peut-être que ça devrait être un consortium plus indépendant qui n'est pas lié au financement des soins.*

Image of the guidelines

Furthermore, interviewees mentioned the often "bad image" of the guidelines themselves, being too scientific and not linked to their practice.

> *Elles sont toujours perçues comme un critère économique et pas comme un critère de qualité, et ça, sur le terrain, ça c'est clair, on fait des guidelines, des recommandations pour économiser... quand on a des retours, c'est souvent parce que, même si on les a testés sur le terrain, les gens qui trouvent que c'est inapplicable, mais de toute façon on le sait bien que ce n'est pas applicable comme tel.*

Too much information kills information

The interviewees quoted the excessive provision of scientific knowledge and continuous innovations as a major break to dissemination. This problem comes from an exponential increase of available and accessible information. This situation is worsened by the excessive dissemination of information, the lack of practical information and sometimes divergent messages. The professionals discard or file the information because they have no time in the clinical setting. The importance of reminders, of short and clear messages has been repeatedly mentioned to overcome this difficulty.

> *Il y a trop de guidelines. Il y a trop de choses sur le même sujet et énormément de publications. C'est difficile de suivre tout cela.*

Key points difficulties to disseminate guidelines:

- **Global lack of dissemination plan;**
- **High costs of dissemination;**
- **Ignorance of the Belgian users landscape;**
- **Difficulties to reach the target population;**
- **Perception of the users about the value of guidelines;**
- **Information overload.**

2.2.8 Facilitating factors to disseminate and implement CPG

The interviewees pinpointed various facilitating factors for the dissemination of guidelines on two levels: facilitating factors on the organizational level (financing, structural organization) and on the individual level.

Involvement of health professionals in the guidelines development

The interviewees find it essential to involve the professionals in the process of guidelines development and dissemination: choosing the topic, developing and disseminating the CPG. This is a condition to provide useful and practical information. This bottom-up approach is more acceptable by the professionals than a top-down approach.

> *...je les trouve trop monodisciplinaires et surtout pour les médecins. C'est dommage, ils sont secondés par des infirmiers ou autres et on ne les voit pas. Ca me frappe souvent. Je pense qu'il y a un besoin de transversalité. Au CIPIQ-S ils doivent incorporer le volet MG dans la démarche.*

> *Bij het ontwikkelen van richtlijnen proberen we multidisciplinair te werken. Bvb het valprotocol was volledig multidisciplinair : ergo's, kine's, psychologen, vpk en artsen waren betrokken. Die mensen vinden wij in de beroepsgroepen, en de Belgische vereniging heeft ook werkgroepen van verschillende disciplines*

Comprehensible language

The disseminators should pay attention to the use of a language adapted to the target population, to develop concise and clear messages and to use the correct and adapted mean of communication. As an illustration the CLEAR instrument (Common Language Evidence-based Advices and Recommendation) was developed by KCE to reach this goal.

More frequent multidisciplinary consultation and testing of documents should provide a more efficient approach of dissemination.

> *De thuisverpleegkundige heeft nood aan praktisch gerichte richtlijnen die verstaanbaar zijn. Zij moeten niet ne zoekterm kunnen intikken en dan Pubmed raadpleegen. Da's misschien goed voor academisch geschoolde zorgverleners. Ze moeten echt op maat gemaakte richtlijnen hebben, die snel en overzichtelijk kunnen geraadpleegd worden, in het Nederlands ook. … Maar wij moeten echt voorgekauwde richtlijnen hebben omdat het anders niet werkt.*

Incentives for continuing professional development

The interviewees declared that the professionals should be encouraged to continue to learn. "Accreditation points" are the incentives most often cited by the interviewees. Financial incentives are usually discarded as opposite to our culture. Offering structural support was perceived as an important factor.

Accessibility of information

Easily accessible, accurate information is perceived as a positively motivating factor for professionals. According to interviewees, this can be done by presenting up-to-date information, by proposing a good search on the website and by centralising the information. In general, interviewees underline the importance of further digitalization and state that information on websites should be provided for free.

One interviewee who emphasized the importance of the user-friendliness of messages further expressed his concern that user-friendly guidelines could decrease the quality of information.

> *Il faut souvent aller chercher n'importe où ; il n'y a pas de centralisation de l'information ; les urgentistes partagent cela avec les généralistes. il nous faut un peu de tout. Car nous sommes dans le pluridisciplinaire.*

> *Peut-être avoir une plateforme qui soit connue de tous et qui mette à disposition de tous les professionnels de santé les informations dont ils ont besoin et vers lesquelles ils peuvent aller s'ils veulent aller chercher de l'information*

Een tweede manier van verspreiden is dat iedere richtlijn ook op de website staat, en voor iedereen toegankelijk is, los van het feit of ge nu lid zijt of niet, kunt ge die richtlijn raadplegen en ook gebruiken.

Combination of strategies

Finally, most interviewees stated that a strategy would never work alone: a combination of strategies (different for each topic) was cited to overcome the above mentioned difficulties.

… on a construit une brochure que le SPF a diffusé, pour la douleur, on a construit un compendium douleur, et pour les escarres on a aussi construit un support brochure, et on réfléchit de plus en plus maintenant à développer des applications pour Smartphone, PDA, I-pad etc.,

Ik denk dat we er allemaal van overtuigd zijn dat het louter op papier zetten en publiceren en zelfs verspreiden naar alle artsen dat dat onvoldoende is om ingang te laten vinden in de praktijk.

Nu, ik denk niet dat er een one size fits all-manier is om aanbevelingen te implementeren. Het zal afhangen van de topic maar ook, gaat het over behandeling, diagnose, preventie, therapie en dan het onderwerp en de setting waarin je terechtkomt : kun je best via de arts, patiënt, apotheker,… Dus ja soms zal een patiëntenfolder genoeg zijn en soms zul je de arts moeten bezoeken.

Ik ben zelf thuis bij de antibiotica en wat daar gebeurd is: de mensen worden gesensibiliseerd met tv-spots, folders en posters die de huisartsen en apothekers ter beschikking krijgen. … Die artsen hebben ondertussen al drie keer een zogenaamde nieuwsflash gekregen van de overheid, die krijgen individuele voorschrijffeedback – hebben ze ook al drie keer gekregen- met verwijzingen naar aanbevelingen. … Er is een antibioticagids. De overheid heeft ooit verplicht gemaakt om die individuele feedback bespreekbaar te maken in de LOK-groep opdat de huisartsengroep in z'n geheel hun loon geïndexeerd zou zien worden. Dus als je kijkt, dat is een gigantische, brede interventie waarbij je niet precies kan zeggen wat nu juist heeft gemaakt dat het werkt of niet.

Key points facilitating factors to disseminate CPG:

- **Involvement of more-than-one discipline;**
- **Comprehensible language;**
- **Incentives for continuing professional development;**
- **Easily accessible information;**
- **Combination of strategies.**

2.2.9 Suggestions to improve CPG dissemination and implementation

2.2.9.1 Creation of a coordinating, national group

Interviewees agreed that the current CPG landscape (developers, disseminators) is fragmented: there is a need for coherence in the domain of CPG. Yet there are already some initiatives as for example the platform "Wetenschap en Praktijk" for the nurses: this platform brings together stakeholders interested in the production and dissemination of guidelines for nurses and midwives. One website (www.portal4care.be) gives access to guidelines from various institutions (e.g. KCE, FPS) for topics that relate to nursing/midwive's practice.

A further suggestion by the stakeholders is the creation of a unique national coordinating group. This committee of experts would represent the main institutions involved in CPG development and dissemination. The terms used by interviewees to describe this group of experts (committee, think-tank, and dome) refer to the variety of representatives from paying, developing and disseminating institutions. This group would ensure a more coherent landscape, since participation in different CPG groups is nowadays more often based on coincidence than on structured planning.

Als je kijkt naar coördinatie van disseminatie, er is daar eigenlijk ook nog niet echt een groep die daarop toeziet. Er gebeurt heel wat goed werk, maar dat is niet per se op elkaar afgestemd en er is niet 1 groep die daarop toeziet. Het zou interessant mocht daar ook een beetje stroomlijning in zijn en mocht gekeken worden « wie doet wat » en hoe wordt dat op de meest optimale manier georganiseerd.

2.2.9.2 A common database of CPG

Another suggestion to rationalise CPG development and dissemination was to centralise the information concerning CPG: topics covered, need for update, topics under development. The aim is to use resources efficiently and avoid duplicate work.

A common database of all guidelines (finished or under process) should be set up at the federal and interregional levels. This database would be a tool for the coordinating group of experts that would decide on priorities and on a common plan of actions.

EBMPracticeNet is an illustration of this concept as it currently gives priority to the (limited) collection of validated Belgian guidelines and offers a collection of EBM Finnish guidelines translated in French and Dutch, adapted to the Belgian context.

2.2.9.3 Larger budgets

Perception of the participants

In general, participants' vision on budget was vague with uncertainty on that topic. Most interviewees did not to know the size of the budget and/or how the budget was calculated and/or spent. Yet the interviewees were perhaps not the best persons within the organization to answer to accounting questions.

Budgets are most commonly provided annually or per project. Some organizations receive financing from FOD/SPF or RIZIV/INAMI but other ones rely on their own budget to develop guidelines.

Most participants described difficulties concerning "too limited" budgets. Some participants compared their situation with other European countries with higher budgets for CPG development. One participant stated that developing one CPG of high quality costs approximately € 200 000 euros but few Belgian organizations have this budget. Another interviewee declared that the government encourages organizations to develop CPG, but provides them with a budget that is only sufficient for two CPGs. Interviewees insisted on the need for more resources to develop and disseminate CPG in the future.

Yet one participant stated that organizations would need to learn how to partition the budgets in more creative ways.

Complementary information from stakeholders

The research team contacted the National Institute for Health and Disability Insurance (NIHDI) and the Federal Public Services (SPF/FOD) to get a more precise idea of the budget spent on guidelines in Belgium. The institutions provided the requested information but the figures did not allow drawing any conclusion: the financing of guidelines is indeed embedded in more global budgets that cover other activities of the scientific associations. Some illustrations are:

- the yearly budget received by the GP associations for their guidelines related activities (€ 50 000 and € 200 000 for SSMG and Domus respectively);
- budget from the NIHDI for the Digital Library for Health (€ 650 000 in 2012);
- NIHDI budgets (2012) for EBMPracticeNet (e-platform with validated guidelines - € 250 000) and for the licence of the Duodecim guidelines (Finnish guidelines that will be translated into French and Dutch for Belgian health professionals - € 300 000).

2.2.9.4 Collaboration with European organizations

The interviewees also questioned the idea of developing CPG in Belgium. They argued that other countries have more manpower and finances and that we could translate/adapt CPG from European countries to the Belgian context. The same idea came repeatedly: the synergy between people and institutions should be promoted, organized and valorised.

2.2.9.5 The standardization of CPG development processes and standards

Another suggestion was the development of a global framework on "how to develop CPG". This would increase standardisation of information, which would lead to an easier dissemination and better implementation. To achieve the same goal, collaboration between institutions involved with CPG development should be increased.

2.2.9.6 The involvement of all health sectors

In the future, a stronger involvement of the secondary and tertiary care is needed to improve CPG development, dissemination and implementation, according to the interviewees. Several participants also mentioned that the current landscape mainly focuses on physicians and thought that it should cover in the future other auxiliary disciplines. Patient organizations should be more actively involved in the whole CPG process, e.g. in the development of CPG or in the testing for feasibility. A suggestion was to expand the "working group of primary care developers" to other professionals from the second and third lines of care in order to have all GCP developers in one committee.

2.2.9.7 A centralized CPG-related information for the professionals

Centralisation of information on an electronic platform for all professionals would decrease the time for searching information as well as for disseminating the information between professional groups. Some interviewees mentioned EBMPracticeNET as an appropriate candidate to fulfil this task: this platform is planning to gather all primary care players in the CPG landscape by the end of 2015; and from 2016 onwards to extend its field to the secondary care. EBMPracticeNet considers itself as the national platform where CPG are disseminated adequately and are being linked to EBMeDS (Evidence Based Medicine Electronic Decision Support), which is connected to the patient files. EBMPracticeNET functions currently as a gate-keeper, only posting CPG on their website that passed a CEBAM validation.

2.2.9.8 Clear dissemination Strategies

Having a plan to disseminate information, standardising it, multiplying the strategies used were among the most important suggestions of interviewees. Analysing and transferring strategies from the pharmaceutical industry was also suggested to improve dissemination.

2.2.9.9 New professionals' attitude towards CPG

Interviewees emphasized the need for improving the professionals' attitude towards CPG. An EBM approach should be encouraged by all means, starting during the basic education and going on by e.g. continuous medical education, conferences and lectures. Many other factors have been mentioned by the interviewees concerning the professional like difficulty to change the practice, lack of time because of heavy workload, lack of motivation, risk to lose patients or patient's confidence while applying new CPG, lack of incentives to modify the practice. The professionals often question the feasibility to apply guidelines and nothing is offered to compensate for the extra time and energy needed.

> *De oplossing zit em vooral in de attitude, het gedrag van mensen en niet in de instrumenten die je hen geeft. Nu, ge hebt die instrumenten nodig om een betere attitude te kunnen hebben.*

2.2.9.10 A cautious move to electronic support systems

Concerning the organizational aspects, interviewees quoted the need to adapt the environment to apply CPG: the equipment necessary to apply guidelines is sometimes missing (e.g. software packages), the team should modify the organization of the work, someone should take the responsibility of this adaptation. Expectations by the interviewees on the future of Electronic Decision Support Systems are high. However, several participants emphasized that professionals also need to improve their skills to code the patient's information in the medical record. Some interviewees expressed their concerns on the readiness of doctors and other professionals for this tool.

2.2.9.11 A health care system in line with CPG philosophy

According to the interviewees, the whole health care system should be organised in line with a CPG philosophy. Reimbursement of patients should be for example in accordance with CPG; EBM should be promoted with positive incentives or reduction of incentives if not followed. Controversial influence of pharmaceutical industry was mentioned.

2.2.9.12 The evaluation of CPG impact on practice

Only few experiences relate to the evaluation of the impact on the practice. All interviewees regret that so much time, energy and financial resources were spent to develop and disseminate CPG without knowing whether these strategies have an impact on change of practice or not.

> *Voir si ça sert à quelque chose, on n'en sait rien si il y a une retombée, si elles ont été suivies, ne fût-ce que par DM (Dossier Médical Informatisé), le nombre de fois où on a consulté… avec le dossier médical informatisé, si on voit le nombre de clic sur le lien, ça pourra dire que cette recommandation là a été beaucoup consultée ; pour l'instant on ne sait pas, on finance et on ne sait pas ce qu'on fait*

Key point suggestions to improve CPG dissemination:

- **A coordinating, national group for a comprehensive, uniform CPG landscape;**
- **A common CPG database that centralises information and helps end users to find the right information (cf. example of EBMPracticeNet);**
- **Adapted budgets for an effective development and dissemination of guidelines;**
- **Collaboration with European organizations for a more efficient use of resources;**
- **New dissemination strategies adopted by professional organizations;**
- **Changing professionals' attitudes towards CPG;**
- **Evaluation of impact of CPG on practice helps to discover the efficiency of the CPG processes.**

2.2.10 SWOT analysis: dissemination of CPG

SWOT analysis (Strengths, Weaknesses, Opportunities, Threats) was performed to reflect the main results of the interviews, with a focus on dissemination of clinical practice guidelines (see appendix 2.5). The EPOC-taxonomy was used to categorize the strategies used by the participants of the interviews. For each item of the EPOC-taxonomy strengths, weaknesses, opportunities and threats are described in bullet style to present a clear overview.

A first draft of the SWOT was mailed to the interviewees, in order to collect feedback and refine the SWOT. These SWOT tables covered broad views from the interviewees, with widely different strategies and visions.

2.3 Belgian landscape: summary of the main findings

This study showed a wide range of perceptions on CPG development, dissemination and financing.

Different CPG definitions

Perceptions on the CPG definition differed among the participants: some participants saw a CPG as the product of a strict method of development, others focused more on the practical and feasible aspect of CPGs to define them.

Belgian CPG versus importation of guidelines

Participants had different views on the need to develop Belgian CPG. Many interviewees questioned the current landscape for development of Belgian CPGs, mentioning a lot of work being done twice (or more) and a lack of resources and manpower as obstacles. For the future, these participants suggested a focus on the adaptation of the vast body of European guidelines.

Validation is an equivocal concept

The concept of validation was perceived as an equivocal concept. Several participants stated that only a CEBAM validation could be considered as a valid quality label. Other organizations considered validation as expert opinion and/or consensus and/or test for feasibility.

A wide range of dissemination strategies

The use of dissemination strategies differed among the organizations. The systematic review indicated that a specific, multifaceted approach for CPG dissemination is advisable, depending on the topic and the target group: the opinions of the interviewees were in line with these findings.

Yet some organizations only use one strategy (mostly website) for each topic and target group. Other ones use multiple strategies, as e.g. website and periodical or training sessions. A few participants described a well-defined dissemination plan, where the choice of (multifaceted) strategies depends on the topic and the target group.

Most of the interviewees had thought of better or more innovative ways to disseminate. However, only a few of them were able to implement/use these new strategies. The main difficulty mentioned was lack of time and financial resources.

Unclear views on budgets

In general, the participants' knowledge of budgets for CPG activities was limited. They agreed on the need for centralization of decision-making within the Belgian CPG landscape.

Need for standardization

A clear need for standardization in the methodology was found in the interviews. Development and validation processes of CPG now differ and should be standardized to assure a similar approach by all stakeholders. Participants urged to a national organization that provides a global dissemination plan.

Need for centralization

Information on guidelines should be centralized in one database, with all available guidelines and those in progress.

The role of the patient

Displaying the information for the patient as well should foster the use of guidelines by patients and health care providers. A guideline can help shared decision-making. Therefore it is important that patients would easily find reliable sources of information to have accurate information.

These results provide a meaningful insight into the Belgian landscape of CPG dissemination: they were used in combination with the literature findings to build the statements proposed to the stakeholders and discussed in the following section.

3 STRATEGIES TO IMPROVE THE DISSEMINATION AND IMPLEMENTATION OF GUIDELINES IN BELGIUM

Chapter 2 gave an overview of the Belgian landscape. It reported the main stakeholders, the professional interventions used to disseminate/ implement guidelines and a SWOT analysis of the Belgian situation as perceived by the stakeholders. These results were compared to the data from the systematic reviews (chapter 1) to identify the gaps between the Belgian situation and the solutions proposed in the literature.

As a final step, the research team presented six statements (see appendix 3.1) to representatives of the main organisations at stake. The objective was to collect practical and political considerations about these proposals to improve dissemination and implementation of CPGs in Belgium and to get innovative ideas about how these proposals could be concretely implemented.

3.1 Methodology

3.1.1 Development of the statements

The development of the statements benefited from the collaboration of A. Heselmans, a Belgian researcher whose PhD analysed the barriers and facilitators of electronic implementation of GCP in primary care.

The statements covered the following topics:

- Towards a national platform of CPG to inform users;
- Multidisciplinary approach;
- Adaptation of international guidelines versus national production;
- Value of a quality label;
- Multifaceted interventions;
- Integration of guidelines in professional education.

3.1.2 Participants

Participants of the group sessions represented the main organisations at stake in the CPG landscape in terms of:

- End users in the health system, i.e. general practitioners, physicians from other specialties, nurses, physiotherapists and other health professions;
- Their role: funding bodies, disseminators, users, education.

The French speaking group had 9 participants with the following affiliations (some cumulated several functions): physicians (pneumology, French speaking society of general practice (SSMG)), sickness funds, college of specialists (radiology), CEBAM, nurses (CIPIQ-S, National nurse Federation (FNIB)), association of dieticians, association of physiotherapists (AXXON), Federal Public Service (Public Health).

The Dutch speaking group had 8 participants with the following affiliations (also here some cumulated several functions): physicians (geriatrics, radiology, Dutch speaking society of general practice (Domus Medica), nurses (Wit-Gele Kruis, Platform Wetenschap en Praktijk), CEBAM, EBMPracticeNET, Public federal Service.

The delegate from the National Health and Disability Insurance could not attend the meeting: his written comments were discussed in both groups.

The Appendix 2.6 provides further details on the stakeholders' affiliations.

3.1.3 Stakeholder meetings

Two simultaneous stakeholder meetings in small groups (8 to 9 people) were followed by a plenary session. The stakeholders received the SWOT analysis and the statements one week before the meeting. The separate start stimulated the active participation of the stakeholders due to the session conducted in their native language (French or Dutch) and the small size of the groups. All ideas were considered, in particular the most innovative ones, even if not all participants did agree with them.

Each group had one or two moderators and two observers who took notes. The common part facilitated a general discussion between the stakeholders who shared the results from the other group.

All discussions were audio taped. The researchers drafted a synthesis of the discussion points. This draft was sent to the participants to get a feedback on missing information; their feedback was integrated.

3.1.4 Ethical considerations

All interviewees signed an informed consent and declaration of confidentiality. An informed consent was given to the respondents so informing them about the purpose and course of the study. Permission was asked before audio-taping the interviews.

3.2 Results

3.2.1 Discussion on a national platform of clinical practice guidelines

Statement 1: One national platform ensures an efficient dissemination of guidelines that are adapted to the Belgian clinical landscape

One guideline platform with user-friendly format

The French and Dutch speaking participants agreed on a bi- or trilingual electronic platform to present guidelines. It should be easy to access with effective search engine. The guidelines should be presented with their level of evidence and their origin. The participants mentioned characteristics detailed in the literature review (see chapter 1): material should be presented under various formats, favouring interactivity with the users. The information should be brief and to the point ("cook book format").

Participants stated that public funding is needed to assure independency of this platform: the option of private funding (e.g. by pharmaceutical industry) was excluded.

Which guidelines online?

The Dutch-speaking group argued that the platform should allow users to compare CPGs. According to EBMPracticeNET representatives, CEBAM or another international validation procedure is a condition to disseminate a guideline on the platform. This position raised questions of other participants: they questioned the refusal of non-validated Belgian guidelines and the online publication of guidelines whose validation procedure abroad might be sometimes questionable as well.

Participants from the first line of care emphasized that some non-validated guidelines might still be useful tools for the clinician. In this case their publication on a website should be coupled with information on their validation status (i.e. the AGREE score as mentioned above). This differs from a Clearinghouse concept where no information on the validation/accreditation process can be found.

Conditions for success

Help from specialists in teaching/learning approaches as well as in communication would increase the impact of the guidelines. However, adherence to guidelines is heavily related to EBM culture and training among the professionals, according to the participants.

One participant illustrated the need for multifaceted approaches to implement guidelines. The ones developed by the college of radiology were first disseminated with little impact. A national initiative from the NIHDI (website and written documents) further attempted to improve the use by physicians, including general practitioners. After a few years, coupling this dissemination to obligatory procedures (e.g. use of a formulary) resulted in a better use by the clinicians.

Besides the availability of guidelines on one national platform, their link with the software of the health professional would greatly facilitate their use in daily practice. Some participants argued that the correct use of patient records is limited at present. This hampers the use of EBM in integrated software packages.

Translation of information for patients

Finally, the groups mentioned that information should be accessible and understandable for patients: a suggestion was a specific platform for the patients' information.

3.2.2 Discussion on the value of a quality label

Statement 2: All guidelines should benefit from a quality label

What is a quality label?

The participants argued that validation should look at content and methodology: the objective is to check that no better evidence does exist.

In general, participants agreed on desirability of a quality label that makes possible for the end user to evaluate the quality of the guideline. High validation standards mean validation by an independent organization that operates in collaboration with independent validators with expertise.

Both groups mentioned the importance of well-referenced information: origin of information and level of evidence. One participant suggested that AGREE scores of the validated guidelines should be accessible on the website for the end users.

One size does not fit for all: alternatives are welcome

The requirement of a quality label is not synonym of CEBAM validation for some participants. In particular for more technical specialties with fast scientific developments, other validation procedures might be more suitable e.g. an adaptation of validation procedures performed abroad.

The possibility to have different types of validation procedures was further discussed. An illustration is a new CEBAM specific procedure for guidelines where little or no evidence is available (e.g. domestic violence). Another suggestion was to develop a new *"light validation"* procedure that requires less manpower and time, for "light" clinical issues.

One participant advocated a multidisciplinary GCP development/validation as follows: "*geen betweterig EBM-puritanisme maar gezamenlijk ervaring opdoen via heldere en correcte EBM-methodologie"* (no EBM-puritanism but building a common experience through clear and correct methodology).

Resources for validation

Resources for validation were discussed by a few participants: they mentioned that the CEBAM-budgets are currently too limited to validate all Belgian guidelines. Together with concerns for manpower and timing, this was a reason to propose the "light validation" mentioned above.

Another participant proposed to create a validation fund that could be used for validation of Belgian guidelines.

Finally, a participant proposed that validation would be a condition for obtaining subsidies by funding bodies, in order to assure quality of a CPG.

3.2.3 Discussion on the need for a multidisciplinary approach

Statement 3: Multidisciplinary work is a priority for future health care: all health professionals' organizations need to be involved in CPG activities

Multidisciplinary work: a basis for sharing common EBM practice

Participants stated that multidisciplinary work requires communication. The EBM approach can foster this attitude. Developing attitudes of respect, listening to the others and absence of hierarchy in a health care team should be taught to students early in their curriculum. The current monodisciplinary culture does not favour this tendency. They argued that monodisciplinary guidelines need to fit in clinical pathways that require a multidisciplinary approach.

Training, time and culture

Developing and disseminating multidisciplinary CPGs requires the involvement of experts from all disciplines. The problem of training for collaboration was mentioned several times in both groups (see also 3.2.6). EBM is quite a new concept for some professional groups and these may lack expertise at present. Furthermore the development of (multidisciplinary) guidelines is time-consuming. Finally, the monodisciplinary culture of professionals often prevents them from working in multidisciplinary groups.

Need for clear messages

- According to the participants, the content of CPG needs to be clear and non-contradictory. A unique source of information for the health disciplines (as for example one platform or a unique guideline for a specific topic) can therefore be more adequate than several sources.

Expansion of guidelines offer

Each health professional group needs to have a comprehensive set of high-quality guidelines. Now EBMPracticeNET targets the first line of care but some stakeholders supported the idea of expanding the set of guidelines. This expansion, with integration of foreign guidelines, would call for a consensus between the authorities, the guidelines stakeholders (validators and disseminators) and the professional groups (end users).

3.2.4 Discussion on the adaptation of international guidelines versus national production

Statement 4: Adapting existing guidelines from other countries is preferred to « de novo » guidelines development in Belgium

More efficient?

There was general agreement that time and money would be saved, when guidelines developed abroad or by an international group of national experts are used. Clinical questions have sometimes to be reformulated for the Belgian context. This needs additional work and therefore, the benefit of this approach can be somewhat limited.

Some participants mentioned that the skills required for a valid adaptation/translation of guidelines are similar to the skills needed for a “de novo” development. So, the process of adaptation/translation can be perceived as an intensive, time-consuming process. Participants also mentioned the risk of over-adapting, creating a scenario of “adapt from adapt from adapt”, which could result in dilution of the primary evidence. This in turn might hamper the quality of the final product.

In conclusion the “de novo” development is time-consuming but this may hold for updating and translating a CPG as well.

Adaptation and testing needed

Adapting international guidelines to the national context can be done in different ways: using the formal ADAPTE methodology, based on expert consensus and/or tested by field professionals to detect difficulties related to their applicability. However, some participants found that the last options (testing CPG by field and expert consensus alone) were not sufficient to validate guidelines. Unfortunately the ADAPTE methodology is unknown to some professions that should become aware of this strategy.

All stakeholders agreed upon the fact that feedback from professional end users is needed to improve the final Belgian adaptation.

All guidelines should be properly translated into French and Dutch as many end users do not master the English language.

An alternative: collaboration to an international group

Some professionals mentioned the lack of guidelines for their specialty and the lack of manpower within their professional organisations to develop guidelines. There are some initiatives to create European databases of guidelines. Examples are the GIN network and the collaboration of Belgian dieticians within the European Federation of the Associations of Dieticians.

3.2.5 Discussion on the effectiveness of multifaceted interventions

Statement 5: Multifaceted interventions among professionals with a strong focus on electronic dissemination should be the future

This statement was not discussed. However, some participants mentioned some conditions for successful implementation i.e. compatibility between professionals’ software, user-friendly search engine, language, coupling between guideline and feedback on practice.

3.2.6 Discussion on the need for integration of guidelines in professional education

Statement 6: Training of students and professionals in healthcare is a corner stone to increase adherence to guidelines

There was a consensus on this statement and the participants insisted on the major role of medical faculties. The importance of training was mentioned various times in the afternoon, including the training of students to search for EBM information: without knowing the EBM concepts and being trained to use them, professionals cannot benefit from the points previously discussed.

As a summary, the main points suggested by stakeholders are:

Stakeholders' involvement

- **Stakeholders from different disciplines need to be involved in the development of guidelines to share a common EBM approach: this multidisciplinary approach as well as EBM culture are corner stones of health professionals' curricula.**

Validation

- **A quality label is important for the health professional who will use the guideline;**
- **The need for alternative validation procedures would ensure the viability of the Belgian validation system and answer to the necessity to validate diverse guidelines' contents.**

Guidelines from abroad

- **The stakeholders acknowledged the interest of adapting international high-quality guidelines to the Belgian context;**
- **The experience shows however that this adaptation also needs time and skills that should not be underestimated in comparison with the "de novo" development of guidelines.**

Platform

- **A unique platform that displays the guidelines in two (or three) languages together with the validation status and underlying level of evidence could foster the dissemination and use of guidelines.**

In a nutshell, some innovative ideas and suggestions for the future:

- **Working together in international consortia to decrease costs and efforts for Belgium;**
- **A "light" procedure for validation;**
- **A platform that displays all guidelines used by health professionals (including guidelines validated abroad) with validation status;**
- **A platform for patients.**

3.3 Summary of the main findings: analysis of the current situation and proposals for the future

This study showed a wide range of perceptions regarding the Belgian CPG landscape, CPG development and dissemination, the difficulties and opportunities of dissemination strategies of CPG in this country. Also, many suggestions for improvement were identified.

3.3.1 A patchy landscape

The Belgian CPG landscape of stakeholders is broad and scattered. Drawing an accurate map of the stakeholders was a challenging job and many stakeholders had difficulties to position themselves within this landscape. Furthermore, many stakeholders represent different organizations with slightly different focus and many of them have various overlapping functions. The communication and financing flows are unclear in the eyes of the stakeholders interviewed in this research.

3.3.2 "Guidelines": what's in a name?

The official definition from the Institute of Medicine defines a CPG as a systematic method to develop statements to assist practitioners' decisions. Yet some organizations mention the importance of a strict EBM methodological approach but other organizations use less formal methods to develop tools that will assist practitioners in their decisions (i.e. more informal literature review combined with expert based opinions).

The interviews highlighted the pros and cons of both approaches. The first one (evidence-based) minimises risks of biases, personal opinions, conflicts of interest and offers a scientific material of high quality: this approach still requires highly skilled collaborators and consumes large resources (time and money). The second more informal approach is faster, can encompass more recent evidence and is more in harmony with the local health context. The major drawbacks are the risks of biases and opinion based statements that might diverge from the scientific evidence.

3.3.3 Value of international guidelines

The stakeholders report an increasing interest for guidelines developed in other countries. The attitude towards these guidelines differs between stakeholders. In particular the adaptation to the Belgian context raises questions. Some stakeholders advocate for the use of the strict ADAPTE procedure to produce high quality guidelines. However this procedure is highly demanding (in terms of resources and skills): its application would give birth to a restricted set of fully adapted guidelines (with loss of other useful clinical guidelines).

3.3.4 One dissemination platform

A single platform to disseminate guidelines would have the following characteristics.

- It is advisable that the platform would present the best guideline for a specific clinical topic A large supply of guidelines ("Clearinghouse") that disseminates all available guidelines and leaves the sorting to the end users was not a valid option;
- Information on the validation status (i.e. by CEBAM or other official institutions like NICE) is desirable;
- Comprehensive but easily accessible key information, in particular for health professionals on the field;
- Focus on mulitidisciplinary work: the platform should display information for all relevant professional groups, to base common work on the evidence;
- Reliable sources of information for the patients: they should find easily reliable sources of information to identify the accurate information.

3.3.5 Dissemination strategies: more than papers

The dissemination strategies mentioned during the interviews mostly referred to the dissemination of paper/electronic materials and educational meetings. Yet the literature highlighted the interest to combine methods. More active approaches that could be promoted in Belgium are in particular reminders, audit and feedback and opinion leaders as they have a limited but significant impact on the clinical practice of the health professionals (see chapter 1).

The stakeholders mentioned that the main barriers to the dissemination of CPG were the lack of dissemination plans in organizations, the high costs for dissemination and the low availability of information at the point-of-care.

Easy accessible CPGs, presented in a short and understandable way, integrated in the patient record, disseminated by a combination of strategies are a challenge for the future.

3.3.6 Public source of financing

The stakeholders agreed on the need for public financing to limit the undesirable influence of commercial stakeholders. Moreover a lack of resources pushes organizations to use less stringent development methods.

3.3.7 Strengths and limitations of the field study

The field study involved a broad variety of representatives of the Belgian CPG landscape. They were first selected from an exhaustive inventory and the data collection used different techniques, including the drawing of the landscape, a questionnaire, interviews and group discussions. The question is to know to what extent this study captured the entire span of the opinions of the stakeholders.

Through the use of audio-taping, data-analysis by independent researchers, continuous comparisons, and regularly feedback loops from respondents, the researchers strove for objectivity in the analysis. This field study allowed stakeholders to report their personal opinion and the position of the organization that they represent: the distinction between both views may not be always clear. On one hand their position is synonym of conflicts of interest but on the other hand they are best placed

to reflect on the context where they operate. Therefore, the researchers carefully reported the variety of opinions and tried to be as objective as possible (e.g. by using records, transcripts and double analysis).

The focus on stakeholders versus end users could be considered as a limitation of this study. This analysis has only been done ten years ago in a population of French speaking general practitioners[42]. They valued the guidelines published by the French-speaking society of general practitioners (SSMG) in particular guidelines on diagnosis and therapy. About half of the respondents stated that they used them in practice. The interest for guidelines decreased with an increasing number of years of practice, as described in the literature (see effect modifiers in 1.3.7). Suggestions for implementation favoured the discussion in peer groups.

Future research should be carried out by professional societies to tailor the dissemination and implementation strategies to the audience of specific health professionals groups. Furthermore research should pay attention to the patients' position as well, as main stakeholders in the use of guidelines.

4 GENERAL DISCUSSION

The summary of this scientific report is published in the synthesis. This document pulls together the results of the three main sections and proposes actions to improve the future of guideline dissemination in Belgium.

KCE recommendations to the Belgian stakeholders are published at the end of the synthesis.

APPENDICES

APPENDIX 1. SYSTEMATIC REVIEW

Appendix 1.1. AMSTAR criteria definitions

AMSTAR Criteria ID	Criteria Definitions
1	'a priori' design provided
2	duplicate study selection/data extraction
3	comprehensive literature search
4	status of publication as inclusion criteria
5	list of studies (included/excluded) provided
6	characteristics of included studies documented
7	scientific quality assessed and documented
8	appropriate formulation of conclusions
9	appropriate methods of combining studies
10	assessment of publication bias
11	conflict of interest statement

Appendix 1.2. Critical appraisal of the systematic reviews: AMSTAR scores

Study ID	AMSTAR criteria											
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**Total (Yes)**
Akbari, 2011[12]	y	y	y	y	y	y	y	y	NA	NA	can't answer	8
Baker, 2010[24]	y	y	y	y	y	y	y	y	y	y	can't answer	10
Baskerville, 2012[21]	y	y	y	y	y	y	y	y	y	y	can't answer	10
Borgermans, 2010 (KCE-report)[23]	y	y	y	y	y	y	y	y	y	y	can't answer	10
Brusamento, 2012[16]	y	y	y	y	y	y	y	y	NA	NA	can't answer	8
Chaillet, 2006[3]	y	y	y	y	n	y	y	y	?	NA	can't answer	7
Damiani, 2010[5]	y	y	y	y	n	y	y	y	n	NA	can't answer	7
Dulko, 2007[24]	y	n	y	y	n	y	n	n	NA	NA	n	4
Flodgren, 2011[12]	y	y	y	y	y	y	y	y	y	can't answer	can't answer	9
Forsetlund, 2009[9]	y	y	y	y	y	y	y	y	y	can't answer	can't answer	9
Francke, 2008[19]	y	y	y	y	y	y	y	y	NA	NA	can't answer	8
Giguère, 2012[4]	y	y	y	y	y	y	y	y	can't answer	NA	can't answer	8
Grimshaw, 2004[1]	y	y	y	y	n	y	y	y	y	NA	can't answer	8
Hakkennes, 2008[17]	y	y	y	y	n	y	y	y	NA	NA	can't answer	7

Study ID	AMSTAR criteria											
Ivers, 2012[5]	y	y	y	y	y	y	y	y	y	NA	can't answer	9
McGowan, 2009[6]	y	y	y	y	y	y	y	y	NA	NA	can't answer	8
Medves, 2010[11]	y	y	y	y	y	y	y	y	NA	NA	can't answer	8
Menon, 2009[14]	y	y	y	y	n	y	y	y	y	NA	can't answer	8
O'Brien, 2007[11]	y	y	n	y	y	y	y	y	Can't answer	y	can't answer	8
Prior, 2008[13]	y	y	y	y	y	y	y	y	NA	NA	can't answer	8
Reeves, 2008[10]	y	y	y	y	y	y	y	y	NA	NA	can't answer	8
Shojania, 2009[7]	y	y	y	y	y	y	y	y	y	NA	can't answer	9
Vale, 2007[26]	y	y	y	y	n	n	y	y	NA	NA	can't answer	6
Van der Wees, 2008[19]	y	can't answer	y	y	y	y	y	n	can't answer	NA	N	6
Weinmann, 2007[18]	y	y	y	y	n	y	y	y	NA	NA	can't answer	7

Appendix 1.3. Data evidence tables

Table 9 – General characteristics of included studies (alphabetically ordered)

Study ID	References, aims and short description	Methodological characteristics	Intervention (strategies)	Results	Critical appraisal
Akbari, 2011[12] (update from 2008)	**Title:** Interventions to improve outpatient referrals from primary care to secondary care **Aim:** to estimate the effectiveness and efficiency of interventions to change outpatient referral rates or improve outpatients referral appropriateness **Studies included:** n=17studies **Date limits:** until October 2007	**Type of study:** SR **Design of studies included:** RCTs, CCTs, CBAs and ITSs **Searches in:** EPOC register, Medline, Embase, CINAHL	Referral is the management option in most diseases, therefore any intervention aiming to inlfuence clinical behaviour could have indirect effects on the quality and quantity of referrals. Comparisons in this SR: • Passive dissemination of guidelines • Dissemination of guidelines with structured management sheets • Secondary care provider-led educational activities Only the effectiveness of prosseional educational interventions are presented in this report.	Effectiveness of passive dissemination of guidelines (n=2 trials) • No change in quantity or quality of referrals Effectiveness of passive dissemination of guidelines with structured management sheets (n=5 trials) • Overall: Improved pre-referall management of patients • 2 multifaceted interventions: reduction in quantity • 3 single interventions: no effect on quantity of referrals but improvement in quality (increase in appropriate referrals) Secondary care provider-led educational activities (n=3 trials): • In 2 trials: effect on quantity and improvement of quality of referalls Authors' conclusion: Referral guidelines are more likely to be effective if local secondary care providers are involved in dissemination activities, structured referral sheets are used,	AMSTAR evaluation: Y, Y, Y, Y, Y, Y, Y, Y, NA, NA, can't answer Notes: no pooling possible, small number of studies

Study ID	References, aims and short description	Methodological characteristics	Intervention (strategies)	Results	Critical appraisal
				secondary care management is responsive to changes in primary care behaviour as a results of the guidelines and if they reflect local circumstances and address local barriers.	
Baker, 2010[24] (update from 2009)	**Title:** Tailored interventions to overcome identified barriers to change: effects on professional practice and health care outcomes **Aim:** to assess the effectiveness of interventions tailored to address identified barriers to change on professional practice or patient outcomes **Studies included:** n=26studies **Date limits:** until October 2009	**Type of study:** SR + MA **Design of studies included:** RCTs **Searches in:** EPOC register, Medline, Embase, CINAHL (until 2007), PsychInfo, AMED (until 2007), BNI, HMIC	Tailored strategies are defined as strategies to improve professional practice that are planned taking into account of prospectively identified barriers to change. Barriers may be identified by various methods (observation, focus group discussions, interviews, surveys, analysis of organisation or system). Comparisons in this SR: • Interventions tailored to address identified barriers to change versus no intervention (comparison A) • Interventions tailored to address identified barriers to change versus intervention not tailored to the barriers (comparison B) • An intervention targeted at both individual and social or organisational	Results excluded for meta-regression (n=14trials): • 8/14 trials: benefit from tailored interventions • 2/14 trials: benefit for some outcomes • 4/14 trials: no improvement over control arms for study's primary outcomes Meta-regression (n=12 trials): • Overall effectiveness is modest • Pooled odds ratio of 1.54 (95% CI 1.16 to 2.01) from Bayesian analysis, pooled odds ratio of 1.52 (95% CI 1.27 to 1.82) from classical analysis (both p<0.001)→ both approaches show benefit with tailored interventions • Comparison A: OR 1.58 (95% CI 0.96 to 2.59) • Comparison B: OR 1.56 (95% CI 1.27 to 1.90) • Sign heterogeneitty between	AMSTAR evaluation: Y, Y, Y, Y, Y, Y, Y, Y, Y, Y, can't answer Notes: 9 studies with low risk of bias, 15 trials with moderate risk of bias and 2 with high risk of bias, wide variations in effectiveness, barriers, methods, clinical settings, targeted behaviour.

Study ID	References, aims and short description	Methodological characteristics	Intervention (strategies)	Results	Critical appraisal
			barriers versus interventions that are targeted at only individual barriers	OR at follow-up (p<0.001) • none of study attributes (risk of bias, level of tailoring etc) sign assocated with reported effectiveness (p-values not mentioned) • subgroup analyses for level of tailoring: pooled OR of 1.63 (95% CI 0.64 to 4.18) in high level of tailoring versus pooled OR of 1.44 (95% CI 1.26 to 1.66) in moderate tailoring. High level of tailoring showed greated but non sign effect size than moderate. Authors' conclusion: Interventions tailored to prospectively identified barriers are more likely to improve professional practice than no intervention or dissemination of guidelines. However, the methods to identy barriers need further development and research is required to determine the effectiveness of tailored interventions.	
Baskerville, 2012[21]	**Title:** Systematic Review and Meta-analysis of Practice Facilitation within Primary Care Settings **Aim:** to examine the overall effect size of	**Type of study:** SR + MA **Design of studies included:** RCTs and CCTs **Searches in:** MEDLINE, Thomsons	Practice facilitation or outreach is a multifaceted approach that involves skilled individuals who enable others, through a range of intervention components and approaches, to address the	Effectiveness of interventions: • Overall effect size on behavior change: sign in favor of intervention (p<.001), overall moderate effect size point estimate of 0.56 (95% CI:0.43-0.68), OR=2.76	AMSTAR evaluation: Y, Y, Y, Y, Y, Y, Y, Y, Y, Y, can't answer Notes: no stat

Study ID	References, aims and short description	Methodological characteristics	Intervention (strategies)	Results	Critical appraisal
	practice facilitation and possible moderating factors on change in evidence-based practice behaviour **Studies included:** n=23, n= 1398 participating practices **Date limits:** 1980-2010	Scientific Web of Science database, reference lists	challenges in implementing evidence-based guidelines within the primary care setting. Comparisons in this SR: • Audit and feedback: n=22 studies • Consensus building and goal setting: n=20 studies • Meetings (includes quality circles and learing collaboratives): n=11 studies • Information only: n=1 study	(95%CI:2.18-3.43) • Relationship between duration of intervention and effect size: not sign (p=.94) • An intervention tailored to the context and needs of practice: sign larger overall effect size of 0.62 (95% CI: 0.48-0.75) (p=.05) • Scatter plot on number* of practices vs effect size: sign negative association (β=-0.02) (p=.004) • Scatter plot on intensity of intervention vs effect size: sign positive trend (β=0.008)(p=.03) Authors' conclusion: Primary care practice are 2.76 times more likely to adopt avidence-based guidelines through practice facilitation. The findings support the need to tailor to context, to incorporate audit and feedback with goal setting and to consider intensity of interventions.	heterogeneity but differing outcome measures, settings, diversity of guidelines + risk for publication bias (only positive results published)
Borgermans, 2010[23](KCE report)	**Title:** Impact of academic detailing on primary care physicians **Aim:** to analyze the impact of academic detailing on the practice of GPs in Belgium and	**Type of study:** SR **Design of studies included:** SRs, RCTs, CCTs, before/after studies, retrospective studies and time series **Searches in:**	AD is university or non-commercial-based educational outearch. The process involves face-to-face education of prescribers by trained health care professionals. The goal	Effects of AD on clinical outcome measures: • N=42 (55%) positive effect, n=25 (32%) mixed results (pos and no effect), n=10 (13%) no effect	AMSTAR evaluation: Y, Y, Y, Y, Y, Y, Y, Y, Y, Y, can't answer Notes: no

Study ID	References, aims and short description	Methodological characteristics	Intervention (strategies)	Results	Critical appraisal
	to assess the effectiveness of individual, face-to-face academic detailing among GPs and other physicians in primary care **Studies included:** n=87 **Date limits:** until September 2009	MEDLINE, Cochrane database of systematic reviews, Embase, Eric, Psychinfo, Econlit	of AD isto change professional behaviour consistent with medical evidence, support patient safety en to foster cost-effective medication choices. A key-component is that academic detailers, mangemant, staff and program developers do not have any financial links to the pharmaceutical industry. • Effects of AD on clincial outcome measures: n=77studies • Modification of prescription behaviour: n=5 studies • Effectiveness of AD compared to other educational strategies: n=77studies	Modification of prescription behaviour: • Heterogenous results ranging from no cost-savong to cost-effective Effectiveness of AD compared to other educational strategies • Generally effective for improving appropriate care and prescribing • multifaceted interventions: 48% positive effect, 14% no effect, 38% mixed results, 0% negative effect • single intervention: 76% positive effect, 7% no effect, 17% mixed results, 0% negative effect Authors' conclusion: Most studies in the literature show an effect of AD on the targeted care processes but the size of the effect if usually small. Cost-effectiveness is not demonstrated.	description per combination of strategies in multifaceted interventions, important heterogeneity in funding, study populations, interventions and outcomes
Brusamento, 2012[16]	**Title:** Assessing the effectiveness of strategies to implement clinical guidelines for the management of chronic diseases at primary care level in EU Member States: a systematic review	**Type of study:** SR **Design of studies included:** RCTs, cluster-RCTs, CCTs, controlled-before-and-after, ITS (with at least 3 pre-and post-intervention time points)	Comparison of single or multifaceted interventions versus control group (number of interventions varying from 2 to 5): • (prescriber) Feedback: n= 9 studies • (guideline)	Comparisons of single or multifaceted interventions (only narrative description per study): • Single intervention strategy (7 studies): no to small improvement in performance indicators • Overall assemment of	AMSTAR evaluation: Y, Y, Y, Y, Y, Y, Y, Y, NA, NA, can't answer Notes: different levels of risks

Study ID	References, aims and short description	Methodological characteristics	Intervention (strategies)	Results	Critical appraisal
	Aim: to evaluate the effectiveness of strategies to implement clinical guidelines **Studies included:** n=21 studies **Date limits:** 2000-2011	**Searches in:** Embase, Medline, CENTRAL, Eppi-Centre and Clinicaltrials.gov	Dissemination (by mail): n= 5 studies • Computer decision support system: n= 2 studies • Reminder system: n= 2 studies • (formal) Training session: n= 4 studies • Educational material:n= 10studies • Interactive workshops: n=8 studies • Outreach visits: n=5 studies • Structural interventions: n=2 studies • Small seminars: n=1 study	multifaceted intervention (14 studies): 6 studies no effectiveness, 2 fully achieved expeted outcomes, 2 most of outcomes, 4 partially effective • Multifaceted interventions with feedback to GPs (9 studies): 4 studies no improvement, 3 studies improvement in less than half of the indicators and 2 studies improvement in most of the outcomes • Multifaceted interventions with educational materials for GPs (8 studies): only in 1 study significant improvement (in hypertension control) • Multifaceted interventions with interactive workshops (8 studies): in 2 studies effective results in intervention groups (on reduction of mortality and proportion of patients managed) Authors' conclusion: There are only a few rigorous studies which assess the effectiveness of a strategy to implement guidelines. The results are not consistent in showing which strategy is the most appropriate. In 4 studies fully effective intervention, in 8 studies partially effective and in 9 studies no evidence of effectiveness	of bias, no pooling of data

Study ID	References, aims and short description	Methodological characteristics	Intervention (strategies)	Results	Critical appraisal
				found.	
Chaillet, 2006[3]	**Title:** Evidence-based strategies for implementing guidelines in obstetrics: A systematic review **Aim:** To estimate effective strategies for implementing clinical practice guidelines in obstetric care and to identify specific barriers to behaviour change and facilitators in obstetrics. **Studies included:** 32 (one of the included studies compared two different strategies compared with a control group. This study was considered as two different studies in the analysis). **Date limits:** from January 1990 to June 2005.	**Type of study:** SR **Design of studies included:** cluster RCTs, RCTs, controlled before-after study, interrupted time series studies. **Searches in:** The Cochrane Library, EMBASE, and MEDLINE	Audit and feedback: an external or internal systematic and critical analysis of the quality of the medical care with feedback to local providers Multifaceted interventions: tailored intervention involves two or more interventions targeting different specific barriers to change Targeted behaviors: clinical prevention services antenatal care and breast- feeding, diagnosis (fetal distress monitoring), management of labor or obstetric complications (preeclampsia), and procedures, particularly cesarean deliveries. Comparison in this SR: • Audit and feedback: n=11 studies • Multifaceted interventions: n=9 studies	Audit and feedback: • Positive effect in 9/11, mixed results in 1/11 Multifaceted interventions: • Positive effect in 9/9 • Prospective identification of barriers to change carried out in all studies Overall: • Proportion of effective strategies significantly higher among the interventions that include a prospective identification of barriers to change compared with standardized interventions (93.8% versus 47.1%, n=33, P=.004). Authors' conclusion: Audit and feedback and multifaceteted interventions are genreally effective. MOerover, mutlifaceted interventions showed higher potential to change behavior than single strategies.	AMSTAR evaluation: Y, Y, Y, Y, N, Y, Y, Y, ?, NA, can't answer Notes: These findings differ from data on the efficacy of clinical practice guidelines implementation strategies in other medical specialties; results from other strategies not mentioned due to small number of studies per strategy
Damiani, 2010[5]	**Title:** The effectiveness of computerized clinical guidelines in the process of care: a	**Type of study:** SR **Design of studies included:** Observational and	An effective model of computerized clinical guidelines consists of computer accessibility, patient-specific reminders in	Effectiveness of CCG: • Positive effect proportion 0.64 (p=0.053) Multivariable analysis:	AMSTAR evaluation: Y, Y, Y, Y, N, Y, Y, Y, N, NA,

Study ID	References, aims and short description	Methodological characteristics	Intervention (strategies)	Results	Critical appraisal
	systematic review **Aim:** to assess the impact of computerized clinical guidelines (CCG) on the process of care compared with non-computerized clinical guidelines **Studies included:** n=45 **Date limits:** from January 1992 to March 2006.	experimental studies **Searches in:** Pubmed/Medline, Embase and Cochrane Controlled Trials Register	the clinician's workflow and its integration with medical records Comparisons in this SR: • Effectiveness of CCG • Multivariable analysis CCGs features in 5 categories: general system features, clinician-system interaction feature, communication content features, auxilliary features, guidelines features	• Statistically significant predictors of positive impact: automatic provision of recommendation in electronic version as part of clinician workflow (OR=17.5;95%CI 1.6-193.7) and publication year (OR = 6.7; 95%CI: 1.3-34.3) • Marginally significant: justification of recommendation via provision of reasoning (OR 14.8, 95% CO 0.9-224.2) Authors' conclusion: After implementation of CCG significant improvements in process of care are shown. The positive effect might be related to time saving for clinicians, facilitation of the information retrieval and integration among different users.	can't answer Notes: low quality statistical analysis, no comparisons between interventions, no differentiation between single and multifaceted interventions, only significant results presented
Flodgren, 2011[12]	**Title:** Local opinion leaders: effects on professional practice and health care outcomes **Aim:** To assess the effectiveness of the use of local opinion leaders in improving professional practice and patient outcomes.	**Type of study:** SR **Design of studies included:** RCTs **Searches in:** Cochrane EPOC Group Trials Register, the Cochrane Central Register of Controlled Trials, MEDLINE, EMBASE, HMIC, Science Citation Index, Social Science	Opinion leadership is the degree to which an individual is able to influence other individuals' attitudes or overt behaviour informally in a desired way with relative frequency. Opinion leaders are people who are seen as likeable, trustworthy and influential. Comparisons in this SR:	Results (median adjusted RD) (dichotomous outcomes) • Overall: +0.12, range -.15 to +0.72 ➔ 12% absolute improvement in compliance • Opinion leaders compared to no intervention: +0.09, range -0.15 to +0.38 ➔ 9% absolurte	AMSTAR evaluation: Y, Y, Y, Y, Y, Y, Y, Y, Y, can't answer, can't answer Notes: heterogeneous studies using a variety of

Study ID	References, aims and short description	Methodological characteristics	Intervention (strategies)	Results	Critical appraisal
	Studies included: n=18 studies (n=15 for calculation) **Date limits:** up to February 2005 (SIGLE), April 2009 (EPOC Specialised Register) or May 2009 (MEDLINE and EMBASE), 2009 (The Cochrane Central Register of Controlled Trials)	Citation Index, ISI Conference Proceedings and World Cat Dissertations, reference lists	• Opinion leaders compared to no intervention • Opinion leaders alone compared to a single intervention • Opinion leaders with one or more additional intervention compared to on or more additional interventions only • Opinion leaders as part of multifaceted intervetions compared to no intervention	imrpovement in performance • Opinion leaders alone compared to a single intervention: +0.14, range +0.12 to +0.17 ➔ 14% aboslute increase in compliance • Opinion leaders with one or more additional intervention(s) compared to the one or more additional intervention(s): +0.10, range -0.08 to +0.25 ➔ 10% improvement in performance • Opinion leaders as part of multiple interventions compared to no intervention: +0.10, range -0.04 to +0.72 ➔ 10% improvement in performance Authors' conclusion: Opinion leaders alone or in combination with other interventions may successfully promote evidence-based practice, but the effectiveness varies both within and between studies.	different interventions, variety of different settings and different outcomes, no clear description of role of the opinion leader
Forsetlund, 2012[9]	**Title:** Continuing education meetings and workshops: effects on professional practice and health care	**Type of study:** SR **Design of studies included:** RCTs **Searches in:** EPOC	Educational meetings are commonly used for continuing medical education with the aim of improving professional practice and,	Results (mean adjusted RDs and % change): • Any intervention in which educational meetings were a	AMSTAR evaluation: Y, Y, Y, Y, Y, Y, Y, Y, Y, can't answer, can't

Study ID	References, aims and short description	Methodological characteristics	Intervention (strategies)	Results	Critical appraisal
	outcomes **Aim:** To assess the effects of educational meetings on professional practice and healthcare outcomes. **Studies included:** n=81 studies **Date limits:** from 1999 to March 2006.	Trials Register, Embase, Scopus	thereby, patient outcomes. Educational meetings include courses, conferences, lectures, workshops, seminars, and symposia. Comparisons in this SR: • Any intervention in which educational meetings is a component compared to no intervention • Educational meetings compared to no intervention • Educational meetings compared to other interventions • Any intervention in which educational meetings are a component compared to educational meetings alone • Interactive educatinoal meetings compared to didactic (lecture-based) educational meetings • Any other comparison of different types of educational meetings	component compared to no intervention (overall assessment) • Practice outcomes (dichotomous): range from -2.0% to 36.2%, median improvement 6% (IQ range 1.8% to 15.9%) • Practice outcomes (continuous): range from 0% to 53%, median % change 6% (IQ range 9% to 24%) • Patient outcomes (dichotomous): range from -0.9% to 4.6%, median improvement 3.0% (IQ range 0.1% to 4.0%) • Patient outcomes (continuous): range from -1% to 26%, median % change 4.0% (IQ range 0% to 11%) • Educational meetings alone compared to no intervention • Practice outcomes (dichotomous): range from -2.0% to 29.3%, median improvement 6% (IQ range 2.9% to 15.3%) • Practice outcomes (continuous): range from	answer Notes: 20/81 studies high risk of bias and not included in analysis, inadequate description of interventions, many potential factors that could explain heterogeneity

Study ID	References, aims and short description	Methodological characteristics	Intervention (strategies)	Results	Critical appraisal
				0% to 50%, median % change 10% (IQ range 8% to 32%) • Patient outcomes (dichotomous): range from -0.9% to 4.0%, median improvement 3.0% (IQ range -0.9% to 4.0%) • Patient outcomes (continuous): range from -1% to 26%, median % change 8.0% (IQ range 0% to 12%) • Educational meetings compared to other interventions • Practice outcomes (only 2 trials): adjusted RD -0.8% and -1.4% decrease in compliance • Patient outcomes : not reported • Any intervention in which educational meetings were a component compared to educational meetings alone • Practice outcomes (no MA): 12% adjusted relative % increase in patients receiving blood testing (1 trial) • Patient outcomes: not	

Study ID	References, aims and short description	Methodological characteristics	Intervention (strategies)	Results	Critical appraisal

				reported
				• Interactive educational meetings compared to didactic (lecture-based) educational meetings
				  • Practice outcomes (2 trials): adjusted RD 1.4% (1 trial)
				  • Patient outcomes: not reported
				• Any other comparison of differetn types of educational meetings: no results reported
				Authors' conclusion: Educational meetings alone or combined with other interventions, can improve professional practice (small to moderate improvements) and healthcare outcomes for the patients (small improvements). The effect is most likely to be small and similar to other types of continuing medical education, such as audit and feedback, and educational outreach visits. Strategies to increase attendance at educational meetings, using mixed interactive and didactic formats, and focusing on outcomes that are likely to be perceived as serious may increase the effectiveness of educational meetings. Educational meetings alone are not likely to be effective	

Study ID	References, aims and short description	Methodological characteristics	Intervention (strategies)	Results	Critical appraisal
				for changing complex behaviours.	
Francke, 2008[19]	**Title:** Factors influencing the implementation of clinical guidelines for health care professional: a systematic meta-review **Aim:** to gain a better understanding of which factors affect the implementation of guidelines and to provide insight into the 'state-of-the-art' regarding research within this field **Studies included:** n=12 studies **Date limits:** until November 2006	**Type of study:** SR+ MA **Design of studies included:** SRs, meta-reviews **Searches in:** Pubmed, Cinahl, Cochrane Library, Embase, NIVEL catalogus, GIN-website	Barriers and facilitators are factors that negatively or positively influence the implementation of clinical guidelines. Comparisons in this SR: • Evidence regarding factors	Results per category: • Characteristics of guidelines: complexity, higher adherence to evidence-based guidelines, development by target group and experts • Characteristics of implementation strategies: contrary results in different SRs on effectiveness of multifaceted interventions, active professional participation and strategies closely related to clinical decision-making • Characteristics of professional: lack of awareness, limited famialrity, lack of agreement with guidelines, age and/or experience • Characteristics of patients: resistance of patients, patients with co-morbidities • Characteristics of environment: limited time and personnel resources, workpressure, negative attitude or limited support from peers or superiors Authors' conclusion: Multiple strategies for implementing	AMSTAR evaluation: Y, Y, Y, Y, Y, Y, Y, Y, Y, can't answer, can't answer Notes: low to moderate quality of SRs

Study ID	References, aims and short description	Methodological characteristics	Intervention (strategies)	Results	Critical appraisal
				guidelines appear to be more effective than single ones. However, more research is neede to make definitive statements about the effectiveness of strategies.	

Giguère, 2012[7] **(update from 2011)**	**Title:** Printed educational materials (PEMs): effects on professional practice and healthcare outcomes
	Aim: to assess the effect of PEMs on the practice of healthcare professionals and patient health outcomes and to explore the influence of some of the characteristics of the PEMs on their effects on professional practice and patient outcomes
	Studies included: n= 45studies (52 PEM interventions)
	Date limits: until June 2011
		Type of study: SR and MA
		Design of studies included: RCTs, quasi-randomised trials, CBAs, ITS
		Searches in: Medline, Embase, CENTRAL, HealthStar, CINAHL, ERIC, CAB abstracts, Global Health, EPOC register
			PEM interventions, defined as distribution of published or printed recommendations for clinical care and evidence to inform practice, comprising clinical practice guidelines, journal articles and monographs, included: delivered personally (addressed to specific individual), through mass mailings or passively delivered through broader communication channels.
			Comparisons in this SR:
			• PEM versus no intervention (comparison A)
			• PEM versus single intervention (comparison B)
			• Multifaceted intervention with PEM versus multifaceted intervention without PEM (comparison C)
			• Effect modifiers (box
				Comparison A:
				• Dichotomous professional practice outcomes (7trials):
				  • median ARD of 0.02 (range 0 to 0.11)→ 2% absolute improvement
				  • in 5/7 trials observed median effect stat. sign.
				• Continuous professional practice outcomes (3trials)
				  • Standard median effect size of 0.13 (range -0.16 to 0.36)
				• Time series regression (54outcomes from 25trials): standardized median change in level of 1.69 (range from -6.96 to 14.26) →an overall imrpovement in professional practice outcomes
				• Patient health outcomes: overall median standardized effect size of -0.14
				Comparison B (1 trial):
				• Standardised median ARD of -0.02, no sign changes
					AMSTAR evaluation: Y, Y, Y, Y, Y, Y, Y, Y, can't answer, NA, can't answer
					
					Notes: original search strategy revised, variable quality of RCTs

Study ID	References, aims and short description	Methodological characteristics	Intervention (strategies)	Results	Critical appraisal
			plots)	between groups Comparison C: no studies found Effect modifiers: • Potential influence on effectiveness: source of information, tailoring, clinical areas, type of targeted behaviour, purpose, level of evidence, format • Not much variation: mode, frequency, duration of delivery • No variation: endorsement, specification of educational components, appearance, lentgh Authors' conclusions: PEMs may have a small beneficial effect on professioanl practice outcomes when used alone and compared to no intervention. There is insufficient information to estimate effect on patient outcomes and clinical significance of observed effect sizes is not known. Effectiveness of PEM in multifaceted or compared to other interventions is uncertain.	
Grimshaw, 2004[1]	**Title :** Effectiveness and efficiency of guideline dissemination and implementation strategies **Aim**: To undertake a	**Type of study:** Meta-review **Design of studies included**: cross sectional, pre-test post-test studies or CCTs	Following comparisons of single or multifaceted interventions (up to 6 interventions combinations): • Educational materials	Multifaceted vs no intervention • MF with educational outreach vs no int: • modest improvements: +6%, range -4 to +17.4%	AMSTAR evaluation: Y, Y, Y, Y, N, Y, Y, Y, Y, NA, can't answer

Study ID	References, aims and short description	Methodological characteristics	Intervention (strategies)	Results	Critical appraisal
	systematic review of the effectiveness and costs of different guideline development, dissemination and implementation strategies+ to estimate the resource implications of these strategies+ to develop a framework for deciding when it is efficient to develop and introduce clinical guidelines. **Studies included**: n=235 studies **Date limits**: 1966 to mid-1998	**Searches in**: MEDLINE, Healthstar, Cochrane Controlled Trial Register, EMBASE, SIGLE and the specialised register of the Cochrane Effective Practice and Organization of Care (EPOC) group.	• Educational meetings • Consensus processes • Educational outreach • Opinion leaders • Patient-directed interventions • Audit and feedback • Reminders • Other professional (including mass media and marketing) • Financial interventions • Organizational interventions • Structural interventions • Regulatory interventions Only results on multifaceted interventions are extracted for this report.	for RCTs and +7.3%, range -5.6 to +17.4% for CBAs • educ mat + educ outreach: relatively ineffective; educ mat+educ meetings+educ outreach: modest to moderate effects • Educ mat + educ meetings vs no int • Small to modest improvements: +1.9%, range -3.0 to +5.0% for RCTs and +10% for CCTs • Educ mat + A&F vs no interv • Modest improvements: +7.4% in RCTs • Reminders + patn-directed int vs no int • Moderate to large improvements (range 1.3 to 20.0%) • Educ mat, educ meetings + A&F vs no int • Small improvements: +3.0% for RCTs • Educ mat, educ meetings + organ int vs no int • Small improvements:	Notes: no clear description of results, contrary results with other reviews

Study ID	References, aims and short description	Methodological characteristics	Intervention (strategies)	Results	Critical appraisal

				+1.0% for CBAs
				
				Multifaceted vs intervention controls
				• Educ outreach vs other int
				  • Modest improvements but less than in single interventions
				• Educ mat +reminders vs educ mat
				  • More effective than educ mat alone
				• Educ meetings + reminders vs educ meetings
				  • More effectives than educ meetings alone
				• Educ mat+ educ meetings+reminders vs educ mat+educ meetings
				  • More effective than educ mat and educ meetings alone
				Number of interventions: No relationship was found between the number of component interventions and the effects of multifaceted interventions.
				Authors' conclusion: The majority of interventions observed modest to moderate improvement in care. However, across all combinations, multifaceted interventions did not	

Study ID	References, aims and short description	Methodological characteristics	Intervention (strategies)	Results	Critical appraisal
				appear to be more effective than single interventions and the effects of multifaceted interventions did not appear to increase with the number of component interventions.	

Hakkennes, 2008[17]	**Title:** Guideline implementation in allied health professions: a systematic review of the literature
	Aim: To evaluate the effects of the introduction of clinical guidelines for allied health professionals + to estimate the effectiveness of the guideline dissemination and implementation strategies used.
	Studies included: n= 14 studies
	Date limits: up to June 2006
		Type of study: SR
		Design of studies included: RCTs, CCTs, CBAs, interrupted time series studies
		Searches in: MEDLINE, CINHAL, EMBASE, PsychINFO, AMED, the Cochrane Controlled Trials Register, DARE
			Allied health included the following professions: audiology; dietetics; occupational therapy; orthoptics; orthotics and prosthetics; pharmacy; physiotherapy; podiatry; psychology; radiography; speech pathology; and social work.
			Comparisons in this SR:
			• Single intervention: 6/14
			• Multifaceted intervention: 7/14
			• Mix of single and multifaceted interventions: 1/14
			• Focus on educational interventions: 10/14
				Summary of results:
				• Overall effect:
				  • Process outcomes: small to moderate effects in favour of intervention group
				  • Patient outcomes: small effects and in favour of intervention group
				• Multifaceted interventions:
				  • no more effective than single interventions
				  • effects of the same strategy varied across trials
				• single interventions: results not reported
				Authors' conclusion: At best the effects were small to moderate with results varying widely across studies. Identification of specific barriers to change needed in the target group.
					AMSTAR evaluation: Y, Y, Y, Y, N, Y, Y, Y, NA, NA, can't answer
					
					Notes: heterogeneous quality of studies, incomplete data reporting

Ivers, 2012[5] **(updated from**	**Title:** Audit and feedback: effects on	**Type of study:** SR **Design of studies**	Comparison of audit and feedback alone or a core of	Comparison A: • Compliance with desired	AMSTAR evaluation: Y,

Study ID	References, aims and short description	Methodological characteristics	Intervention (strategies)	Results	Critical appraisal
2010)	professional practice and health care outcomes **Aim:** to assess the effects of audit and feedback on the practice of healthcare professionals and patient outcomes and to examine factors that may explain variation in the effectiveness of audit and feedback **Studies included:** n= 140 studies **Date limits:** until dec 2010, sept 2011	**included:** RCTs **Searches in:** CENTRAL, MEDLINE, EMBASE, CINAHL, Science Citation Index and Social Sciences Citation Index, ISI Web of Science	multifaceted intervention: • Any intervention in which audit and feedback is the single intervention or is the core, essenatial feature of a multifaceted intervention, compared to usual care (comparison A) (includes B and C) • Audit and feedback alone compared to no intervention (comparison B) • Audit and feedback as the core feature of a multifaceted intervention compared to no intervention (comparison C) • Different ways of providing audit and feedback (comparison D) • Audit and feedback combined with complementary interventions compared to audit and feedback alone (comparison E) • Other interventions compared to audit and	practice (dichotomous outcomes) (82 comparisons from 49 studies): 4.3% increase of the weighted median adjusted risk difference (RD) (interquartile range 0.5%-16%), range in adjusted RD from 9% decrease to 70% increase • Compliance with desired practice (continuous outcomes) (26 comparisons from 21 studies): 1.3% increase of the weighted median adjusted change relative to baseline control (interquartile range 1.3%-23.2%), range in adjusted change reliative to baseline corntrol from 50% decrease to 139% increase • Patient outcomes (dichotomous outcomes) (12 comparisons from 6 studies): 0.4% decrease of weighted median adjusted RD (IQR -1.3% to 1.6%) • Patient outcomes (continuous outcomes) (8 comparisons from 5 studies): 17% improvement of median adjusted change relative to baseline control (IQR 1.5% to 17%)	Y, Y, Y, Y, Y, Y, Y, Y, NA, can't answer Notes: only comparison A (covering all comparisons) mentioned in summary of findings

Study ID	References, aims and short description	Methodological characteristics	Intervention (strategies)	Results	Critical appraisal
			feedback (comparison F)	• Characteristics related to intervention to explain variation in effects: sign for format (p=0.02), source (p<0.001), frequency (p<0.001), instructions for improvement (p<0.001), direction of change required (p=0.007) • Characteristics related to recipients: baseline performance (p=0.007), profession of recipient (p=0.561) • Characteristics related to trial design: risk of bias (p=0.679) Comparison B: • Compliance with desired practice (dichotomous outcomes) (32 comparisons from 26 studies): 3.0% weighted median adjusted RD (IQR 1.8% to 7.7%) • Compliance with desired practice (continuous ouctomes) (14 comparisons from 13 studies): 1.3% weighted median adjusted change relative to baseline control (IQR 1.3% to 11.0%) Comparison C: • Compliance with desired practice (dichotomous	

Study ID	References, aims and short description	Methodological characteristics	Intervention (strategies)	Results	Critical appraisal
				outcomes) (50 comparisons from 32 studies): 5.5% weighted median adjusted RD (IQR 0.4% to 16%) • Compliance with desired practice (continuous ouctomes) (12 comparisons from 11 studies): 26.1% weighted median adjusted change relative to baseline control (IQR 12.7% to 26.1%) Comparison D (only description per study): • Peer comparison: small differences • Presentation of feedback and inclusion of additional information: no to small differences • Source and delivery: no or little differences • Recipient participation: contrary results (worsening and no sign improvement) Comparison E: • With reminders: (7studies): no or little differences (only description per study) • With educational outreach (academic detailing) o Compliance with desired practice	

Study ID	References, aims and short description	Methodological characteristics	Intervention (strategies)	Results	Critical appraisal
				(dichotomous outcomes) (15 studies): 0.7% weighted median adjusted RD (IQR -1.1% to 5.1%) o Compliance with desired practice (continuous outcomes) (4 studies): 27% median adjusted change relative to baseline control (IQR 0% to 40.5%) • Plus other educational interventions: no or little differences (only description per study) • With case management or organizational interventions: no or little differences (only description per study) • With financial incentives: no or little differences (only description per study) • With patient-mediated interventions: no or little differences (only description per study) Comparision F: • Reminders: no or little differences (only description per study)	

Study ID	References, aims and short description	Methodological characteristics	Intervention (strategies)	Results	Critical appraisal
				• Eduactional outreach: no or little differences (only description per study) • Other educational interventions: no or little differences (only description per study) • Case management or organizational interventions: no or little differences (only description per study) • Financial incentives: less effective at reducing test-ordering(-41%, p<0.05) • Patient-mediated interventions: no sign differences (p-value not mentioned) Authors' conclusion: The effect on professional behaviour and on patient outcomes ranges from little or no effect to a substantial effect. The quality of evidence is moderate. It is uncertain wheter audit and feedback is more effective when combined with other interventions.	
McGowan, 2010[5] (update from 2009)	**Title:** Electronic retrieval of health information by healthcare providers to improve practice and patient care	**Type of study:** SR **Design of studies included:** cluster RCTs **Searches in:** EPOC register, CENTRAL,	Following interventions were considered: provision or increased access to electronically retrievable information (free access to journals or databases),	Results per comparison • Comparison A: no studies found • Comparison B (1trial): no stat sign differences in physician	AMSTAR evaluation: Y, Y, Y, Y, Y, Y, Y, Y, NA, NA, can't answer

Study ID	References, aims and short description	Methodological characteristics	Intervention (strategies)	Results	Critical appraisal
	Aim: to assess the effectiveness of interventions intended to provide electronic retrieval (access to information) to health information by healthcare providers to improve practice and patient care **Studies included:** n=2 studies **Date limits:** until July 2008	Medline, AMED, CAB Health, CINAHL, EMbase, ERIC, LILACS, LISA, reference lists, contacts with authors and organizations	provision of electronically retrievable information at point of patient care delivery or elsewhere in the workplace, training component where there was differential provision of electronically retrievable information between groups Comparisons in this SR: • Electronic retrieval of information versus no electronic retrieval (or no intervention) in practice (comparison A) • Electronic retrieval of information versus access to print based materials only (comparison B) • Electronic retrieval of information versus one or more other types of electronic retrieval of information (comparison C) • Enhanced electronic retrieval of information versus assess to electronic resource as part of standard practice (comparison D)	consultation practice • Comparison C: no studies found • Comparison D (1trial): knowledge and use of Cochrane reproductive health library increased in both countries from 24.8% to 65.5% and from 33.9% to 83.3% in intervention group compared to control group (from 33.5% to 39.2%) Authors' conclusion: Overall there was insufficient evidence to support or refute the use of electronic retrieval of healthcare information.	Notes: both studies at low risk of bias, no information on patient outcomes, contamination of control group
Medves, 2010[8]	**Title:** Systematic	**Type of study:** SR	Ten dissemination and	Effectiveness of implementation	AMSTAR

Study ID	References, aims and short description	Methodological characteristics	Intervention (strategies)	Results	Critical appraisal
	review of practice guideline dissemination and implementation strategies for healthcare teams and team-based practice **Aim:** to synthesis the literature relevant to guideline dissemination and implementation strategies for healthcare teams and team-based practice **Studies included:** n=88studies **Date limits:** 1994-2007	**Design of studies included:** RCTs, descriptive/case series, comparable cohort studies **Searches in:** AMED, CINAHL, Cochrane Database of Systematic Reviews, CRD, Embase, ERIC, HealthStar, Medline, PsycInfo, Clinical Pharmacology, Clinical Reference Systems, Current Contents, Biomed Central, Pubmed, Turning Research Into Practice	implementation strategies found in this SR: • Distribution of educational materials (59 studies) • Educational meetings (62 studies) • Local consensus processes (34 studies) • Educational outreach visits (12 studies) • Local opinion leaders (16 studies) • Patient mediated (14studies) • Audit and feedback (45studies) • Reminders (27 studies) • Marketing (18 studies) • Mass media (1study)	strategies on change in knowlegde, practice,, patient and/or economic outcomes: • Distribution of educational materials: 72.3% sign findings + most common strategy • Educational meetings: 74.2% sign findings • Local consensus processes: 64.7% sign findings • Educational outreach visits: 66.6% sign findings • Local opinion leaders: 81.3% sign findings • Patient mediated: 64.3% sign findings • Audit and feedback: 82.2% sign findings • Reminders: 85.2% sign findings • Marketing: 77.7% sign findings • Mass media: 100% sign findings+ least common strategy • Strategies with significant findings used local opinion leaders, audit and feedback and reminders Patient interventions: • Patient incentives (5 studies):	evaluation: Y, Y, Y, Y, N, N, Y, Y, NA, NA, can't answer Notes: heterogeneous sample of studies, variation in number of strategies, limited results presented

Study ID	References, aims and short description	Methodological characteristics	Intervention (strategies)	Results	Critical appraisal
				not comparable and small in number Organisations • Professional roles (7 studies): narrative description per study • Continuity of care plan (8studies): narrative description per study • Communication and discussion (3 studies): sign changes in knowledge or practice or outcomes Structural intervention: • Redesign of medical or health record systems (6 studies): no results presented Patient and process outcomes: • Assessment of knowledge of practitioners (37studies): sign in 12 studies Economic outcomes (12 studies): sign findings in 6 studies Authors' conclusion: Team-based care using practice guidelines locally adapted can affect positively patient and provider outcomes. It makes sense to be more effective by involving the whole team and preferable similar dissemination strategies for the whole team.	

Study ID	References, aims and short description	Methodological characteristics	Intervention (strategies)	Results	Critical appraisal

Menon, 2009[8]	**Title:** Strategies for rehabilitation professionals to move evidence-based knowledge into practice: a systematic review
	Aim: To examine the effectiveness of single or multicomponent knowledge translation interventions for improving knowledge, attitudes, and practice behaviors of rehabilitation clinicians.
	Studies included: n= 12 studies
	Date limits: up to June 2008
		Type of study: SR
		Design of studies included: RCTs, CBAs, case series
		Searches in: MEDLINE, CINHAL, AMED, EBM Reviews, PEDRO, Occupational Therapy Seeker, Research and Development Resource Base
			A knowledge translation (KT) intervention is defined as a means of exchanging evidence-based information (e.g. through educational outreach, opinion leader, journal club, lectures, audit and feedback, reminders, online resources) to improve knowledge, attitudes and practice behaviors of health professionals, with the ultimate goal of optimizing patient outcomes and maximizing the potential of the health system.
			Comparisons in this SR:
			• Multifaceted interventions for improving knowledge
			• Single interventions for improving knowledge
			• Multifaceted interventions for improving attitude towards EBP
			• Single interventions for improving attitude towards EBP
			• Multifaceted intervention for changing practice behavior
			• Single intervention for
				Results per comparison
				• Multifaceted int for improving knowledge
				  • occupational therapists: no evidence
				  • physical therapists: moderate evidence
				• Single int for improving knowledge
				  • occupational therapists: limited evidence
				  • physical therapists: no evidence
				• Multifaceted int for improving attitude
				  • occupational therapists: no evidence
				  • physical therapists: moderate evidence of ineffectiveness
				• Single int for improving attitude
				  • occupational therapists: limited evidence for effectiveness
				  • physical therapists: limited evidence of ineffectiveness
				• Multifaceted int for changing practice behavior
					AMSTAR evaluation: Y, Y, Y, Y, N, Y, Y, Y, Y, NA, can't answer
					
					Notes: low quality of studies, no clear description of results, no focus on included strategies in interventions

Study ID	References, aims and short description	Methodological characteristics	Intervention (strategies)	Results	Critical appraisal
			changing practice behavior	• occupational therapists: no evidence • physical therapists: strong evidence of effectiveness • Single int for changing practice behavior • occupational therapists: limited evidence of effectiveness • physical therapists: limited evidence of ineffectiveness Authors' conclusion: Active multifaceted interventions results in improved self-perceived knowledge as well as positive changes in actual and self-perceived practice bahaviors of physical therapists. These gains did not translate into change in physical therapists' attitude towards EBP. No studies found on multifaceted interventions for occupational therapists, limited evidence suggests that single interventions may improve knowledge, attitues and practice behaviors.	
O'Brien, 2008[11] (update from 2007)	**Title:** Educational outreach visits (EOVs): effects on professional practice and health care outcomes	**Type of study:** SR + MA **Design of studies included:** RCTs	Type of face-to-face visits, also been referred to as university-based educational detailing, academic detailing and educational visiting.	Comparison A: • Dichotomous health professional outcomes (n=37 trials)	AMSTAR evaluation: Y, Y, N, Y, Y, Y, Y, Y, can't answer, Y,

Study ID	References, aims and short description	Methodological characteristics	Intervention (strategies)	Results	Critical appraisal

	Aim: to assess the effects of EOVs on health professional practice or patient outcomes
	Studies included: n=69 studies
	Date limits: until March 2007
		Searches in: original search in several electronic bibliographic databases (including Medline and CINAHL); EPOC register, test searches in Medline and Embase, reference lists	Comparisons in this SR:
			• Any intervention with EOVs as component versus no intervention, both with or without printed educational materials (comparison A)
			  • Meta-regression analysis on primary explanatory factors: targeted behaviour (prescribing vs other behaviour), baseline compliance, number of clinicians included at each visit, number of EOVs
			  • Meta-regression analysis on secondary explanatory factors: complexity of targeted behaviour, seriousness of outcome, risk of bias, contribution of EOVs as component of the intervention
			• EOVs alone versus no intervention (comparison B)
				• Desired practice behaviour: median improvement of 5.6% (adjusted RD range from -3% to 64%)(IQR 3% to 9.0%)
				• Meta-regression on all explanatory factors: no explanation for variation in adjusted RDs (p=0.08 to 0.90)
				• Meta-regression on primary explanatory factors: only sign for targeted behaviour (p=0.002)
				• Bubble and box plots: less variation and small effects for prescribing (median adjusted RD 4.8%, IQR 3.0% to 6.5% for 17 comparisons) compared to other behaviours with wide variation (median adjusted RD 6.0%, IQR 3.6% to 16.0% for 17 comparisons) + effect size of multifaceted interventions slightly larger but not sign (p=0.90) (mean adjusted RD 8.8%, IQR 2.9% to 12.7% for 16
					can't answer
					
					Notes: only studies with low or moderaterisk of bias in primary analyses, no patient outcomes in primary analyses, meta-regression analyses limited by large number of potential explanatory factors and interaction in between, considerable variation in types of interventions

Study ID	References, aims and short description	Methodological characteristics	Intervention (strategies)	Results	Critical appraisal
			• Any intervention with EOVs as component versus any intervention including audit and feedback and reminders (comparison C) • Any comparison of different types of EOVs (comparison D)	comparisons) versus EOV intervention alone (median adjusted RD 5.0%, IQR 3.0% to 6.23% for 18 comparisons) • Continuous health professional outcomes (n= 17 trials): percentage change: median of 21% (IQR 11% to 41%), range from 0% to 617% • Patient outcomes (n=6) • Difficult to determine if sufficient power to detect an important difference (narrative description of results per study) Comparison B: • Dichotomous health professional outcomes (n= 19trials): median adjusted RD of 5% (IQR 3.0% to 6.2%), range from 1% to 20% • Continuous health professional outcomes (n=15trials): median adjusted relative percentage change of 23% (IQR 12% to 39%), range from 0% to 617% • Patient outcomes (n=2trials): included in comparison A Comparison C: • Health professional outcomes	

Study ID	References, aims and short description	Methodological characteristics	Intervention (strategies)	Results	Critical appraisal
				(n= 8trials): interventions with EOVs slightly more effective than audit and feedback alone (narrative description per trial) • Patient outcomes (n=1trial): adjusted RD of 5.9% (95% CI -0.3 to 12.2) for blood pressure control Comparison D: • Health professional outcomes (n=6trials): narrative description per trial, no overall conclusion • Patient outcomes: not reported Authors conclusion: EOVs with or without additional interventions can be effective in improving health professional practice, but effects are small to moderate but potentially important	
Prior, 2008[13]	**Title:** The effectiveness of clinical guideline implementation strategies-a synthesis of systematic review findings **Aim:** to synthesize the evidence of effectiveness of clinical guideline implementation	**Type of study:** meta-review **Design of studies included:** SRs **Searches in:** Medline, AMED, Cinahl, Academic Search Elite, Cochrane, reference lists	Overview of implementation strategies: • Educational strategies • Traditional educational • Educatinoalmeetings/interactive educational • Educational outreach • Audit & feedback/ peer review	Multifaceted interventions: • Significant improvements in guideline compliance and behavioral change (ranged up to 60%) • Greater evidence of effectiveness than single interventions • No evidence of any relationship between number	AMSTAR evaluation: Y, Y, Y, Y, Y, Y, Y, Y, NA, NA, can't answer Notes: only SRs included, no description of strategies in multifaceted

Study ID	References, aims and short description	Methodological characteristics	Intervention (strategies)	Results	Critical appraisal
	strategies **Studies included:** n=33 studies **Date limits:** 1987-2007		• Multifaceted interventions • Mass media and distribution strategies • Guideline content and construction • Reminder and decision support systems • Financial incentives • Local opinion leader • Cost-effectiveness Only the results on multifaceted interventions are presented in this report.	of components and strategy effectivenss • No evidence about the effect of combination of strategies Authors' conclusion: Consistently effective guideline implementation strategies include multifaceted interventions, educational outreach, educational meetings and interactive educational interventions, clinical reminders and decision support systems, patient-specific interventions and the production of practical guidelines of low complexity. There is insufficient evidence to adequately support the use of many other strategies such as traditional educational strategies and guideline dissemination in isolation.	interventions
Reeves, 2009[10] (update from 2007)	**Title:** Interprofessional education (IPE): effects on professional practice and health care outcomes **Aim:** to assess the effectiveness of IPE interventions compared to education interventions in which the same health and social care professionals learn	**Type of study:** SR **Design of studies included:** RCTs, CBAs **Searches in:** EPOC register, Medline, CINAHL, ISI Web of Science, reference lists, hand search in journals	An IPE intervention occurs when members of more than one health and/or social care profession learn interactively together, for the explicit purpose of improving interprofessional collaboration and/or health/well being of patient/clients. Interactive learning requires active learner participation, and active exchange between	Comparison A: no studies found Comparison B (n=6 trials): only descriptive results per study, no comparison possible Authors' conclusion: Although the studies reported some positive outcomes, due to the small number of studies, the heterogeneity of interventions and the methodological limitations, it is not possible to draw generalisable inferences about the key elements	AMSTAR evaluation: Y, Y, Y, Y, Y, Y, Y, Y, NA, NA, can't answer Notes: one study high quality, other 5 studies moderate quality, small

Study ID	References, aims and short description	Methodological characteristics	Intervention (strategies)	Results	Critical appraisal
	separately from on another + to assess the effectiveness of IPE interventions compared to no education interventions **Studies included:** n=6 studies **Date limits:** 1999-2006		learners from different professions. Comparisons in this SR: • IPE intervention versus education intervention in which the samen professions were learning separately from another (comparison A) • IPE intervention versus no education intervention (comparison B)	of IPE and its effectiveness.	sample size in most of studies limit the sensitivity in detecting an effective intervention

Shojania, 2009[7]	**Title:** The effects of on-screen, point of care computer reminders on processes and outcomes of care
	Aim: To evaluate the effects on processes and outcomes of care attributable to on-screen computer reminders delivered to clinicians at the point of care.
	Studies included: n=28 studies
	Date limits: up to July 2008
		Type of study: SR
		Design of studies included: RCTs
		Searches in: Cochrane EPOC Group Trials register, MEDLINE, EMBASE and CINAHL and CENTRAL and scanned bibliographies from key articles.
			Point of care computer reminders:
			• The reminder was delivered via the computer system routinely used by the providers targeted by the intervention
			• The reminder was accessible from within the routinely used clinical information system
			• The reminder targeted the person responsible for the relevant clinical activity
			Comparisons in this SR:
			• Effectiveness of on-
				Results per comparison
				• Effectiveness of on-screen reminders
				  • All reported process outcomes: 4.2% (IQR 0.8% to 18.8%)
				  • Prescribing behavior: 3.3% (IQR: 0.5% to 10.6%);3.8% (IQR: 0.5% to 6.6%) for improvements in vaccinations; 3.8% (IQR: 0.4% to 16.3%) for test ordering behaviour
				  • Dicotomous clinical endpoints: median absolute imrpovement 2.5% (IQR 1.3% to 4.2%)
				• Effect modifiers for process
					AMSTAR evaluation: Y, Y, Y, Y, Y, Y, Y, Y, Y, NA, can't answer
					
					Notes: heterogeneity of interventions, variable degree of reporting, limited description of complex interventions

Study ID	References, aims and short description	Methodological characteristics	Intervention (strategies)	Results	Critical appraisal
			screen computer reminders on process or outcomes of care • Effect modifiers of on-screen reminders	adherence by study feature: • Not significant for (p>0.05): sample size, baseline adherence, country, setting, publication year, design • Significant for (p<0.05): presence of co-intervention ➔ Median improvement higher in single intervention (5.7% (IQR 2.0% to 24.0%) compared to multifaceted intervention (1.9%, IQR 0.0% to 6.2%), p=0.04 • Effect modifiers for process adherence by reminder feature • Non significant for (p>0.05): targeted problem, patient-specific reminder, delivery of reminder, explanation provided, response required, developed in consultation with recipients, reminder delivered via CPOE system • sensitivity analysis: no change in results ➔ lack of any significant	

Study ID	References, aims and short description	Methodological characteristics	Intervention (strategies)	Results	Critical appraisal
				association between study or reminder features and the magnitude of effects achieved by computer reminders Authors' conclusion: Computer reminders delivered at the point of care have achieved variable improvements in target behaviours and processes of care. The small to modest median effects shown in analysis may hide larger effects.	
Vale, 2007[22]	**Title:** Systematic review of economic evaluations and cost analyses of guideline implementation strategies **Aim:** to appraise the quality of economic studies undertaken as part of evaluations of guidelines implementation strategies **Studies included:** n=63 studies **Date limits:** 1966-1998	**Type of study:** SR **Design of studies included:** RCTs, cluster RCTs, ITS, other **Searches in:** Medline, Embase, HealthSTAR, SIGLE, Cochrane Controlled Trials register, EPOC register	Comparisons in included studies between more than 2 strategies (total of 53 different behaviour change strategies) versus no intervention of only one strategy (use of reminders alone).	Comparisons: • Estimation of costs: no study gave reasonable complete information on the estimation of costs for guideline development, implementation and treatment • Efficiency of alternative implementation strategies: no meaningful results due to multifaceted nature of many of implementation strategies, multitude of policy issues and weak methodology Authors' conclusion: The paucity of data on resource use, cost and efficiency of guideline implementation strategies has been shown in this review. Studies were of poor methodological quality and did not	AMSTAR evaluation: Y, Y, Y, Y, N, N, Y, Y, NA, NA, can't answer Notes: form of economic evaluations rarely stated, methodological weaknesses often undermined the effectiveness results, process measures of uncertain validity, more emphasis on

Study ID	References, aims and short description	Methodological characteristics	Intervention (strategies)	Results	Critical appraisal
				appear to consider guidelines based on evidence of effectiveness or efficiency. Studies did not report an economic rationale for the choice of implementation strategies considered and did not cover all stages of guideline implementation that may be relevant.	methodology of included studies than on economic evaluation itself
van der Wees, 2008[15]	**Title:** Multifaceted strategies may increase implementation of physiotherapy clinical guidelines: a systematic review **Aim:** to assess the effectiveness of strategies to increase the implementation of physiotherapy clinical guidelines **Studies included**: n=5 studies **Date limits:** until October 2007	**Type of study:** SR **Design of studies included:** RCTs, CBAs, interrupted time series studies **Searches in:** MEDLINE, EMBASE, CINHAL, PEDRO, Cochrane Library	Single or multiple strategies to increase the implementation of physiotherapy clinical guidelines. Comparisons in this SR: • Multifaceted intervention of an interactice educational meeting administered by opinion leaders followed by an educational outreach visit vs dissemination of the guideline only; interactive educational meetings administered by experts vs dissemination of guideline only; evidence-based educational meeting administered by local opinion leaders vs standard in-service educational meeting	Results for multifaceted interventions: • professional practice: (=compliance adherence to recommendations): heterogeneous results between studies • patient outcomes: no difference between intervention and control group • cost-effectiveness: no difference between intervention and control group Authors' conclusion: Multifaceted interventions based on educational meetings aimed at increasing the implementation of physiotherapy clinical guidelines may improve professional practice, but not patient health or cost of care.	AMSTAR evaluation: Y, can't answer, Y, Y, Y, Y, Y, N, can't answer, NA, N Notes: Limited number of trials, variability in findings

Study ID	References, aims and short description	Methodological characteristics	Intervention (strategies)	Results	Critical appraisal
Weinmann, 2007[18]	**Title:** Effects of implementation of psychiatric guidelines on provider performance and patient outcomes: systematic review **Aim:** to identify evidence from comparative studies on the effects of psychiatric guideline implementation on provider performance and patient outcomes. Effects of different implementation strategies were reviewed **Studies included:** n=18 studies **Date limits:** 1996-2006	**Type of study:** SR **Design of studies included:** RCTs, CCTs, BA **Searches in:** Medline, Embase, CINAHL, PsycInfo, Cochrane Trials Register	Implementation strategies in this SR classified as: • Continuous quality improvement (CQI) • Academic detailing (AD) • Distribution of educational materials • Marketing techniques • Audit and feedback • Patient-mediated interventions • Reminders Comparisons in this SR: • Pure dissemination of guidelines (8studies) • Compared to control group without intervention (6 studies) • Different methods of guidelines implementation (3 studies) • Uncontrolled BA design (1 study)	Effects on provider performance (18studies): • In 9 studies (6RCTs, 1 CCT, 2 BAs): no sign effect of the intervention on process measures • In 7 studies: sign effect on provider performance but effect size generally modest (except for tobacco counselling rates in 1 study) • Better provider performance associated with multifaceted interventions with ongoing expert consultation, AD or CQI with ongoing supervision or hotlines or interventions using marketing techniques and psychological theories to overcome guideline implementation obstacles Effects on patient outcomes (13 trials): • Most studies small temporary effects, lack of effect or a decrease in the number of patients improved • 4 studies: sign improvement but effect size generally modest (except for smoking cessation in 1 study) + limited duration • Positive outcomes associated	AMSTAR evaluation: Y, Y, Y, Y, N, Y, Y, Y, NA, NA, can't answer Notes: high quality of studies for allocation concealment, sample size and follow-up but no blinding to allocation, no ITT analysis, underpowered to show small intervention effects. No pooling of data due to heterogeneity

Study ID	References, aims and short description	Methodological characteristics	Intervention (strategies)	Results	Critical appraisal
				with multifaceted interventions such as reminder systems plus audit and feedback and social marketing principles, AD plus audit and feedback, patient-mediated interventions and family interventions, AD plus case discussions and involvement of a psychiatrist or psychological methods to face guidelines implementation obstacles Authors' conclusion: There is insufficient high quality evidence to draw firm conclusions on the effects of implementation of specific psychiatric guidelines. We suggest that one of three implementation components may be necessary to improve patient outcomes: ongoing support or feedback with the possibility to use expert consultation; the use of specific psychological models to overcome obstacles to guideline implementation; social marketing techniques.	

APPENDIX 2. FIELD RESEARCH

Appendix 2.1. Inventory of CPG stakeholders in Belgium

This list provides an overview of about one hundred stakeholders (possibly) involved in CPG development, dissemination and/or financing in Belgium.

Green = interviewed (n=28)

CAT 1: MEDICS Specialty	N° of professionals in Belgium	Organization	N° CPG/year	Level of evidence
Cardiac Pathology		College of Cardiac Pathology		
Cardiology	1090	Belgian Society of Cardiology	Adaptation EU CPG	
Clinical Biology		Belgian Society for Clinical Biology		
Dentists-FR	7878	Société de Médecine Dentaire		
Dentists-NL		Vlaamse Beroepsvereniging Tandartsen		
Dermatology		Belgian Society of Dermatology		
European Renal Best Practice	414		2-3 + position statements	GRADE
Physical Medicine and Revalidation		Royal Belgian Society of Physical Medicine and Rehabilitation		
Geriatrics	220	College of Geriatrics	1	"high level"
General Practitioners-FR	14758	Société Scientifique de Médecine Générale	2-3	
General Practitioners-NL	2000	Domus Medica	2-3	GRADE
Gynecology Flanders	1517	Vlaamse Vereniging voor Obstetrie en Gynaecologie	1-3	Expert opinion and if possible "evidence based"
Gynecology Wallonia		Groupement des Gynécologues Obstétriciens de Langue Française de Belgique		
Hematology	124	Belgian haematological society		
Intensive care	679	College of Intensive care		
Internal discipline	1320	Belgian society of internal		

CAT 1: MEDICS Specialty	N° of professionals in Belgium	Organization	N° CPG/year	Level of evidence
		medicine		
Liver	271	Belgian Association for the Study of the Liver		
Medical imaging and nuclear medicine	80	College of Medical imaging and nuclear medicine		
Mother and new born		College of Mother and new born		
Nephrology		Belgian Society Nephrology		
Neurology		Belgian Neurological Society		
Occupational medicine	1071	Belgian Professional Association of Occupational Physicians		
Oncology	201	College of Oncology		
Pediatrics	1701	College of Pediatrics		
Pneumology	505	Belgian Society of Pneumology		
Psychiatrists (NL)	2249	Vlaamse Vereniging voor Psychiatrie	0	
Psychiatrists (FR)		Société Royale de Médecine Mentale de Belgique		
Radiology		Royal Belgian Society of Radiology		
Radiotherapy	690	College of Radiotherapy		
Renal Failure		College of Chronic Renal Failure		
Reproductive medicine	(=gyn)	College of Reproductive medicine		
Specialized emergency care	324	College of Specialized emergency care		
Surgery	1689	Belgian Association for Cardio-Thoracic Surgery		
Urology		Belgian Association for Urology		

CAT 2: NURSES/ MIDWIVES	N° of professionals in Belgium	Organization	N° CPG/year	Level of evidence
Association belge des praticiens de l'art infirmier (ACN)		Belgian association of nurse practitioners		
Association Francophone des Infirmier(e)s d'Urgence (AFIU)		French-speaking association of nurses specialised in emergency		
Association des infirmiers gradués en pédiatrie (AIGP)		Association of nurses specialised in pediatry		
Association des Infirmières Indépendantes de Belgique /Vereinigung Unabhängiger Krankenpflegerinnen Belgiëns (AIIB/VUKB)		Belgian association of self-employed nurses (French-speaking and German-speaking)		
CompAS		Belgian association of nurses who care for elderly persons		
Deutschsprachige Krankenpflegevereinigung in Belgien (KPVDB)		German-speaking association of nurese		
Federale Neutrale Beroepsvereniging Verpleegkunde (FNBV)		Neutral association of Flemish nurses		
Fédération Nationale des Infirmières de Belgique (FNIB)/Nationale Federatie van Belgische Verpleegkundigen (NFBV)		National federation of Belgian nurses		
NVKVV		National Association of Catholic Flemish nurses and midwives		
SIO		Association of French-speaking nurses specialised		

CAT 2: NURSES/ MIDWIVES	N° of professionals in Belgium	Organization	N° CPG/year	Level of evidence
		in oncology		
Société des Infirmiers(e) de Soins Intensifs / Vlaamse Vereniging Intensieve Zorgen verpleegkundigen		Nurses specialised in intensive care		
Vlaamse Beroepsvereniging voor zelfstandige verpleegkundigen (VBZV)		Flemish organisation for self-employed nurses		
Vlaamse Organisatie van Vroedvrouwen (VLOV)	9147	Flemish Organisation of midwives		GRADE
Vlaamse Vereniging Verpleegkundigen Spoedgevallenzorg (VVVS)		Flemish Association of nurses specialised in emergency care		
VVRO		Association of Flemish nurses specialised in oncology and radiotherapy		
Wit-Gele Kruis	6074 workers, incl 3448 Full-time equivalent nurses	Flemish Organisation of home nurses		

This list has been added for the second edition of the report. About 40 nurses/midwives associations exist in Belgium and the inclusion criterion for this table is to have an official mandate to be represented at the Federal Public Services. Three additional associations have either a mandate at the NHIDI (self-employed nurses) or a large size (Wit-Gele Kruis). From 2014 onwards one large organisation only will have official recognition: the Union générale des infirmiers de Belgique – Algemene unie van verpleegkundigen van België, an organisation that gathers 36 of the 40 existing associations.

CAT 3: Other health professionals	N° of professionals in Belgium	Organization	N° CPG/year	Level of evidence
Audiology	Audio + Speech: 5844	National union for audiologists (UNAS-NUAS)		
Bandagists	Bandagist + ortho: 5657	Belgian professional union for orthopaedic technologies (UPBOT-BBOT)		
Dieticians-FR	3205	Union Professionnelle des diplômés en Diététique de Langue Française (UPDLF)	<10	A,B
Dieticians-NL		Vlaamse Beroepsvereniging van Voedingsdeskundigen en Diëtisten (VBVD)		
Ergotherapists NL		Vlaams Ergotherapeutenverbond		
Ergotherapists FR		Association des ergothérapeutes		
Orthoptics	50	Belgian association for orthoptics (BOV-ABO)		
Pharmacists		Belgian pharmaceutical association (APB)		
Physiotherapy	28008	Belgian association for physical therapists (AXXON)		
Podologues	295	Belgian association for podologists (FBP-BVP)		
Speech therapists-FR		Union Professionnelle des Logopèdes Francophones (UPLF)		
Speech therapists-FR		Association Scientifique et Ethique des Logopèdes Francophones (ASELF)		
Speech therapists-NL		Vlaamse Vereniging voor Logopedisten (VVL)		

CAT 4: AUTHORITIES Specialty
Federal Public Services
National Institute for Health and Disability Insurance including the National Council for Quality Promotion)
Belgian Health Care Knowledge Centre (KCE)
Scientific Institute for Public health
Christian Sickness Funds (Christelijke Mutualiteit / Mutualité Chrétienne)
Neutral Sickness Funds
Socialist Sickness Funds
Liberal Sickness Funds
Independent Sickness Funds
SNCB/NMBS (employees of train society) Sickness Funds
Flemish Government

CAT 5: OTHERS	Description	N° CPG/year	Level of evidence
	Colleges (Hogescholen)		
BAPCOC	Belgian Antibiotic Policy Coordination Committee	0	GRADE
BCFI	Belgian Centre for Farmacotherapeutic Information (Compendia, Transparantiefiches)	3 in 10 years	
BICEP	Collaborating center van het Joanna Briggs Institute that promotes and disseminates the evidence for nursing practice		
BICS	Belgian Infection Control Society		
Caritas Group			
CEBAM	Belgian Centre for Evidence-Based Medicine: CPG validation, methodological support CPG development	0	
CIPIQ-S (Collaboration Internationale des Praticiens et Intervenants en Qualité – Santé)	International Collaboration of practitioners and health workers (French speaking)	1-2	Meta-analysis - level 3
EBMPracticeNET	Online database of Belgian and international guidelines, validated by CEBAM	Total: 940 international CPG + 40 Belgian CPG	
EVV	Expertisecentrum Val- en Fractuurpreventie Vlaanderen		
FAGG-AFMPS	Federal agency for medicines and health products *(Finances BCFI)*	0	
FARMAKA	Independent Centre for drug information	2-3 Transparantiefiches	
ITG	Institute for Tropical Medicine		

CAT 5: OTHERS	Description	N° CPG/year	Level of evidence
K&G/ONE	Birth and Childhood Organization		
KUL (ACHG)	Catholic University of Leuven (NL)	0	
Portal4Care	Platform for dissemination of scientific evidence for nursing practice		
PRISCI	Interdisciplinary Research Centre in nursing science and practice		
UCL	Catholic University of Leuven (FR)		
ULG	University of Liège	0	
VAD	Vereniging voor Alcohol – en andere drugproblemen		
Vlaamse Werkgroep Richtlijn Ontwikkelaars			
ULB	Free University of Brussels (FR)		
VUB	Free University of Brussels (NL)		
VWVJ	Vlaamse Wetenschappelijke Vereniging voor Jeugdgezondheids		

Appendix 2.2. Preparation to interviews: preliminary information

Before each interview, a mail questionnaire was sent to the interviewees collecting information to prepare for the interview.

KCE Project - Preliminary info

"Evaluation of development and dissemination strategies for clinical practice guidelines (CPG) in Belgium"

We would like to thank you for representing your organization in this KCE project. The project evaluates development and dissemination strategies for clinical practice guidelines (CPG) in Belgium. Before interviewing you, we kindly ask you to answer some general questions. The answers will enable us to prepare the interview and to proceed more quickly at the time of the interview. The completed questionnaire can be send to Sarah.Steckel@ua.ac.be or "Universiteit Antwerpen, t.a.v. Sarah Steckel, CDE R3.34, Universiteitsplein 1, 2610 Wilrijk", preferably two days before the interview. During the interview difficulties and facilitating factors for CPG development and dissemination will be discussed.

WHO ARE YOU ?

- Name and Title
  ……
- Function in your organization
  ……
- Experience with guidelines
  ……

GENERAL QUESTIONS

1. **The organization you represent is ……**
   - Target population
     ……..
   - Number of members
     ……..
   - Activities
     ……..

2. **Does your organization develop CPGs?**
   - o No
   - o Yes

3. **Does your organization disseminate CPGs?**
   - o No
   - o Yes

4. **Does your organization pay other organizations for CPG development/dissemination?**
   - o No
   - o Yes

5. **Who is your target population? (="users" of the CPG)**
   - o **General practitioners**
   - o **Specialist medical practitioners**
   - o **Dentists**
   - o **Nurses**
   - o **Midwives**
   - o **Pharmacists**
   - o **Paramedics: ……**
   - o **Other: ……**

6. **Which Belgian stakeholders in CPG development and dissemination do you cooperate with?**

Organisation?	**Purpose ?**

QUESTIONS **ONLY** FOR CPG **DEVELOPERS**
***if your organization does not develop CPG, please proceed to question 15.**

7. **What method for CPG development do you use?**
   - o **Evidence based practice guideline development**
   - o **Expert consensus based practice guideline development**

8. **Do you…**
   a) **develop original CPG's?**
      - o **No**
      - o **Yes**

   b) **adapt CPG from the original CPG to be used locally?**
      - o **No**
      - o **Yes**

9. **How many CPG do you develop annually? ……..since …….**

10. **Have you developed CPG which are…**
    a) **Monodisciplinary**
       - o **No**
       - o **Yes**

    b) **Multidisciplinary**
       - o **No**
       - o **Yes**

11. **Which of the following criteria do you consider in CPG development?**
    a) **Training of the authors**
       - o **No**
       - o **Yes : process ? ……**

    b) **Grading of the level of evidence**
       - o **No**
       - o **Yes : which tool ? ……..**

    c) **A strict strategy/ methodology for CPG development**
       - o **No**
       - o **Yes: which one ? ……**

d) Validation of the CPG
- o **No**
- o **Yes: By whom ? ……..**

e) Involvement of experts in clinical practice
- o **No**
- o **Yes**

12. Who pays for the CPG development? ……

13. What is your annual budget for CPG development?.....

14. What are the main themes/subjects of the CPG?
Please give the names of the 5 last ones with publication date (or write down the link where these subjects can be found)

Year	Title

QUESTIONS **ONLY** FOR CPG **DISSEMINATORS**
***if your organization does not disseminate CPG, please go to question 23**

15. How many CPG do you disseminate annually? …….. since …….

16. Have you disseminated CPG which are…

Monodisciplinary	**No**	**O**
	Yes	**O**
Multidisciplinary	**No**	**O**
	Yes	**O**

17. Which dissemination interventions do you use?

- o Distribution of educational materials
- o Educational meetings
- o Local consensus processes
- o Educational outreach visits
- o Local opinion leaders
- o Patient-mediated interventions
- o Audit and feedback
- o Reminders
- o Marketing
- o Mass media
- o Other: ……..

18. Which of the following criteria do you consider in CPG dissemination?

a) Guidelines have to report on the level of evidence.
- o **No**
- o **Yes**

b) Guidelines have to be developed with a strict strategy/ methodology.
- o **No**
- o **Yes**

c) **Guidelines have to be validated.**
   - o **No**
   - o **Yes**

d) **Experts in clinical practice have to be involved in the development.**
   - o **No**
   - o **Yes**

e) **Other criteria: ……**

19. **Do you make adaptations to the Belgian context ? ……..**

20. **Who pays for the CPG dissemination? ……..**

21. **What is your annual budget for CPG dissemination?.....**

22. **What are the main themes/subjects of the CPG?**
    Please give the names of the 5 last ones with publication date (or write down the link where these subjects can be found)

Year	Title

QUESTIONS **ONLY** FOR ORGANIZATIONS WHICH **PAY FOR CPG** DEVELOPMENT/DISSEMINATION BY OTHER ORGANIZATIONS

23. What type of CPG does the organization pay for?

- **O Evidence based practice guidelines**
- **O Expert consensus based practice guidelines**

24. Has the organization paid for CPG which are…

Monodisciplinary	**No**	**O**
	Yes	**O**
Multidisciplinary	**No**	**O**
	Yes	**O**

25. Does the organization pay for

developing original CPG's?	**no**	**O**
	yes	**O**
adapting CPG from the original CPG to be used locally?	**no**	**O**
	yes	**O**

26. Which of the following criteria do you consider in supporting CPG development or dissemination financially?

a) Guidelines have to report on the level of evidence.
- o **No**
- o **Yes**

b) Guidelines have to be developed with a strict strategy/ methodology.
- o **No**
- o **Yes**

c) Guidelines have to be validated.
- o **No**
- o **Yes**

d) Experts in clinical practice have to be involved in the development.
- o **No**
- o **Yes**

e) Other criteria (e.g. specific topics, populations): ……

27. **What are the supervision/follow-up/quality control procedures set up in this context of financing ?**

    ……

    ……

28. **What is the annual budget your organization pays for CPG development and dissemination?**

    ……

Thank you for your time!

Please send the completed questionnaire to Sarah.Steckel@ua.ac.be
"Universiteit Antwerpen, t.a.v. Sarah Steckel, CDE R3.34, Universiteitsplein 1, 2610 Wilrijk", two days before the interview.
University of Antwerp & University of Liège for KCE

Appendix 2.3. Interview guide

This interview guide has been developed using the EPOC taxonomy of professional interventions and the findings from the literature review (see the synthesis). It was translated in French and Dutch by the researchers CD and SS.

Appendix 2.3.1. Before interview

- Preliminary information
- Information sheet, informed consent, declaration of confidentiality

Appendix 2.3.2. Introduction

Hello, my name is Christiane Duchesnes / Sarah Steckel and I work for the University of Liège / Antwerp. First, I would like to thank you for participating in this interview.

The Universities of Antwerp and Liège, by order of KCE, are investigating the Belgian CPG stakeholders' experience of CPG dissemination and implementation in Belgium. The interviews are part of a larger research project. The aim of the project is to evaluate CPG dissemination and implementation strategies in Belgium. The results of the interviews will be used to create building blocks for scenarios to improve CPG dissemination ad implementation.

We are interested in your experience, not in theoretical best practices and theoretic frameworks of how it should be done. So what we are looking for is what you think about CPG dissemination and implementation strategies, which ones you use (and which ones not), what difficulties you experience and your suggestions for improvement.

The interview will take approximately one hour. If you agree, we will not take a break but continue the interview.

The interview will be recorded, so we can optimize the analysis afterwards.

We guarantee that your privacy will be respected. Your name will not appear in the analysis or in the final report. No one will be able to recognize that you have participated in this interview. You always have the right to stop the interview.

May I ask you to sign the Informed Consent and the declaration of confidentiality? In the Information Sheet is stated all the information about the project.

I also would like to state that there are no right or wrong answers. Anything you say is important. Do you have questions or remarks?

If you agree, shall we start with the interview then?

Appendix 2.3.3. Questions

Mind map

We will start this interview by showing you a mind map of the Belgian CPG landscape.

- Where on this map do you locate your organisation?
- Do you agree with the map? What would you change? (place, size of the circles) What would you add?
- Can you draw arrows to indicate collaboration or financing between organisations?

Development process

Methodology

- Which methods do you use? (eg AGREE, ADAPT,…)
- How do you feel about the method?
- What are the good aspects of this method? What is strong about it?
- What is this method based upon? What is the background of this method?
- What are the difficulties of this method?

Authors

- Where do you find the authors?
- What are facilitating factors for finding authors?
- What kind of difficulties do you experience with the authors of CPG?
  For instance, difficulties with the authors…
  - at the origin/begin of the process?
  - During the process?
  - With validation?

Collaboration with other professionals

- What are facilitating factors for a better collaboration with other CPG professionals like payers, developers and disseminators?
- Could you give some examples?
- What kind of difficulties do you experience in the collaboration with other professionals?
- What are the reasons for that in your opinion?

Validation

- How do you validate CPG/let CPG be validated?
- Who validates CPG?
- What is the value of this validation, what does it mean?
- Facilitating factors?
- Could you describe some difficulties in the validation process?
- Examples?
- What are the reasons for this, in your opinion?

Rounding up

We now discussed the development process.

- Do you have some other topics you wish to discuss?
- Would you like to add something?
- What is your most important message?

Dissemination

Dissemination strategies

I saw in the preliminary info that you use for example strategy X and Y.

- Would you describe your dissemination as rather active or passive? Could you illustrate this with some examples?
- What is the reason to choose for these strategies?
- In your opinion, which strategies worked well?
  - What are the reasons in your opinion?
- Which strategies worked not so well?
  - What is it due to in your opinion?

Target population (= CPG users)

- Could you describe your target group?
- How many people do you reach?
- How can you measure that?
  - Do you work with process indicators?
- How do you choose the target population?
- What kinds of factors facilitate the collaboration with the users?
- Examples?
- What kind of difficulties do you see with…
  - The collaboration with the users?
  - Reaching the users?
  - What are the reasons for that in your opinion?

Adherence

CPG are not always well accepted / followed by the professionals.

- How do you experience the following/acceptance of CPG by the professionals?
- In your opinion, what are the reasons?
- Do you have any experience with CPG that were followed well?
  - Do you know the reasons why they were followed well?
- What was different with the CPG that were not well followed?
- Have you got any suggestion to improve adherence?
  - How could the behaviour be changed?

Rounding up

We now discussed the dissemination process.

- Do you have some other topics you wish to discuss?
- Would you like to add something?
- What is your most important message?

Budget

- How is your organisation being financed?
- How is the budget calculated for development of CPG?
- Do you pay particular attention to some financial aspects?
- How would you describe the collaboration with…
  - *if payer*: …with developer/disseminator?
  - If developer/disseminator: …with the payer?
- Which difficulties are there with…
  - The budget size?
  - Payments?

Vision of the future CPG landscape

- How do you see dissemination in the future? What would have to be changed/adapted for better CPG dissemination? Can you illustrate this?
- How do you think organizational structures in the future of CPG landscape will evolve? (mind map) What will change, or what should be changed to improve CPG dissemination in Belgium?
- Who should collaborate more? Who does not collaborate but should?
- How do the universities fit in?
- How do the scientific organisations fit in?
- How would you rate the professionalism of CPG dissemination in the Belgian landscape?
- Would you say CPG dissemination in Belgium is rather coherent of fragmented? Can you illustrate this? What are the reasons for that in your opinion?
- Where do you see your organisation on this map in the future?

Ending questions

- Do you have any remarks, anything you would wish to add?
- What in this interview do you wish to state specifically?
- What is, general, the most important message that you have?

Appendix 2.3.4. End

I have heard many interesting things about how you experience CPG dissemination and implementation. Your contribution to his research will be of great value. I would like to thank you for your time and for your efforts!

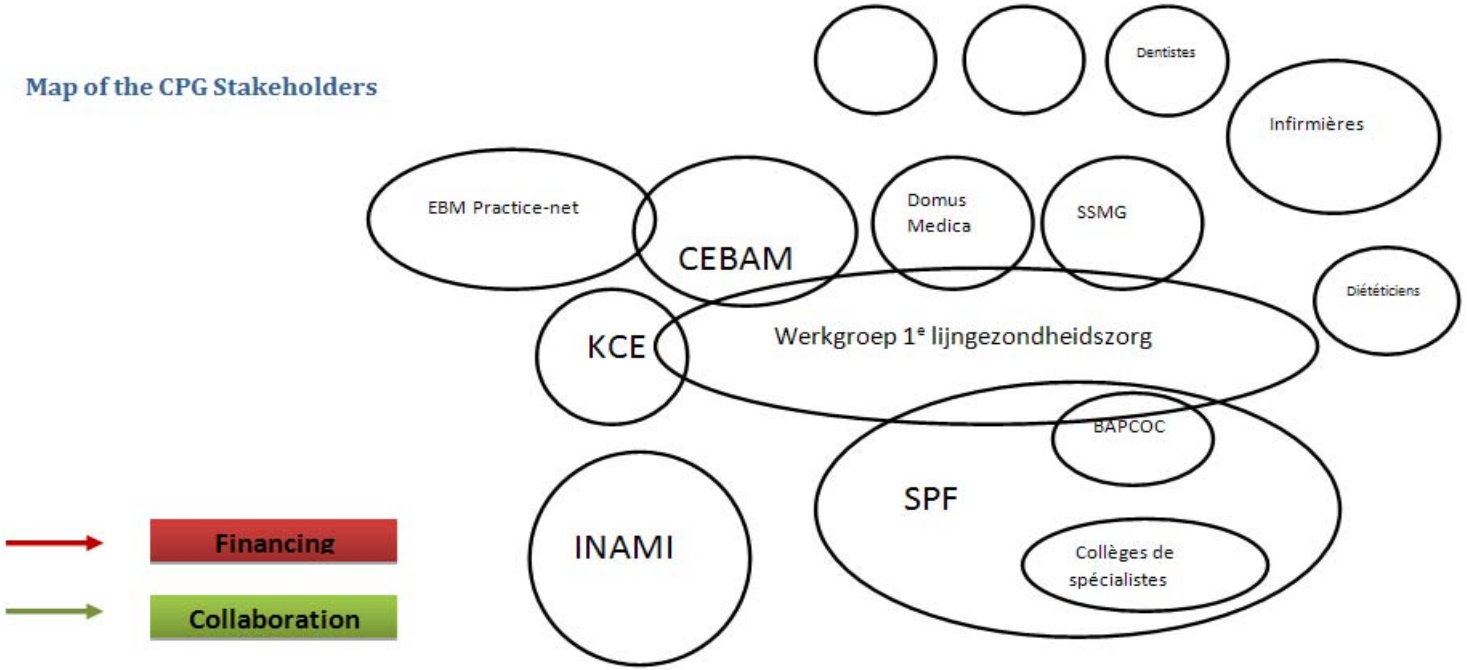
Appendix 2.4. Maps of the Belgian CPG landscape

The following maps were drawn to support the interviews. The reader can find the methods and sequence of data collection in chapter 2. They do not reflect exactly the reality but its perception by the interviewed stakeholders.

Appendix 2.4.1. First draft designed by the research team

The research team drew a first draft of the Belgian CPG landscape, based on their first inventory of stakeholders involved in CPG development, dissemination and financing. This map was presented during the interviews to hear about the interviewee's perception of the Belgian landscape and the position of their organization. The objective was to propose an overview that could be further filled according to their knowledge of the landscape.

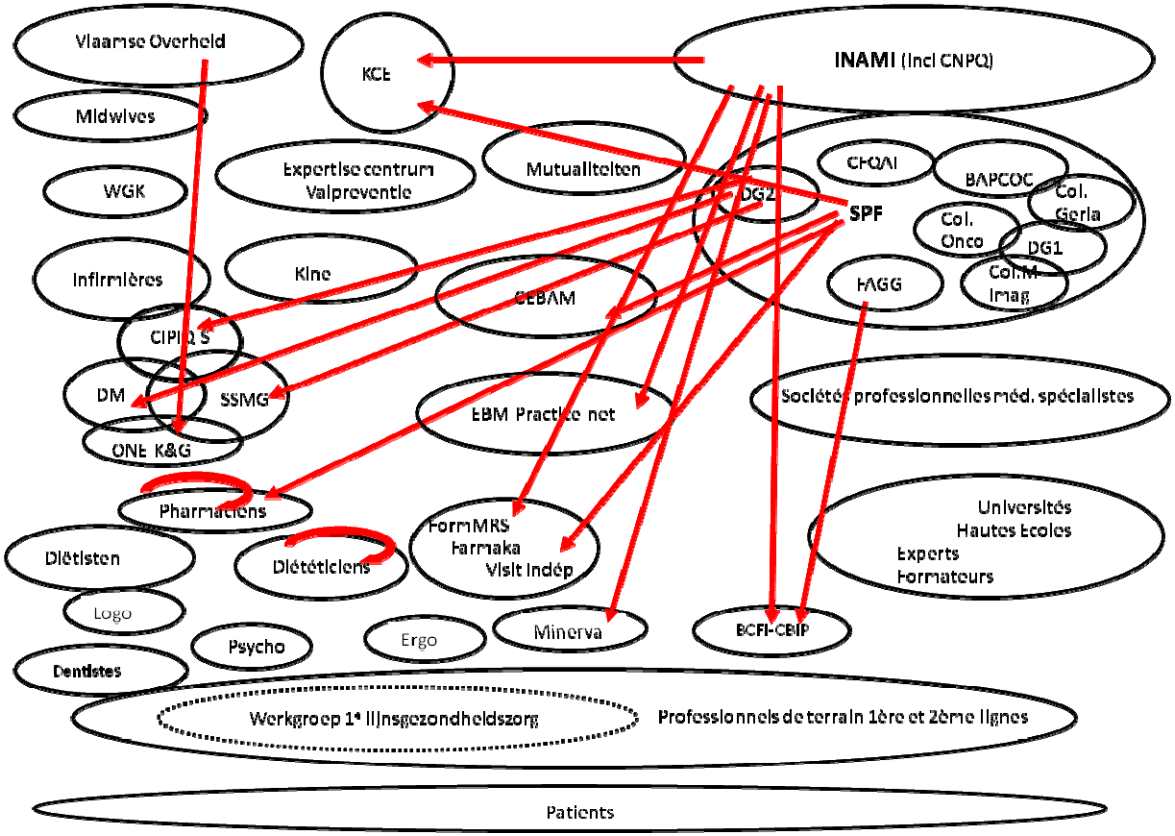
These results of the interviewees' comments were integrated in the further drafts of the maps (see next pages).



Appendix 2.4.2. Maps of the Belgian CPG landscape according to interviewees

This map represents the perception of the stakeholders in relation to the Belgian institutions that finance CPG development or dissemination. Since only a small selection of all possible stakeholders in Belgium has been interviewed, this view is not exhaustive. The red arrows indicate the fluxes of money as they were reported by the interviewees. The National Institute for Health and Disability Insurance, the Federal Public Services and the Flemish Government are reported to be the main funders. Many associations are self-financing.

Figure 3 – Perception of the stakeholders: Belgian institutions that finance CPG development or dissemination

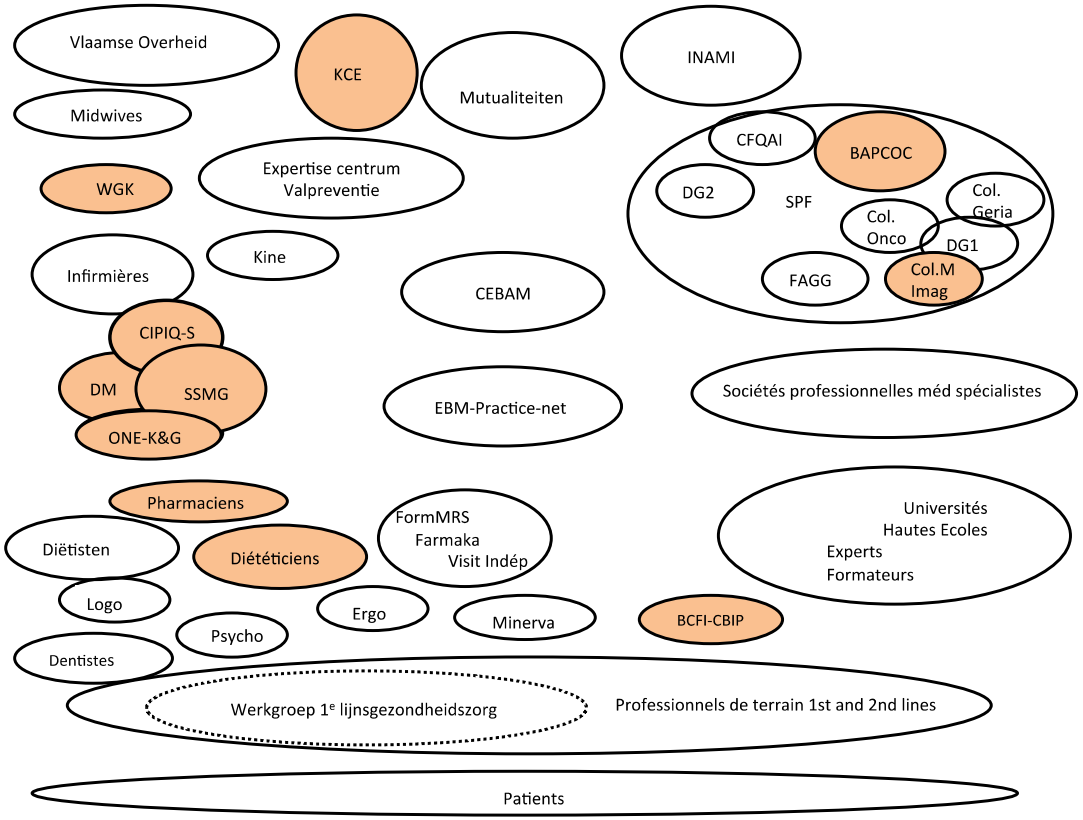


The next overview identifies the Belgian organizations who stated that they develop clinical practice guidelines.

Associations of health professionals are the general practitioners, the pharmacists, the nurses, the midwives, the dieticians, some specialists.

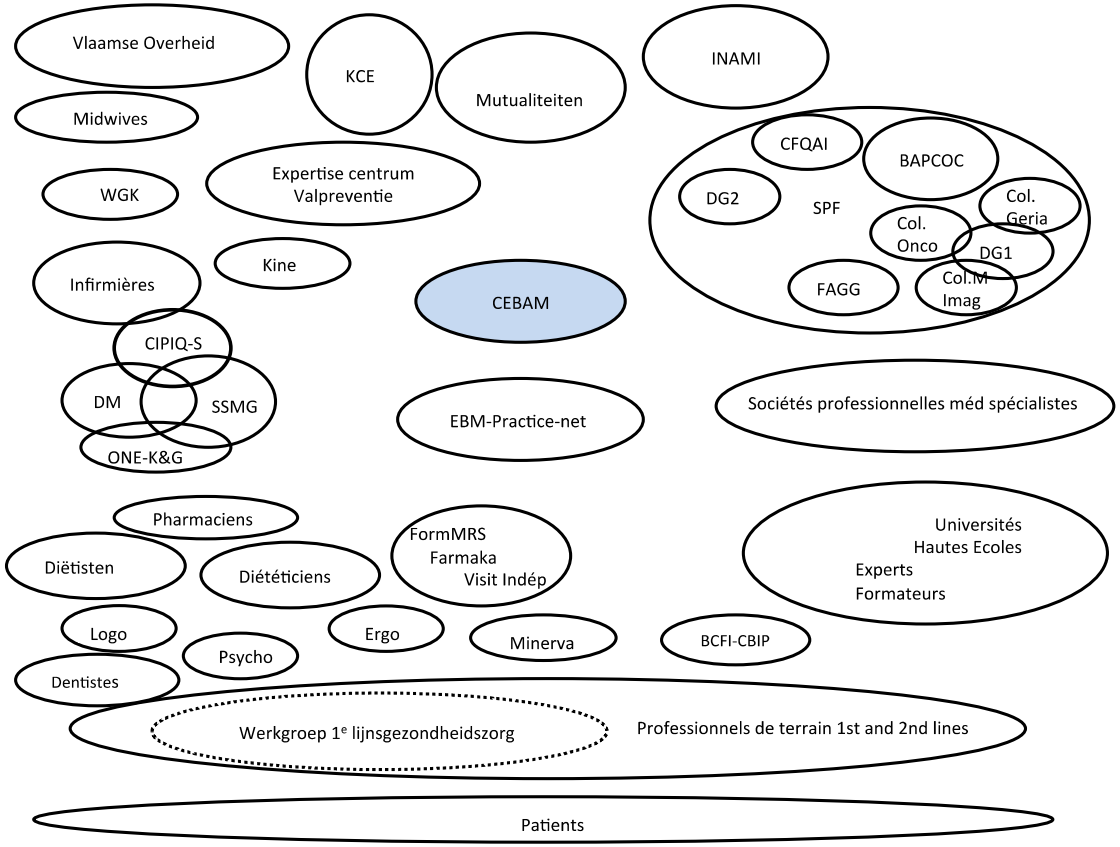
Other associations include groups within the Federal Public Services, the Belgian Health Care Knowledge Centre and the Belgian Centre of Information on medications.

Figure 4 – Perception of the stakeholders: Belgian institutions that develop clinical practice guidelines



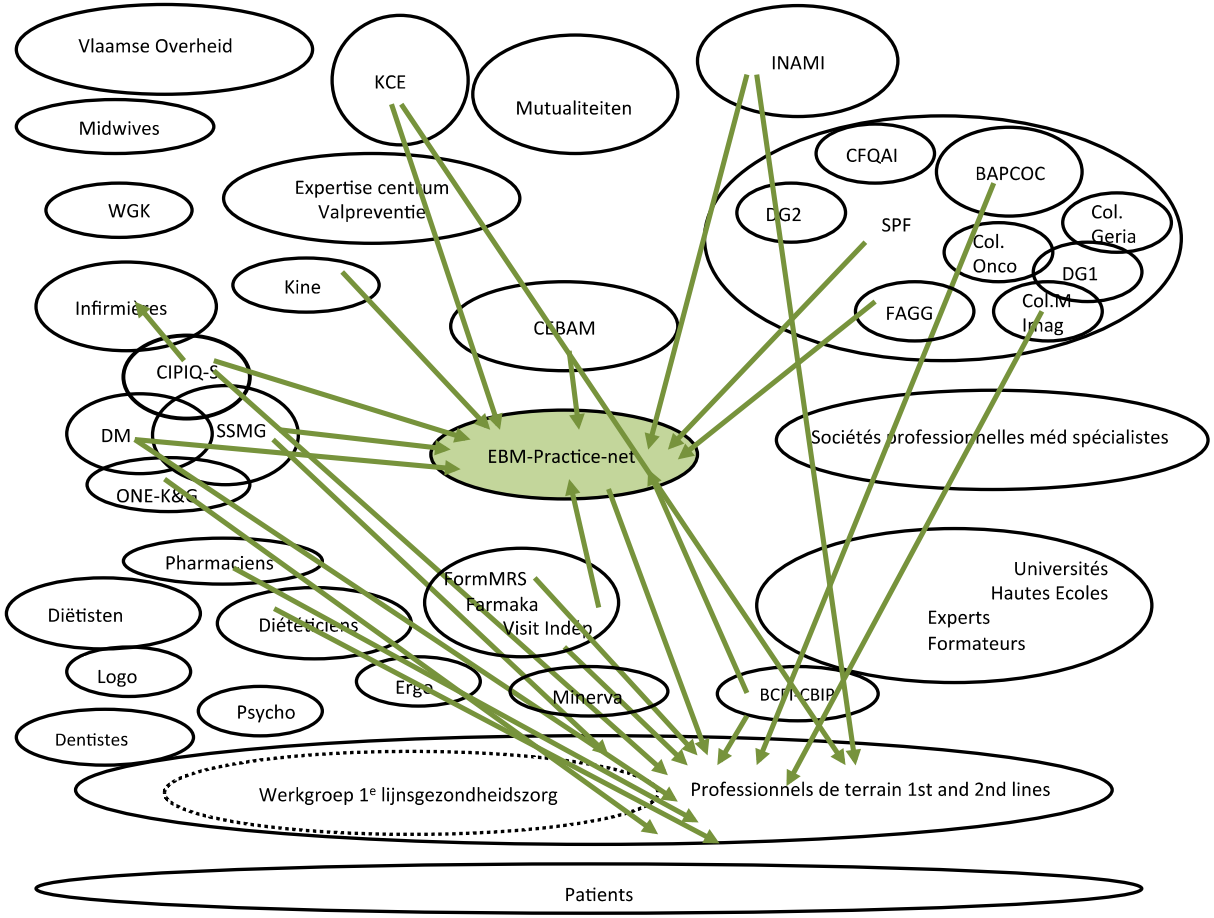
The map below shows that one organization only validates guidelines in Belgium i.e. the Belgian Centre for Evidence-Based Medicine.

Figure 5 – Perception of the stakeholders: Belgian institution that validates clinical practice guidelines



The last map shows the target populations mentioned by the organizations. This illustrates that some groups of professionals receive CPG either directly (from producers/disseminators) or indirectly (through the EBMPracticeNet Platform). It also shows that these professionals receive information from many organisations hence diluting information.

Figure 6 – Perception of the stakeholders: dissemination of guidelines by Belgian institutions



Appendix 2.5. SWOT analysis for CPG dissemination and implementation in Belgium

Appendix 2.5.1. SWOT analysis for development

This SWOT analysis shows the Strengths, Weaknesses, Opportunities and Threats of the current dissemination system.

Strengths	Weaknesses
• Professionals are involved in the choice of the topic of CPGs • Professionals are involved in testing CPG for feasibility • CPG are adapted to the local context • Simple and practical messages are prepared	• Data are old when CPG is published • Sometimes authors are inexperienced
Opportunities	**Threats**
• Collaboration with various institutions, increasing thus the EBM network • Collaboration with international institutions for development • Opportunities to build up expertise of authors	• If no strict method for development is used, there is a risk of bias and a risk for decreased EBM-working

Appendix 2.5.2. SWOT analysis for dissemination

This SWOT analysis is related to factors influencing future dissemination of CPG.

Strengths	Weaknesses
• Information is accessible • Clear information / language / scientific level • Attractive documents • Combination of strategies is possible • Standardized documents	• Reaching the target group of professionals can be difficult • Lack of dissemination plan • Image of developer and/or disseminator • Image of guideline • The more strategies, the more time-consuming & higher costs
Opportunities	**Threats**
• Incentives for professionals to acquire new knowledge	• Lack of knowledge of the Belgian landscape of CPG • Lack of knowledge of EBM-approach • Excessive quantity of information delivered to the professionals • Lack of time for professionals

Appendix 2.5.3. SWOT analysis for adherence to CPG

This SWOT analysis is related to factors influencing future adherence to CPG.

Strengths	Weaknesses
• Adaptation of the information to the user can influence professionals' adherence to CPG • Patient's involvement in CPG 'culture' can influence professionals' adherence to CPG • Once used to CPG, adherence can be long-lasting	• Professionals' self criticism • Professionals' perception of CPG and EBM-approach • Professionals' perception of CPG developer and/or disseminator
Opportunities	**Threats**
• Incentives for professionals to change their practice • Adherence can lead to proper evaluation and improvement of CPG	• Feasibility of CPG at the level of individual practice (cost, time, organisation) • Feasibility of CPG at the institutional level (cost, equipment, team organisation) • Feasibility of CPG at the health care and social security system level (reimbursement of patients, incentives) • Professional does not feel the need for CPG

Appendix 2.5.4. SWOT analysis of specific strategies for dissemination

The Belgian Federal Health Care Knowledge Centre (KCE) aims to develop scenarios to improve the dissemination of clinical practice guidelines (CPG) in Belgium. A qualitative interview design was used to describe stakeholders' experiences on CPG dissemination. The results of the interviews were, consequently, structured in SWOT analysis models (Strengths, Weaknesses, Opportunities and Threats) for interventions of the EPOC taxonomy on professional interventions (Effective Practice and Organization of Care Group of the Cochrane Collaboration (http://epoc.cochrane.org/). The SWOT analysis is displayed in the following paragraphs.

Distribution of educational materials

Distribution of educational materials is "*the distribution of published or printed recommendations for clinical care, including clinical practice guidelines, audio-visual materials and electronic publications. The materials may have been delivered personally or through mass mailings"* (EPOC). One illustration is the publication of guidelines in "Huisarts Nu", the journal of the Flemish association of general practitioners. Other illustrations are the availability of guidelines on various topics on the KCE website, and the dissemination of CPG on the website of EBMPracticeNET.

Paper

Strengths	Weaknesses
• User friendliness: target group prefers 'tangible' material instead of electronic information that can be read any place, any time (no use of electronic device, no specific skills required), no complexity, simple process • Essential information for the target population: short and simple messages rather than large books • Adaptation of language to the target professionals • Clarity and "readability" of the information: various levels of presentation (synopsis, simplified material, whole document) • Fragmented and progressively distributed information (timely) • Development of practical and easy-to-use tools: tables, graphics, decision-making algorithms, documents for the patient	• Excessive documents are not liked • Difficulty to reach target population : incomplete list of distribution, not well targeted, only for members of associations • Variety and heterogeneity of target population (especially for primary care) • "Old fashioned" material • Large costs for material and expedition • No quick adaptation or actualisation possible without full reprint and new distribution • Keeping publication up to date • Currently no award with accreditation
Opportunities	**Threats**
• Certainty to reach target group	• Target group does not read information, too much information and they get tired of reading • Teams: documentation reaches only head of the department, not target professionals • Environmental burden • Financial cost

Electronic sources

Strengths	Weaknesses
• Fast delivery • Simple process, no complexity: professional can read in own time and place, no specific skills required • Attractive • Website: links to more information (various levels of information concerning the same topic, various documents, simplified material for patients available for downloading) • To reach a large target group at minimal costs • No cost for the user • Possibility of quick adaptation/actualisation	• Difficulty to reach the target group: missing email addresses, no data set, old email addresses that are no longer used • Excessive information • Need of electronic device (pc, notebook, smartphone, tablet) which can result in difficulties in specific conditions (home visits), breakdown of computing system • Website: sometimes obligation to create special accounts • Keeping websites up-to-date • Requirement of training sessions
Opportunities	**Threats**
• Availability from the Electronic Medical Record (Med), Personal Medication Record (pharmacists). • Check number of users on website: quantifiable • More regular visits of user to website because of easy access • Reaching younger generations who are used to the electronic dissemination • Use of social media (LinkedIn, Facebook, Twitter…) • Domestic use of many kinds of electronic devices, possible applications for smartphones, tablets • Possibility to find information easily on the internet	• User chooses easier what to read and what not • Depending on work setting: no electronic record for nurses, dieticians • No control of who was really reached (wrong, old email addresses) • Risk of missing older generations who are less used to the electronic dissemination • Teams: documentation reaches only head of the service, not target professionals • Non-uniformity of gathered information (e.g. office-files, XML, PDF) means extra work for downloading specific software • Believe in “omnipotence” of computers • No centralisation of information which is time-consuming to search

Educational meetings

Educational meetings are described as "*health care providers who have participated in conferences, lectures, workshops or traineeships" (EPOC).* AN illustration is the CME (Continuous Medical Education) where the general practitioners invite experts to present the last developments around a specific theme.

Presence

Strengths	Weaknesses
• To reach a large target group face to face • Quality provided by ready-to-use common material for training or presentations (Power Points, activities, questions prepared by the CPG developer)	• Takes a lot of time to go and to attend • Professionalism, knowledge, skills of trainee, will and time to participate • Slow process • Cost of organisation and attendance • Competition of topics for accreditation system meetings: often excessive offers with variable contents to LOK/GLEM's by different suppliers
Opportunities	**Threats**
• Use of educational material within educational meetings (e.g. Power Points, leaflets, material for demonstration) • Presentation during a conference, meeting of another purpose: capsule for guidelines; personal producer's networks • Need of topics for accreditation system meetings • Collaboration within a community of education (e.g. CME: Continuous Medical Education); collaboration between producers and professional trainers (universities, high schools); integration of Evidence Based Medicine into the common educational cursus • Response to professionals' demand	• Target group may not attend the conference • Small attendance • High cost to add educational material • Worker's absence for training must be supported by the institution and by other colleagues

E-learning = Distance

Strengths	Weaknesses
• Individual process • Easy access • Efficient • Possibility to evaluate the learner and give feedback • Flexibility of time of access for the learner as well as speed of learning	• Less control of who uses the tool • No personal teaching, no face to face • Less possibility of motivating the learner • Cost of development
Opportunities	**Threats**
• Reach large target group • Attractive for young people	• Requirement of specific skills • Assumed complexity of tool may deter users

Local consensus processes

Local consensus processes are described as "*the inclusion of participating providers in discussion to ensure that they agreed that the chosen clinical problem was important and the approach to managing the problem was appropriate" (EPOC).* College of Geriatrics and CIPIQ-S (Collaboration Internationale des Practiciens et Intervenants en Qualité dans le domaine de la Santé) made a survey to analyze the professionals' needs and tested the CPG for feasibility in a second phase. Another illustration is the consensus conferences of the Committtee fo rthe evaluation of medical practice in relation to medications (from the NIHDI).

Strengths	Weaknesses
• Users opinion is involved • Higher adherence because of social processes that help • Concrete applicability since users establish a specific problem • Respond to professional's needs	• Time consuming • Requires good organisation
Opportunities	**Threats**
• Systematic approach to identify needs and evaluate whether the management of the problem was appropriate • Implication of users	• Users do not wish to participate

Educational outreach visits

Educational outreach visits consist of *"the use of a trained person who met with providers in their practice settings to give information with the intent of changing the provider's practice. The information given may have included feedback on the performance of the provider(s)".* (EPOC) One illustration is "Farmaka", the project of academic detailing sponsored by the federal Agency for Medicines and Health Products.

Strengths	Weaknesses
• Face-to-face (unlike e.g. paper documents or some types of E-learning) • One on one approach: 1 visitor, 1 physician • Effective	• Takes a lot of time from physician • Possible lack of interest from physician • Too much information at the same time that may not be captured • Limited to pharmaceutical field
Opportunities	**Threats**
• Systematic approach (visitors can systematically visit physicians per region) • Extend field to diagnosis, prevention, behavioral therapy (now limited to pharmaceutical topics) • Advertising tools can be discussed (e.g. CEBAM Digital Library)	• Physician decides which subject he allows to discuss • Physician decides time frame which is often too short • Superficial, insufficient information (visitor gets often paid per subject)

Local opinion leaders

This category can be described as "*the use of providers nominated by their colleagues as 'educationally influential'. The investigators must have explicitly stated that their colleagues identified the opinion leaders."* (EPOC) One illustration is the "Grandes Journées de la SSMG" where the Scientific Society of General Practitioners invites specialists to present the last developments around a specific theme (e.g. dermatology).

Strengths	Weaknesses
• High credibility since local opinion leaders are nominated by their own colleagues • High adherence of professionals • Multiplication of informed people, cascade effect	• Impact on parts of team, not whole team (not everyone may agree on the opinion leader)
Opportunities	Threats
• Education of key opinion leaders to insure correctness of knowledge	• Loss of correctness of knowledge through the process (opinion leader has to disseminate the information correctly) • Loss of credibility

Patient mediated interventions

Patient mediated interventions consist of *"new clinical information (not previously available) collected directly from patients and given to the provider, e.g. depression scores from an instrument" (EPOC).*

The interviewees did not report on this type of strategy.

Audit and feedback

Audit and feedback are described as "*any summary of clinical performance of healthcare over a specified period. The summary may also have included recommendations for clinical action. The information may have been obtained from medical records, computerised databases or observations from patients" (EPOC).*

One illustration in Belgium is the feedbacks on prescription drawn up by RIZIV/INAMI.

Strengths	Weaknesses
• Individual approach: feedback towards an enduser or service • Quantifiable • Answer to "why and how questions"	• Negative perception because experienced as control
Opportunities	**Threats**
• Increased confidence physician if good feedback • Culture of quality of care	• Target group resists, does not cooperate • Decreased confidence physician if bad feedback • Compulsory aspect • Adverse effect: sense of control may increase physician's aversion to CPG • No reward (accreditation, financial)

Reminders

Reminders contain *"patient- or encounter-specific information, provided verbally, on paper or on a computer screen, which is designed or intended to prompt a health professional to recall information. This would usually be encountered through their general education, in the medical records or through interactions with peers, and so remind them to perform or avoid some action to aid individual patient care. Computer-aided decision support and drugs dosage are included."* (EPOC) Examples are the EBMeDS (Electronic Decision Support) System (provides diagnose specific guideline links, automatic reminders, alerts for clinical issues concerning screening, diagnosis, treatment and practice) and the CEBAM Evidence Linker, that provides diagnose specific guideline links.

Strengths	Weaknesses
• Associated-material for patients in Electronic Medical Record (EMR) or another file: simple explanations, drawings, specific technical explanations • Information about the new guideline available in the provider's most commonly used tool of information (letter, EMR, periodical) • Short and clear notes • The implementation of the Decision Support System for the first line of care is linked to the E-Health criteria for the homologation of EMD packages.	• Negative perception because experienced as control
Opportunities	**Threats**
• Repetition leads to higher adherence of professionals	• Adverse effect: same as for audit and feedback

Marketing

Marketing is described as the *"use of personal interviewing, group discussion ('focus groups'), or a survey of targeted providers to identify difficulties to change and subsequent design of an intervention that addresses identified difficulties"* (EPOC).

Interviewees did not report on this type of strategy.

Mass media

Mass media contain a *"varied use of communication that reached great numbers of people including television, radio, newspapers, posters, leaflets and booklets, alone or in conjunction with other interventions; targeted at the population level"* (EPOC). One illustration is the campaigns promoted by the BAPCOC (Belgian Antibiotic Policy Coordination Committee) for the use of antibiotics.

Strengths	Weaknesses
• Can reach end users on a wide scale • Repetition possible (e.g. radio/tv spots) • Information available for the professionals and the patients in the same tool	• Messages of general interest, not specific (drug abuse, antibiotics, organ donation,...) • High cost
Opportunities	**Threats**
• Social media • Higher adherence of the patient • (Integration in) multi facetted intervention (feedback for instance simultaneously to media campaign and/or dissemination of BAPCOC antibiotics guide)	• Target group: not clear who gets reached

Appendix 2.6. Information about the institutions of the interviewees

This table gives detailed information on the interviewed organizations. The group of interviewees represents a small selection of the large landscape of CPG stakeholders in Belgium. The information in this table was gathered from one or two persons representing the organization.

General information

Institution	Number of members	Collaboration	Target population	Source of financing
KCE	About 50	• Development: Public Health service • Validation: CEBAM • Dissemination: Public Health (via Colleges); INAMI (via CNPQ)	• General practitioners • Specialists • Dentists • Nurses • Midwives • Physiotherapists	Belgian state
CIPIQ-S	About 100	• KCE • Public Health Service	• General practitioners • Nurses	Public Health Service DG2
SSMG	3400	• Development: Domus medica • Validation: CEBAM • Dissemination: EBMPracticeNET	• General practitioners	Public Health Service DG2
APB	4200	• Dissemination: SSPF/IPSA (Continuous education for pharmacists)	• Pharmacists	APB; Public Health Service (Fonds federal de lutte contre les Assuétudes)
Farmaka			• General practitioners • Nurses in nursing homes	
College of Medical Imaging	8	• Consilium radiologicum belgicum • Société Royale belge de Radiologie	• Specialists in medical imaging	College of Medical Imaging; Public Health Service DG1
BACTS	200			
UPDLF	450		• Dieticians	UPDLF
SRBDV/KBVDV	?		• Dermatologists	
AIIB	239	• Dissemination: CIPIQ-S and SISD	• Liberally practicing	

			nurses	
Domus Medica	2000	• SSMG • NHG • Nurses	• General Practitioners + students	FOD/SPF RIZIV/INAMI
VVP Psychiatrists	600		• Psychiatrists	
College of Oncology	?	• KCE • Domus Medica • NHG	• Oncologists • Oncology nurses • Specialists involved in oncology • Patients	Public Health Service
College of Geriatrics	8		• Geriatricians • Multidisciplinary team of geriatric wards	Public Health Service
VLOV	1000	• http://www.eetexpert.be • KCE	• Midwives	
WGK	5000	• CIPIQ-S • Academisch Centrum Huisartsgeneeskune KULeuven	• Nurses • Patients • Informal caregivers	WGK
AXXON	6000	• WCPT Europe • Domus Medica • KNGF	• Physiotherapists	AXXON
VVIZV	Number?		• Intensive care nurses	VVIZV
BAPCOC	Several working committees	• Domus Medica • Centrum voor Huisartsengeneeskunde Antwerpen http://www.huisartsgeneeskunde.be • NHG • GIN	• Health care workers • Population	Belgian state
RIZIV/INAMI	> 99% population covered by the National	• Development: KCE	• General practitioners	= Financing Institution

	Institute for Health and Disability Insurance	• Validation: CEBAM • Dissemination: EBMPracticeNET • Implementation: Domus Medica and SSMG • FOD/SPF (workflow CPG)	• Specialists • Dentists • Nurses • Midwives • Pharmacists • Paramedics	
Mutualités Chrétienne / Christelijke Mutualiteit	4,5 million affiliated members	• SSMG • CEBAM • RIZIV/INAMI • KCE • Kankerregister • OKRA, ALteo, Kazou, Skoebidoe,…	• General practitioners • Specialists • Dentists • Nurses • Midwives • Pharmacists • Paramedics • Patients	
BCFI/CBIP		• Domus Medica • RIZIV/INAMI • EBMPracticeNET	• General practitioners • Specialists • Dentists • Pharmacists	FOD/SPF Santé Publique (FAGG)
CEBAM	Staff: 18	• Domus Medica • EBMPracticeNET • SSMG • CIPIQ-S • KCE • BAPCOC • VAD	• General practitioners • Specialists • Dentists • Nurses • Midwives • Pharmacists • Physiotherapists • Ergotherapists	FOD/SPF Santé Publique
Kind & Gezin	1700		• Nurses • Bureau of consultation (general practitioners, pediatricians, youth	Flemish Government

			and health care physicians) • Family supporters • Population	
EBMPracticeNET	15 organizations	• Domus Medica • SSMG • CEBAM • CEBAM Digital Library for Health • WVVK • BCFI • Minerva • Farmaka • KCE • Platform Wetenschap & Praktijk • FOD / SPF Santé Publique DG1 + DG2 • RIZIV/INAMI • eHealth • FAGG/AFMPS • CIPIQ-S	• General practitioners • Specialists • Dentists • Nurses • Midwives • Pharmacists • Physiotherapists • Ergotherapists • Speech Therapists • Dieticians	RIZIV/INAMI

Development

Institution	Number CPG/year	Mono/multi-disciplinary CPG	Evidence based	Expert consensus	Level of evidence	Adaptation	Author training	Validation
KCE	About 6	+/+++	KCE adopted methodology	If not enough evidence	GRADE	ADAPTE	Internal	CEBAM
CIPIQ-S	Max. 1	+/+	X		GRADE	ADAPTE	At least MSc Training to scientific search Must know the context of home care	Delphi + consensus
SSMG	1 or 2	+/+	CEBAM methodology			ADAPTE	CEBAM training	CEBAM
APB	1 or 2 and updates	+/+		+	Summary Product Characteristics (SPC) concerning pharmaceutical data	+	familiarization with EBM approach and knowledge of practice in pharmacy	External experts
BICEP		+/+	X			+ (Joanna Briggs Institute)		
Farmaka	Formulaire MRS							
College of Medical Imaging	1	+/+	+	+		+	Group of the Belgian Royal Society of Radiology	Group of the Belgian Royal Society of Radiology
BACTS						+		
UPDLF	2 or 3	+++	+	+		+	+	+

Dermatologists								
Domus Medica	2	+/+	+		GRADE	ADAPTE	+	CEBAM
VVP Psychiatrists								
College of Oncology		+	+	+				External experts
College of Geriatrics		+/+	+	+		+	+	External experts
VLOV			+	+	GRADE			
WGK		+/?	+	+		+	CEBAM training	Experts
AXXON/WVVK								
VVIZV								
BAPCOC	1	+/+	Methodology Domus Medica	+	GRADE	+	Researchers	CEBAM
RIZIV/INAMI								
Mutualité Chrétienne/Christelijke Mutualiteit								
BCFI/CBIP		+/-	+	+	GRADE	-	-	CEBAM
CEBAM								
Kind & Gezin		+/+		+		+		Experts
EBMPracticeNET						ADAPTE		

Dissemination

Institution	Number CPG/year	Type of interventions										
		Educating material	Educational meetings	Local consensus processes	Educational outreach visits	Local opinion leaders	Patient mediated interventions	Audit and feedback	Reminders	Marketing	Mass media	
KCE	About 6	x									x	
CIPIQ-S	Example	x				x			x	x		
SSMG	1 or 2	x	x	x		x		x	x		x	
APB	1 or 2	x	x						x			
Farmaka	Formulaire MRS	x										
College of Medical Imaging	1	x	x									
BACTS												
UPDLF	2 or 3	x	x									
Dermatologists												
AIIB		x	x		x		x				x	
Domus Medica	2	x	x									
VVP Psychiatrists		x	x									
College of Oncology		x	x									
College of Geriatrics		x	x									
VLOV		x	x									
WGK		x	x			x	x	x	x			
AXXON/WVVK		x										
VVIZV		x										
BAPCOC	1	x			x		x				x	
RIZIV/INAMI												

Institution	Number CPG/year	Type of interventions								
Christelijke Mutualiteit		x	x	x	x	x	x	x		X
BCFI/CBIP	Folia, Transparantiefiches, Geneesmiddelencompendium	x								
CEBAM	Validated: 5-10/year									
Kind & Gezin		x	x	x					x	
EBMPracticeNET	In total: 940 international CPG + 40 Belgian CPG	x							(x)	
Platform wetenschap en praktijk (portal4Care)		x	x						x	X

Financing institutions

Financing institution	
APB	• Pharmacists
UPDLF	• Dieticians
SPF Santé publique DG1	• Specialists (Colleges)
SPF Santé publique DG2	• General practitioners • Nurses in home care
FOD/SPF	• CEBAM • BCFI • BAPCOC
RIZIV/INAMI	• CEBAM Digital library, including Duodecim Finnish guidelines • EBMPracticeNET
Christelijke Mutualiteit	• SSMG (small part) • Specialists (occasionally)

APPENDIX 3. STAKEHOLDERS DISCUSSION GROUPS

Appendix 3.1. Six proposals for the future of guideline dissemination: initial text

The 6 statements proposed to the stakeholders as a basis of discussion (see chapter 3) are displayed below. They were based on the results of the systematic reviews (chapter 1) and the analysis of the field (chapter 2).

The original text that was submitted to the stakeholders was structured as follows:

- The proposal for the future;
- Paragraph(s) that further explain the reason of this statement (i.e. summary of literature and/or analysis of the Belgian landscape);
- The question(s) (if any) submitted to the stakeholders of the 18th June panel (if no question the stakeholders provided free comments).

Appendix 3.1.1. Statement: on a national platform of clinical practice guidelines

Statement 1: One national platform ensures efficient dissemination of guidelines that are adapted to the Belgian clinical landscape

The initiatives to coordinate the dissemination, the implementation and updating of the evidence should be taken at a national level.

Collaborations between health professional organizations should be encouraged. A strong co-operation between groups of experts and a vision of sharing clinical knowledge, analogous to the philosophy of open source software, should aim to reach an optimal level of collaboration (national as well as international). The ultimate goal is that any investment in guidelines' development should benefit from the largest possible dissemination strategy.

EBMPracticeNet is in that respect an interesting illustration that gathers all guidelines developers/disseminators to optimize the dissemination. The question is to know if this initiative would be successful if it is extended to other health professionals besides general practitioners.

Questions to the stakeholders:

- What should the platform look like? (website only, organization, etc?)
- Who should fund this platform? (public vs private)
- Could this be a "clearinghouse"? (displaying all available CPGs with characteristics)

Appendix 3.1.2. Statement on the value of a quality label

Statement 2: All guidelines would benefit from a quality label

The scientific content of a guideline is one element that contributes to the acceptance by health professionals who need to trust it. Therefore in theory, an obligatory independent validation panel should guarantee the scientific quality of each guideline.

In practice the interviews highlighted the positive and negative aspects of this procedure. Some developers, in particular scientists and governmental institutions, consider external validation as a quality label. However time, energy and financial resources are barriers: authors have to cope with multiple remarks on their work, which is experienced as a demotivating aspect.

This validation process could be performed by well-established organizations (e.g. CEBAM) to ensure consistency of the guideline development or adaptation process and quality of output. The rigor of the guideline development should rely on a validated instrument such as AGREE together with an evaluation of the content of the guideline.

Questions to the stakeholders :

- Is validation of CPG a condition for dissemination?
- What do we do with Belgian guidelines that are not validated?
- What do we do with international guidelines that were validated abroad?

Appendix 3.1.3. Statement on the need for a multidisciplinary approach

Statement 3: Since multidisciplinarity is a priority for future health care, involvement of all health professionals' organizations will improve adherence to clinical guidance

Multidisciplinary collaboration for (chronic) patients requires the sharing of a common clinical knowledge and agreement on the possible clinical decisions according to the stage of a disease. The multidisciplinary development of clinical guidelines across disciplines and across lines of care should ensure that all caregivers share this common clinical evidence. For that purpose guideline development groups should be multidisciplinary with a representation of all key stakeholders to discuss the content but also the formulation, presentation and lay-out.

Transparent methods have to translate expert opinions in recommendations and to consider all opinions in the formulation of these last ones. Careful selection of the consensus method is needed to reflect as far as possible the participants' opinions minimize the social psychological influences and disagreements within multidisciplinary group discussions.

Question to the stakeholders :

- What are the practical conditions to set up a succesful multidisciplinary collaboration?

Appendix 3.1.4. Statement on the adaptation of international guidelines versus national production

Statement 4: Adapting existing guidelines from other countries is preferred to « de novo » guidelines development in Belgium

The range of medical topics makes it impossible to develop a national guideline for each of them. On the other hand larger countries with similar health care system produced high-quality guidelines for their health care providers (for example NICE).

Therefore guideline adaptation could be an alternative to de novo guideline development. Level of evidence should be clearly identified and the strength of recommendation should be determined with a national panel of experts. It might be useful to ask participants to evaluate first independently each recommendation in order to have an idea of the divergences between opinions between groups of health professionals.

The Belgian landscape has already experience with the adoption of international guidelines. It is noteworthy that the medical specialists mostly adopt international guidelines (for example stroke care). The translation of Duodecim guidelines is another illustration where guidelines were imported on a national platform with limited initiative from the professionals themselves.

Question to the stakeholders:

- What are the conditions for a successful adoption of international guidelines by health professionals in Belgium (healthcare system, nature of guideline, process of import, adaptation)?

Appendix 3.1.5. Statement on the effectiveness of multifaceted interventions

Statement 5: Multifaceted interventions among professionals with a strong focus on electronic dissemination should be the future

The overview of the literature and the SWOT-analysis on guideline dissemination strategies show a variation of observed effects within and across the dissemination strategies. This heterogeneity hampers to draw a firm conclusion on the most effective intervention to disseminate guidelines.

Dissemination strategies	Literature review	SWOT-analysis
Audit & feedback	• small improvements in desired practice and to a lesser extent in patient's outcomes	• an opportunity to reflect upon one's own practice but negatively perceived by the providers
Printed and electronic educational materials	• a small beneficial effect on professional practice outcome but the clinical significance of these improvements is not known	• printed material: a conventional strategy that reaches a large group, still at high cost. The use of paper is still appreciated by (older) groups of professionals especially when messages are clear and user-friendly • electronic material (including reminders): similar advantages but at a lower cost. Still a group of the target population (older practitioners) maybe excluded
Computer reminders	• only small improvements in process adherence, even for prescription behaviour changes	• see electronic educational materials
Educational meetings	• not likely to be effective for changing complex behaviours. Improvements in desired practice and in patient outcomes are small and similar to other interventions	• conferences also reach a large group but requires time • reaching the professionals who need it most seems also to be a challenge; in that way e-learning seems more efficient.
Educational outreach visits	• a small but consistent effect for improving physicians' prescribing whereas the effect on other professional behaviors is more variable. A KCE report on that topic could not draw any conclusion on the cost-effectiveness	• might be efficacious but the face-to-face approach limits its implementation for reasons of efficiency
Local opinion leaders	• an overall positive effect of opinion leaders but the results varied across trials and within trials where multiple outcomes were assessed	• might play a role in guideline dissemination if their scientific message is limited to the available evidence
Mass media	• no review found on this topic	• reach multiple target groups and may reinforce patient adherence to the treatment but the final effect remains unknown
Multifaceted interventions	• an increased effect but no identification of core components possible	• a common choice to overcome barriers but lack of global strategy

The interviewees emphasized the importance of the user-friendliness of the messages. Also the possibility to have different formats (summary at a glance, decision tree, detailed text) is important to answer to the needs and possible questions. This point requires the continuous adaptation of scientific message for the target population of health professionals. For that purpose the guidelines and main messages should be first designed with the help of a professional from other domains than medicine. The product should then be tested among the end users to adapt it according to their preferences. Further links with the original data from the literature should further highlight professionals who need more specific information.

The persons interviewed in this research also suggested rewards for the use of guidelines in order to improve their use. An accreditation system already exists for the attendance to conferences but up to now the other dissemination strategies do not benefit from the same advantages. Concrete implementation of this reward system would need further analysis.

Electronic dissemination strategies have the potential to be more efficient if available at the place of consultation, easily tailored to an individual patient, based on data provided by electronic health records. The popup of electronic reminders can increase consultation time but it could be an efficient way to avoid overloading of physicians with non-essential scientific information. Electronic systems are the easiest way to keep the evidence up-to-date.

This trend requires a good knowledge infrastructure where information is centralized, easily accessible when needed. i.e. the right information, in the right format, at the right time without any additional effort. Point-of-care decision support systems based on electronic guidelines have been suggested to successfully meet these needs. A number of studies have already shown positive findings for some computer-based decision support systems such as drug-dosing systems and reminders for preventive care services. However, there is less evidence for more complex guideline-based implementation systems.

Problems inherent to the use of electronic systems are e.g. their accessibility at the point of care (e.g. for home visits) and the cultural change (and training) to ensure standardized data entry and appropriate use. Availability of technical support in case of problems with the system is a point of interest. Ease, speed, and some control in the use of the system seem to be critical success factors. The collaboration with end users is essential to include their preferences for system attributes and functionality in the system engineering.

Appendix 3.1.6. Statement on the need for integration of guidelines in professional education

Statement 6: Training of students and professionals in healthcare is a corner stone to increase adherence to guidelines

This statement got a consensus and was not discussed during the stakeholders' meeting.

The knowledge of (the existence) and usefulness of the guidelines is a prerequisite for their use by any health professional. Guidelines should be used as a backbone in all undergraduate, graduate curricula and continuing medical education for all health professionals.

Appendix 3.2. Stakeholders discussion: main results

A common platform

FR:

- Website : on y va MAIS ! User-friendly, interactivité
- Impliquer associations professionnelles et associations patients - Avec les développeurs
- Plate-forme ne suffit pas : il faut d'autres actions : bâton > carotte
- Clearinghouse : pb budget – langue – langage commun (entre professionnels) - complexité – compétences pédagogiques
- Mettre guideline avec son origine sur le website
- Radiologie : plate-forme pour les professionnels en // d'une plate-forme pour le public.

NL:

- Platform : goed maar publiek gesponsored
- Geen clearinghouse (die verzamelt materiaal zonder hierarchie)
- In welke mate moet een guideline … ?
- Multidisciplinaire
- Als beschikbaar voor HA : ook andere beroepen ? Ook includeren info van andere landen ?
- GCP niet geisoleerd maar in een grotere geheel (e.g. patiënten)
- Plateform // Plate-forme des folias pharmaceutica ?
- Ook aanvullende info nodig

Importance of quality label

FR:

- 2 types de validation : (1) Validation CEBAM = quality label (stt pour financeurs) ; (2) validation autre que CEBAM existe (par sociétés professionnelle): rapidité masi il faut que ces société se réfèrent à des outils
- Procédure AGREE classique : trop lourde
- Guidelines non validés : peuvent être mis à disposition en notant le (non) statut de validation

NL:

- Quality label needed
- « quality : what's a name ?
- Users are « safe »
- Veel discussie daarrond
- Betrouwbaarheid niveau moet bepaald zijn
- Richtlijnen met de degree of betrouwbaarheid aangeduid

Adaptation of international guidelines

FR:

- Avantage
  - équipes bien supérieures aux nôtres
  - Update
  - Temps ?
- Problèmes
  - Temps ?
  - Difficile d'identifier guidelines, adapter etc
  - Langue travailler en anglais et // entre les 2 versions FR et NL
  - Connaissance de la procédure ADAPT
- Solutions :
  - Feedback utilisateurs
  - développement au niveau européen

NL:

- Contra : verdunning van evidence - Niet gemakkelijk (Domus) – manpower needed
- Pro : kwaliteitskenmerk – skills nodig – budget
- Europese kaart

Multidisciplinarity

FR:

- Formation
- Difficulté de disponibilité pour avoir représentativité
- Hiérarchisation des professions
- Culture : pensée monodisciplinaire prédomine

NL:

- Understandable guidelines (short, readable, brief)
- Available for all – easy access

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