

Plain Language Summary Pilot Project

Final evaluation report

May 2021

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Acknowledgements... And a poem.

This final evaluation report is based on Cochrane's one-year pilot study (2020 – 2021) to improve Plain Language Summaries. We would like to acknowledge the following people who have contributed to this project as members of the project and evaluation team:

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We would also like to share a poem that was written by a participant who attended our presentation on this project at Cochrane UK's conference, Virtually Cochrane, on 21 April 2020. We believe this poem highlights how important, yet how tricky, it is to improve a product like Plain Language Summaries. We hope you enjoy it as much as the project team did!

The long and short of writing Cochrane Plain Language Summaries

If only you hadn't asked,
Then you wouldn't be tasked
To make something short.
In a bind you are caught,
For to make it plain
It's length you gain.
It's an assignment tough
To write just enough.

- Helen Handoll

1 Background

Plain Language Summaries (PLSs) are a key dissemination product for every Cochrane Review. These summaries are freely available on Cochrane’s main organizational website, Cochrane.org, and also as part of reviews published on the Cochrane Library website. Along with the review Abstract, they are often the first (or only) opportunity potential health decision makers will have to:

- engage with Cochrane as an organization, and
- understand, gain familiarity, or be introduced to a Cochrane Review.

PLSs are the Cochrane product most frequently translated into other languages. Google Analytics for Cochrane.org shows that 94% of web traffic goes to the page where we host PLSs, and 80% of this access is through language translations. **It is critical that PLSs are of a consistently high quality, fairly representing results of Cochrane Reviews in clear, simple language, and understood by the general public, especially non-expert audiences.**

Currently PLSs produced in Cochrane vary in style, accessibility of language, production, and quality. There are many existing resources available for guidance including the Cochrane Handbook, Plain Language Expectations for Authors of Cochrane Summaries (PLEACS), the Cochrane Style Manual, and bespoke guides created by Cochrane Review Groups (CRGs). PLSs are traditionally written by the Cochrane Review authors and although some are well written, feedback from language translation teams and external research work indicates this is not always the case.

In 2016-17 Cochrane Norway ran a pilot scheme exploring three options for developing PLSs:

1. **Option 1:** providing guidance to Cochrane Review authors to support production of the PLS for their review;
2. **Option 2:** providing guidance to Cochrane Review authors to support production of PLSs that are subsequently checked, and improvements suggested by trained members of the CRG editorial teams;
3. **Option 3:** rather than PLSs written by Cochrane Review authors, they are assigned to other CRG editorial staff (e.g. editor or managing editor, consumer representative or professional writer).

The [Cochrane Norway pilot scheme](#) did not recommend any specific option for implementation but did highlight aspects of the process. At the time, Cochrane’s then Editor in Chief decided it should be made the agreed standard, but for unknown reasons it was never made official. The resulting template from the Cochrane Norway pilot scheme was considered to be an acceptable option.

Using plain language is one of the key elements for Cochrane’s new ‘[Dissemination Checklist and Guidance](#)’, launched in late 2019 and implemented across Cochrane during 2020. Consequently, 2020 was an ideal time to raise awareness, explore what plain language looks like in practice, ease facilitation of multi-language translation, and build capacity for people across Cochrane to produce dissemination products. This includes PLSs that meet the criteria provided within the Dissemination Checklist and Guidance. Based on Cochrane Norway’s pilot scheme, and in consultation with colleagues from the Editorial and Methods Department (EMD), we designed a 12-month project, described in the next section.

2 Project description

2.1 Project aim

The primary aim of this project was to recruit a small team of scientific writers to produce PLSs with the objective of improving the quality, understandability, translatability, and consistency of PLSs.

The secondary aim was to produce a set of guidance and templates for writing PLSs at Cochrane, building on pre-existing knowledge and guidance, using the writers' own skills and expertise, and incorporating the results of project evaluations.

This report focuses on results of the final evaluation, which was designed to test the primary aim. The secondary aim (templates and resources produced) exist outside this final report. For ease of understanding, the term 'writers' refers to the skilled writers hired to write PLSs as the basis of the pilot project.

2.2 Project description

We recruited three writers (at 1.0 FTE, 0.5 FTE, and 0.4 FTE). The writers were presented with the same PLS resources and templates available to author groups during their orientation. The writers worked closely with members of the EMD, and Knowledge Translation Departments, where they could ask any questions and glean institutional and contextual lessons and knowledge around PLSs. One writer also reached out to, and developed, a relationship with a consumer representative.

Error! Reference source not found. below shows how PLS writing took place in the editorial process. The benefits of this process included the following:

- minimal disruption to current CRG editorial functioning;
- PLS writing fitted in with the current editorial process because the writers wrote PLSs while the reviews were being copy-edited, and the PLS was copy-edited before being returned to the CRG;
- writers did not have to make multiple edits to the PLS because they received the review in a relatively complete form.
- a critical mass of PLSs would be written and published during the course of the pilot to enable evaluation of this approach at its end.

Some groups incurred a slight increase in the time taken to complete the editorial process, as they sent the PLSs to their consumer reviewers after copy-edit. CRGs retained final sign-off and could make any changes they deemed necessary. CRGs were asked to inform writers of the changes and rationale for these to support writers' ongoing learning, but there was no requirement for this. CRGs in the official pilot were not required to use the written PLS.

Writers completed a total of 155 PLSs, primarily for the two pilot networks (Musculoskeletal, Oral, Skin, and Sensory Network, and Public Health Network) as well as the EMD Editorial Service and 23 other CRGs (total of 35 different CRGs).

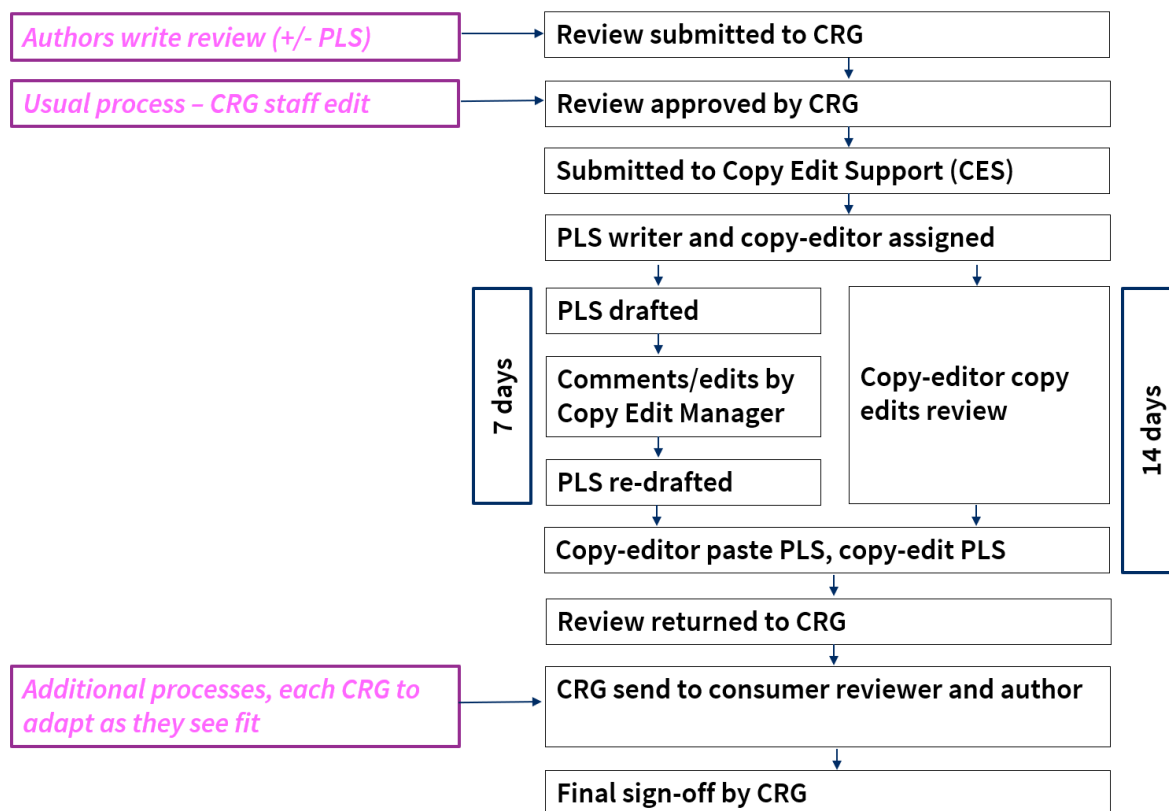


Figure 1: How PLS writing fitted into editorial processes

Towards the end of the project, when writers had experience and knowledge of PLS writing, they created guidance in formats they deemed suitable (e.g. templates, documents, training) to support PLS writing within Cochrane beyond the project timeline. This guidance aims to:

- offer essential guidance for anyone writing a Cochrane PLS;
- take readers through the steps of preparing a PLS;
- give general hints and tips about PLS writing;
- explain what to include in each section of the PLS, with examples of text; and
- provide a template for PLSs of Cochrane Reviews, with suggested text.

3 Summary of mid-year evaluation

3.1 Background to mid-year evaluation

Originally, we planned three separate evaluations. Due to the project timeline (a later start than we anticipated), and other work priorities, we chose to do two evaluations instead. This consisted of a mid-year evaluation to catch any major issues early, and allow time to adjust or pivot the project, and a final, more extensive evaluation.

We completed the mid-year evaluation over the course of summer 2020 and presented results in September 2020. At this time, the project was still in a state of relative infancy; the writers had only a few published PLSs that we were able to evaluate against the usual process. Two members of the project team designed and coordinated the overall evaluation plan (see **Table 1**), but each aspect was delegated to other members of the project team to lead. This was done on the basis of skills and interests of project team members, and was necessary because no team member could take it on fully.

After consultation with the project team and project sponsors, we settled on a set of aspects to measure in the mid-year evaluation. This discussion was based on what was likely to change as a result of the pilot (i.e. we only measured things affected by the pilot), and what information decision makers felt they would need to make a decision on how to proceed as a result of this project. We examined the following aspects in the mid-year evaluation.

Table 1: Mid-year evaluation aspects

What we measured	Why it was measured
Processes the writers used to write PLSs	To understand the process that was leading up to the effect we were seeing
How long it took writers to write PLSs	To understand how this compared to the 'usual' process at Cochrane
Consistency between how the writers were writing their PLSs	To see if there were any substantial differences that needed to be accounted for when examining the writers' outputs as a whole
Writers' reflections on the experience so far	To obtain qualitative data that could help identify barriers or possible solutions in Cochrane's PLS-writing environment
Accuracy between writer PLSs and the original Cochrane reviews	To establish the quality of PLSs produced, defined by comparing the accuracy of the PLS to the content from which it came
Understandability assessment	How understandable the PLSs were to a consumer audience. The assumption was that if consumers could understand the PLSs, then other Cochrane audiences educated or employed in an area of healthcare information interpretation/decision making would too.
Translatability assessment	Whether the PLSs produced by the writers affected the ease of translation
Impact on processes in the CRGs involved	To see whether the process of introducing writers into the PLS-writing process helped or hindered current ways of producing PLSs
'SMOG' (Simple Measure of Gobbledygook) and word count measurements	We used these common measures of plain language to see whether there was a difference between the PLSs the writers were producing, and the PLSs produced the usual way at Cochrane

3.2 Mid-year evaluation findings

Everyone responsible for an aspect of the evaluation presented their results at a team meeting in September 2020. Stakeholders in PLS guidance production at Cochrane were invited to this meeting to hear results and provide input. We have summarised the main findings from each aspect in **Table 2**.

Table 2: Mid-year evaluation summary of findings

What we measured	Main finding(s)
Processes the writers used to write PLSs	Writers used a process of writing PLSs that was similar to the way that people in Cochrane typically write PLSs. They also used an array of resources that are available at Cochrane (MECIR, PLEACS, Cochrane Norway template, etc.) and external to Cochrane to help them.
How long it took writers to write PLSs	Initially it took writers 2 days to write a PLS, but as experience grew, this was shortened to 1.5 days. The 'usual' length of time it takes to produce PLSs at Cochrane is unknown.
Consistency between how the writers were writing their PLSs	Copy-editing ensures a certain level of consistency, but at this point in the project writers were not using a standard, agreed-upon template, so consistency was not assessable in practice.
Writer's reflections on the experience so far	Writers identified outstanding barriers to writing PLSs and questions they wanted clarified to make PLS writing clearer and easier. They also identified preliminary suggestions for standardized PLS templates, and some aspects of future plain language writing guidance. These points are not captured here but are included in the template and guidance documents produced by the writers.
Accuracy between writer PLSs and the original Cochrane Reviews	We were not able to demonstrate whether project PLSs were more accurate or less accurate than control PLSs from the data obtained. We recognized a need to refine methods for measuring accuracy, as the process we used was not ideal and was too open to interpretation.
Understandability assessment	PLSs written by writers were clearer to consumers, but there were more correct answers to comprehension questions enquiring about the content of the PLSs in the control group. Consumers gave suggestions for improvement, although these were things the writers mostly knew already.
Translatability assessment	PLSs written by writers were slightly easier to translate, and, as for the understandability assessment, suggestions for improvement from translators were somewhat generic.
Impact on processes in the CRGs involved	Most CRGs who participated in this project found having PLS writers very helpful to somewhat helpful, and we received a lot of informal positive feedback from those working with the writers.
'SMOG' and word count measurements	Project PLSs had more words, and a better SMOG index (could be understood by people with fewer years of education)

Overall, the mid-year evaluation showed that this project had promising outputs, and at the very least was not producing poorer results than the usual process of writing PLSs at Cochrane. The results encouraged us to continue the pilot with only minor changes in process, and was a good learning exercise for how to conduct or build upon this evaluation in the future.

3.3 What we did differently after the mid-year evaluation

As a result of this mid-year evaluation, the project team agreed a chart of recommendations (see [Appendix A](#)). These related both to changes that could be made to PLSs at Cochrane, and changes that could be made to the final evaluation. The recommendations included:

- Increase the PLS word limit to 850 for all Cochrane PLSs, to:
 - enable inclusion of data;
 - improve phrasing of the results;
 - reduce ambiguity for translators;
 - permit a fuller explanation of methods, particularly certainty of the evidence;
 - accommodate the use of more, and longer, sub-headings;
 - allow inclusion of important information.

The Editor in Chief agreed to adopt this change.

- The writers produced a document of ‘working assumptions’ for PLS writing at Cochrane. As a team we felt we needed to record our thoughts about what a PLS is, and what Cochrane wants the PLS to contain and achieve. It was felt that Cochrane needed to make some executive decisions (e.g. What is the purpose of a PLS? What is the target audience? What should a PLS cover?) for the writers to improve on the product. This useful document formed the basis of discussion for team meetings.
- We decided to remove the accuracy assessment for the final evaluation, as the project sponsor from EMD was confident that the PLSs produced by the writers were of good enough quality not to need this measure in the future.
- For the final evaluation, we decided to expand the understandability assessment to target a more diverse PLS user audience. The team felt this would yield more useful feedback on how to improve PLSs, and be more representative of the audience that Cochrane wishes to reach through its PLSs.
- We received feedback from consumers (from the understandability assessment), and translators (from the translatability assessment) on how to improve PLS writing. This content was incorporated into the templates and guidance for plain language writing being developed by the writers.

4 Final evaluation

4.1 Background on final evaluation

The final evaluation for this project commenced in December 2020, with data analysis completed in April 2021.

We decided to contract out the understandability assessment to an independent organization, because this assessment was the largest and most resource-intensive aspect of the evaluation, since it involved qualitative data collection from users of PLSs. Contracting out allowed us to expand this area of the evaluation, as we were particularly interested in what users thought of PLSs produced by writers compared to the usual way at Cochrane.

The following sections describe each aspect of the final evaluation individually, and **Table 3** summarises the complete evaluation.

Table 3: Overview of final evaluation

What we measured	Why it was measured
Understandability assessment	How understandable the PLSs were to their intended audiences.
Translatability assessment	Whether the PLSs produced by the writers affected the ease of translation.
Impact on processes in the CRGs involved	To see whether the process of introducing writers into the PLS-writing process helped or hindered current ways of producing PLSs
Changes made to PLSs by CRGs involved in this pilot	To see how the final version of PLSs differed from what writers were producing, and why.
'SMOG' (Simple Measure of Gobbledygook) and word count measurements for Readability	We used these typical measures of plain language to see whether there was a difference between the PLSs the writers were producing, and the PLSs produced the usual way at Cochrane.

4.2 Changes to PLSs submitted by writers

Background

PLSs produced by writers went through three main stages of editing before being published.

1. First, the Copy Editing Manager reviewed each PLS and provided comments and suggested changes. Initially multiple rounds of revision were required, but this reduced as the project progressed. Typical suggestions for changes included: the addition of background information to make use of the word allowance, clarification of how interventions work or are delivered, and replacement of words or phrases that could be misunderstood.
2. The PLSs were then submitted to a copy-editor.
3. Finally, the PLSs were returned to CRGs, who published them with the reviews.

We wanted to find out:

- whether the PLSs submitted by writers for copy-editing were changed prior to publication (i.e. in stages 2 and 3 as presented above);
- if so, what was changed; and
- what we could learn from these changes.

Methods

We identified all the PLSs assigned to writers and published prior to 2 February 2021. We compared each PLS submitted by the writers with their final published form. We identified all words and punctuation that were removed, added or replaced, and looked for patterns in changes across PLSs. We used these patterns to create a classification of ‘types of change’.

Limitations

There were two main limitations to this analysis:

1. It did not consider the changes made by the Copy Editing Manager (prior to the PLS being submitted for copy-editing).
2. We ended up classifying changes according to their intent *as perceived by the person analysing them*. We did not check with the people who had made changes whether this matched their actual intent. It may be that the perceived and actual intents were different.

Findings

A total of 95 PLSs submitted by writers had been published by 2 February 2021.

Table 4 summarises the number of PLSs that were changed, and the number of changes made per PLS. Changes other than standard or very minor ones (e.g. changing spelling to American or British English according to the group’s stated preference, or replacing numbers with words to comply with the Cochrane Style Manual) were made to 75 PLSs (79%).

Table 4: Changes to PLSs submitted by writers

	Any change made	Without counting standard or very minor changes
Number of PLSs (out of 95)	87	75
Range of number of changes	Min: 1; Max: 67	Min: 1; Max: 31 (and 4 where the PLS was either not used (3) or completely rewritten (1))
Median number of changes	13	4

Changes were made across all sections of the PLS (title, introduction, methods, results and discussion), and included:

- the removal or addition of words, sentences or paragraphs;
- changes to the layout (e.g. removing bullet points or merging paragraphs); and
- entirely restructuring the PLS.

The nature of changes suggested that they aimed to improve:

- fit with existing guidance;
- appropriateness;
- accuracy; or
- clarity.

Table 5 summarises what can be learnt from each of these changes, and offers recommendations based on these.

Table 5: What we can learn from the changes made to PLSs, and recommendations

Learning	Main recommendation
Changes to improve fit with guidance suggested that everyone was not ‘on the same page’ .	Need to harmonise PLS guidance in future
Changes aimed at improving appropriateness suggest that PLSs written by writers did not capture authors’ and CRGs’ current views on PLS content and wording .	Work more closely with authors
Changes aimed at improving accuracy and clarity suggested that the current process was not perceived as enough to guarantee accuracy and clarity Where changes improved accuracy or clarity, this suggests that the process was not enough to guarantee accuracy and clarity .	Involve consumers (clarity) and authors/CRGs (accuracy) in PLS production
Some changes made the PLS less clear and others may have made no difference to clarity.	Train all involved in PLS production

Implications for decision making

The analysis of changes made to PLSs submitted by writers gave us insight into the acceptability of the intervention and a more nuanced view than whether ‘it works or not’. Overall, the changes made showed no blanket rejection of what writers had proposed across groups. Only one of the 95 PLSs submitted by writers was purposefully not used by the group, at the very beginning of the project.

The changes made to PLSs suggested a number of steps that could help to build on the one-year pilot and improve PLSs:

- harmonising guidance about PLS writing across Cochrane resources;
- training all those involved in the production of PLSs;
- improving the PLS production process, so that the end product would be the fruit of a dialogue in which consumers, authors, and writers had been involved from start to finish (consumers for clarity, authors for accuracy and appropriateness, PLS writers for consistency).

We now suggest that the process of writing PLSs be modified. **Figure 2** summarises the process used in the pilot. **Figure 3** summarises the new process we recommend.

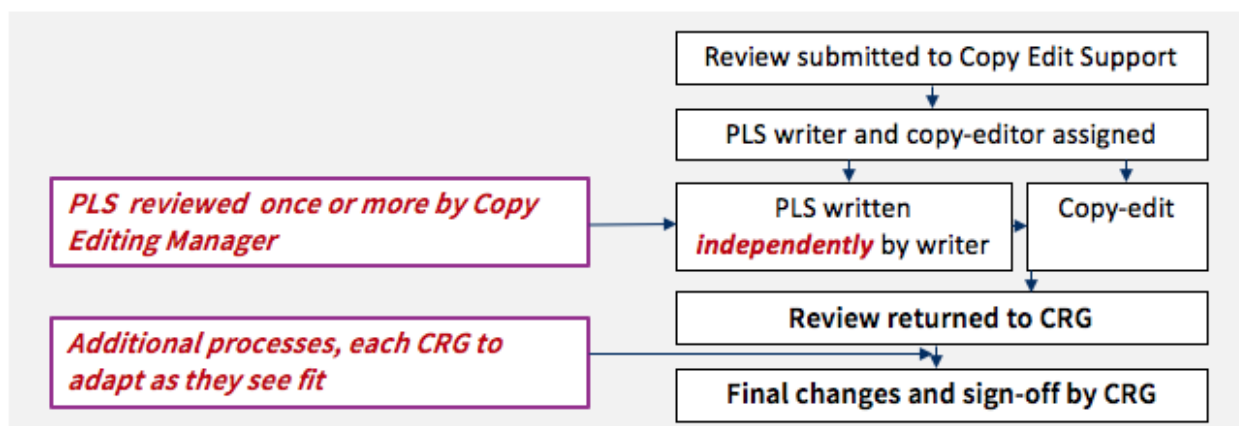


Figure 2: PLS writing process used in the pilot project

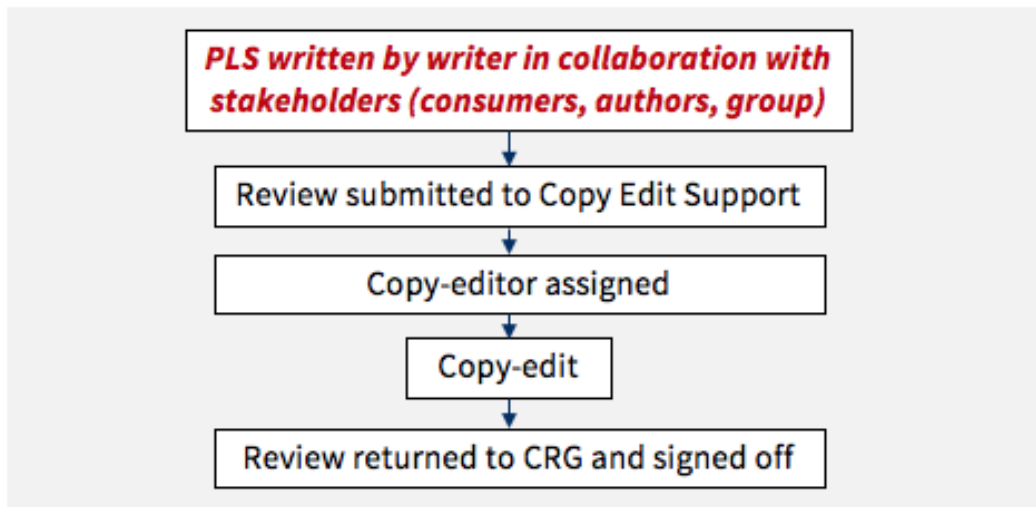


Figure 3: New PLS process we recommend trying, based on the findings from our analysis

4.3 Impact on editorial processes

Background

Much of the evaluation related to users of Cochrane Reviews, but an important part of it concerned CRGs. For this part of the evaluation we asked for feedback from all CRGs that received a professionally written PLS.

To this end, we wanted to investigate two aspects of the project from the CRG point of view:

1. the quality (readability and accuracy) of the final product, and
2. how PLS writing fitted into their editorial process.

Methods

We sent an email survey to all 35 CRGs that had received a professionally written PLS to gather their feedback on the pilot project. We received responses from 26 CRGs; most surveys were completed by Managing Editors. Twelve of the CRGs that responded were officially part of the PLS pilot project, predominantly from the MOSS and Public Health and Health Systems Networks.

The survey consisted of some multiple-choice questions and free-text responses for respondents to provide further detail about their experiences of the PLS project (See [Appendix B](#)). All respondents provided some description of the PLS project and its impact on their editorial process and PLS quality.

Limitations

This part of the evaluation was limited by the fact that not all CRGs who received a professionally written PLS responded to the survey. Additionally, some CRGs who completed the survey had few PLSs written by the writers, so were unable to provide detailed feedback about the impact on their editorial processes. However, these were the CRGs who were not expecting to be involved, and despite their newness to the pilot gave overwhelmingly positive feedback.

Findings

Impact on quality

The first part of the survey invited CRGs to comment on the impact of the project on the quality of the PLS produced. The CRGs gave favourable responses to this multiple-choice question, with all but one indicating that the professional PLS writers improved the quality of the PLS. One CRG said that it made no difference to

the quality of the PLS, commenting that: *'Some language was overly simplistic so [CRG] spent time editing this to reduce word count. Editors noted that clinical input was needed, and careful checks performed by CRG and author team.'*

In general, although it was acknowledged that the PLS writers could not be clinical experts in all fields, the CRGs were satisfied that the PLSs were easier to read, more accessible, with improved layout, and a consistent format. Some illustrative quotes are provided below:

- *'Use of plain language, simple and clearer summaries, written so they are much easier to understand. All information that should be included [is] now part of the PLS.'*
- *'Information more accurately reflected the content of Abstracts and the flow of information in the Review.'*
- *'The language used was much more consumer-friendly. I thought they did a great job of explaining a relatively complex message in a clear and simple way.'*
- *'I really like how much more simplified they are now. I have got so used to Cochrane terminology that I was probably not explaining and clarifying text in the PLS as much as I should. It's taken a fresh pair of eyes to do this! I also like the use of more subheadings and bullet points – the PLS are much less dense and more inviting. (I didn't realise we could use bullet points before).'* [Editorial note: it is not yet possible to use bullet points in Review Manager, but a workaround was used to give the impression of bullet points.]

The survey also asked CRGs to comment on whether they had made changes to the PLSs before publication and whether any areas of the professionally written PLSs needed work. Some comments related to the lack of topic expertise of the PLS writers, with CRG editors and authors making some minor changes to ensure accurate medical terminology and the nuance of the findings was reflected correctly in the PLS. There were a couple of comments about the PLSs being too simplistic, or too long, with editors needing to reduce the word count. This was indicative that perhaps the CRGs were not aware of the decision to increase word count. Some specific examples of changes made to the PLSs are provided below:

- *'The professionally written PLS perhaps tends to make the language too simple at places. This is of course advantageous as we probably reach a bigger audience this way. But at the same time, it assumes that the reader has either no knowledge on the topic, or extremely limited knowledge.'*
- *'... we had one PLS which was about sudden changes in health status in acute hospital settings, and this was slightly misinterpreted by the PLS author to be around emergency departments. However this error was easily and quickly picked up and amended by the editorial team and authors during our final review of the PLS'*
- *'Generally, the authors have been happy to incorporate the changes and were pleased with the assistance. On occasion some have pushed back due to perception that the edits oversimplified terminology or removed necessary context from findings.'*
- *'Review authors suggested minor changes to some plain language description of medical terms. Statement 'studies were poorly conducted' was rephrased to 'concerns about how some studies were conducted. (Review author explanation: Risk of bias concern is not the same as poorly conducted study. And some studies were considered low risk of bias).'*

Impact on processes

In this pilot project, the PLS was written after the review had been submitted for copy-edit, which is one of the final stages in the editorial process. The second part of the survey asked CRGs to comment on the impact of the PLS project on their editorial processes. In response to the multiple choice question, 14 out of 26 groups responded that the project had a positive or very positive impact; eight reported that it had no impact; and three reported that it had a bad impact on editorial processes.

In general, integration of the PLS writers with the copy-edit service was considered useful, with no delays being reported in editorial process and publication. There was also consistently positive feedback about the

quick communication with the PLS service and the responsiveness of those involved. The main divergence in views concerned the best point in review development at which to write the PLS. Eight respondents said the current process worked well and, that if it were to continue, having the PLS written at the same time as copy edit would be best as it would ensure that the PLS reflected the final version of the review:

- *'I think it should stay as it is currently – the PLS is written during copy-edit. The writer is working with a finalised version then. Otherwise, someone has to be responsible for tweaking the PLS as any related edits are made to the rest of the review.'*
- *'Copy edit stage as now so that the PLS doesn't need to be continuously revised as review content changes.'*
- *'I was happy that this was addressed at copyediting stage. Before then, attention is on ensuring that the review is accurate and MECIR-compliant and sections such as the PLS can be overlooked pending final approval of the rest of the text. However, I can see that it might be frustrating for the authors to engage with new text at this stage.'*

However, 17 of the CRGs who responded to the survey commented that the PLS should be written earlier in the process. Several reasons were provided, including that consumer reviewers are not able to comment on the PLS written at this stage in the process as the reviews have already gone through peer review. Some CRGs stated that they sent the professionally written PLS to consumers as a document later, but this added time to the editorial process. Although difficulties were acknowledged about involving the PLS writers earlier in the process – mostly because the review is subject to change after peer review, which would have implications for the PLS – several CRGs were supportive of the PLS writers collaborating with the authors at an earlier stage.

- *'I would find it most useful at the time the review is sent to peer review. This would allow sufficient time for authors to engage with and edit the PLS as needed. I think the PLS should be a collaborative effort between authors and PLS writers, and having the PLS available earlier would enable this.'*
- *'Ideally I would like the revised PLS signed off by CoEd when signing off the final review. In our CRG that is before copy editing. Admittedly, this may be complex to arrange as this stage may be different between CRG'*
- *'it was odd sending some reviews out for external peer review without a PLS (or with a very rough version of a PLS), to request sign off when the review was incomplete, and also having consumer review (and some back-and-forth with authors) happening after sign off. It would seem more appropriate to have (major) addition of content, and revisions to that content, earlier in the writing process'*

Some concerns were raised about duplication of effort because the authors had spent time writing a PLS, which had been reviewed by editors and peer reviewers, only for a new PLS to be written, which then had to be checked again. Those groups who were not officially part of the PLS pilot project could choose not to use the PLS writers' version if they wished. However, there was no indication from this survey that any professionally written PLSs were not used. CRGs commented that clarity would be needed about when a PLS would be written, for which reviews, and how CRGs can maintain efficient editorial processes.

The final question in the survey asked CRGs to give their views on continued access to a professional PLS writer. Twenty-five CRGs rated the possibility of continued access positively or very positively, with only one CRG regarding it neutrally.

- *'We would really appreciate the continuation of the service of the PLS writers!'*
- *'Irrespective of whether PLS writers will be available in the future, further guidance from EMD on whether the new layout is the preferred layout for future PLS would be helpful. Hints and tips from the PLS writers would be also helpful for CRGs.'*
- *'We found the edited PLSs useful for preparing KT dissemination briefs and other dissemination content as they were much more accessible than the typical PLS produced by the authors.'*
- *'We hope the initiative will continue to be supported – better PLS should help translations too.'*

- *‘I’d probably find it hard to go back to writing/editing them! It is definitely a skill. I hope it continues permanently.’*

Implications for decision making

In conclusion, CRGs valued having access to a professional PLS writer and felt the PLSs were improved in terms of readability and consistency. Although the PLS writers did not have clinical expertise and some changes to the PLS were required, CRGs noted improved quality of the PLSs and generally little impact on editorial processes.

The CRGs did suggest some changes and improvements, mostly related to the timing of PLS writing, which emphasised the importance of having the PLS reviewed by consumers and review authors. One group also reported that further guidance on writing PLSs and clarity on word limits, structure, subheadings would be useful, as well as clarity on if, and when, a professional PLS writer would be involved for a particular review. Overall, the CRGs who responded to this survey were keen to have continued access to professional PLS writers.

4.4 Understandability

Background

We conducted this aspect of the evaluation to ascertain whether Cochrane’s four key Knowledge Translation audiences (consumers and the public, practitioners, policymakers, and researchers and funders) found the PLSs produced by the writers to be more understandable than PLSs produced in the usual way. We assessed whether they understood the PLS content, and whether the information was presented in a way that made it easy to access the information they needed. An external organization (The Evidence Centre) carried out this evaluation. **They produced a comprehensive and easy-to-read report of the results of the evaluation, which is in Appendix C.** Below, we share snapshots of the larger report for the Methods, Limitations, Findings, and Implications for decision-making sections (*NOTE: the external report used the word ‘Summary’ to mean ‘PLS’ and ‘science writers’ to mean ‘writers’.* Since the language throughout this final evaluation report uses ‘PLS’ and ‘writers’, we have changed these words, but the rest is preserved it was presented in the external report).

Methods

We asked people to read and give feedback about a PLS by one of the writers and a PLS by a Cochrane Group produced in the usual way. We compared what people said about each PLS to see which was easier to understand. We used six PLSs written by the writers in 2020 and 2021. We matched these with six recent PLSs by Cochrane Groups that were about similar topics and around the same level of complexity. The team in charge of PLSs did this, including science writers.

We created documents containing a pair of PLSs, with questions after each one. In some documents the PLS by a writer was placed first and in other documents it was second, so volunteers did not read and comment on the PLSs in the same order. We emailed everyone who volunteered a file. We asked them to read and give their feedback within 1 to 2 weeks. We emailed them a reminder. We did this over a 5 week period around February 2021. An independent team helped us communicate with volunteers and analyse what they said. The volunteers did not know the source of each PLS (from a writer or the usual way).

We invited people to participate using social media, our website, our mailing lists, and promotion through Cochrane Groups and other organisations. Altogether, 461 people took part. There was a good mix of people. They lived in Europe (36%), North America (35%), Asia (11%), Latin America (8%), Australasia (5%) and Africa (5%); four out of 10 had a main language other than English (38%).

- One-quarter of volunteers were general members of the public (25%).
- One-third were health professionals, trainees and similar (35%).

- One-quarter were researchers or information specialists (23%).
- Other participants included health writers (9%), health policy influencers (5%) and other roles that used health information (3%).

About half of the volunteers knew a lot about Cochrane (45%) and the other half knew only a little (46%) or nothing (9%). This means a wide range of people who might read our Summaries took part.

Table 6 below shows the distribution of participants.

Table 6: Types of volunteers living in different regions

	Africa (23)	Asia (49)	Australasia (23)	Europe (167)	Latin America (38)	North America (160)
Member of the public (116)	26%	15%	65%	32%	3%	20%
Healthcare professional (159)	52%	52%	4%	36%	58%	24%
Policy influencer (23)	0%	2%	9%	4%	3%	8%
Writer (43)	4%	4%	9%	9%	5%	13%
Researcher, information specialist or educator (107)	17%	25%	9%	16%	29%	32%
Other (12)	0%	2%	4%	3%	3%	3%
Total (461)	100%	100%	100%	100%	100%	100%

Limitations

This evaluation was designed in a pragmatic way, to give us the information we thought decision makers needed to make decisions, while respecting the timeline of the pilot and the capacity of people involved. Our methods were not perfect so we need to bear this in mind when interpreting the findings. For example, the PLSs we used may be different from most Cochrane PLSs. Some people who were familiar with PLSs thought we had chosen examples that were not as clear as most of the PLSs available from Cochrane Groups.

We only compared six pairs of PLSs. We matched PLSs that had similar topics, so some topics were not eligible. This included work that science writers did with Cochrane PLSs about COVID-19.

Some volunteers did not come from our main target audience. For instance, some members of Cochrane Groups or our family and friends took part. They may have had more insight into what we were doing than general audience members. Another organisation promoted what we were doing to its contacts. People who responded to that invitation included information specialists, knowledge translators and experts in plain language. Those volunteers commented from a technical point of view, rather than as general readers.

It is not simple to write a PLS. The content and style of the systematic review itself can impact on a PLS. If a review is not clear about its findings or contains a lot of complex comparisons, it can be difficult to summarise this simply. This means we are not simply comparing the writing style of Summaries, but wider parts of how we produce and write content.

Findings

People thanked Cochrane for providing PLSs. They were pleased that we wanted to keep improving our PLSs and had asked for help. Most people said that our PLSs were quite easy to understand. They rated PLSs at an average of 7.7 out of 10, where 10 was the easiest to understand. Six out of 10 thought that patients would find the PLSs useful (65%). Eight out of 10 thought healthcare professionals would find the PLSs useful (84%). Below is a summary of the feedback between PLSs written by writers and PLSs written the usual way at Cochrane (called ‘other summaries’).

People said that PLSs written by writers had many good features. But there were mixed results about whether PLSs written by writers were easier to understand.

- 9 out of 10 said that PLSs written by writers were easy to understand (88%); 7 out of 10 said PLSs written by Cochrane Groups were easy to understand (74%).
- People gave PLSs by writers an average score of 8.2 out of 10, where 10 was the most easy to understand. They scored PLSs by Cochrane Groups an average of 7.2 out of 10.
- We then asked people to compare the two PLSs they read. Half said that PLSs written by writers were easier to understand than those written by Cochrane Groups (53%). The other half thought PLSs written by Cochrane Groups were just as clear (18%) or even easier to understand (29%) than those written by writers.
- We tested whether people understood the main messages in the PLSs. About one in six people answered a comprehension question incorrectly, no matter who wrote the PLS.

General members of the public and people without a university education were most likely to say PLSs by writers were easier to understand. This is important if laypeople are the main target audience.

About one in three people said PLSs written by Cochrane Groups were easier to understand than those written by writers (29%). These were mainly healthcare professionals and journalists. These people thought PLSs written by Cochrane Groups were clearer because they were shorter, contained useful information about methods, contained more numerical details, had familiar subheadings and had less wordy sentences.

Regardless of which Summary they rated higher, people said that PLSs were easier to understand if they:

- were short and did not contain too much detail or repetition
- had clear subheadings and short sections
- used simple words, an informal tone and active voice
- had clear conclusions, implications and take-home messages
- broke up the text with short sentences and bullet points
- explained what certainty of evidence means in practical terms

We can be quite confident in the trends because:

- a large number of people took part
- there was a good mix of volunteers, with a range of roles, countries and languages, not just one 'type' of person
- 116 general members of the public took part, a key target audience
- many people said similar things so there were clear repeated themes

Below is a summary figure that compares the views between PLSs written by writers, and those written the usual way at Cochrane.

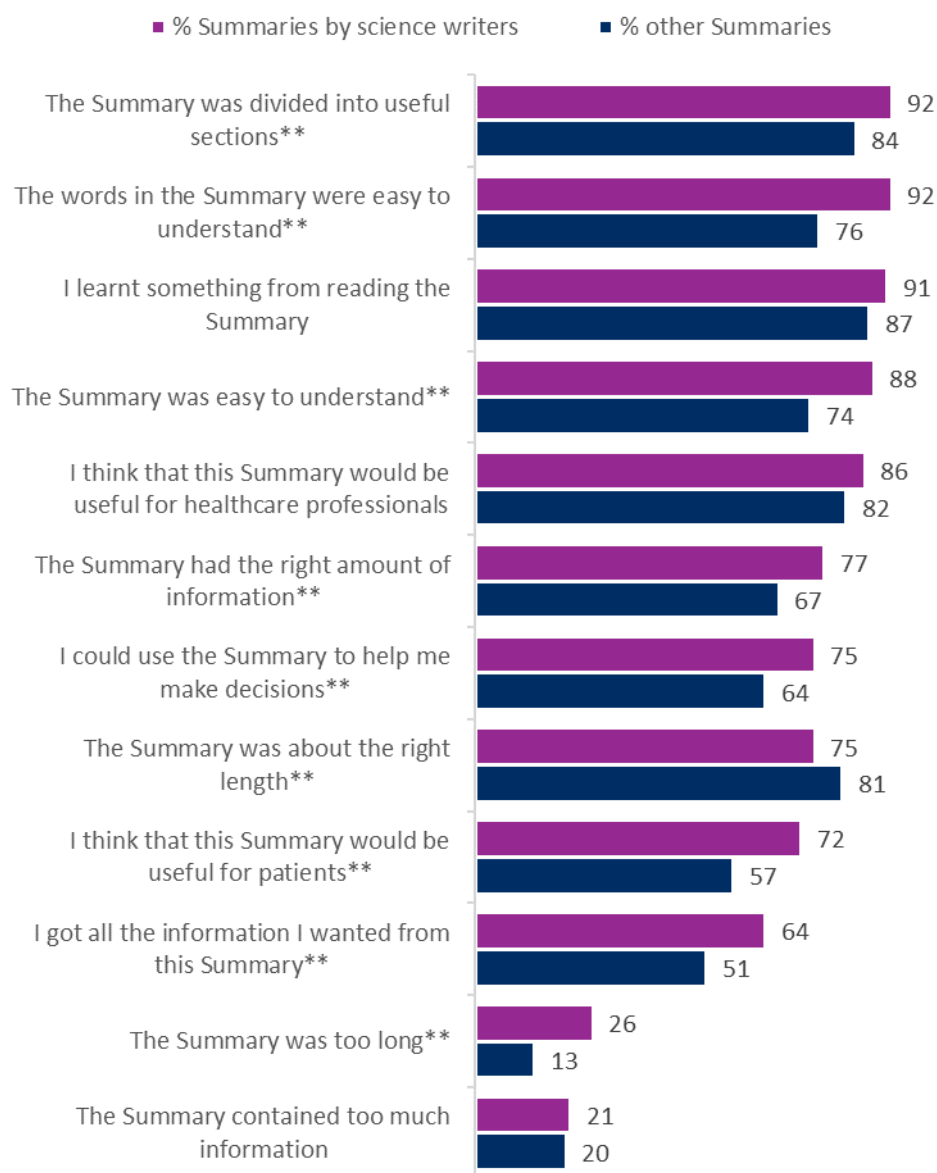


Figure 4: Comparing views about PLSSs

Note: 461 people provided feedback after they read a Summary.

This graph shows those who Strongly Agreed or Agreed on a 4-point scale.

Statistically significant differences are marked **

Implications for decision making

PLSSs by writers seem to be easier for many people to understand, but this is not clear-cut. About half of our volunteers thought that other PLSSs were at least as good or even clearer. People were just as likely to answer comprehension questions correctly about other PLSSs. People already think our PLSSs are relatively easy to understand and useful. But we can do more to make our PLSSs even clearer, no matter who writes them. Volunteers recommended that we:

1. **Be explicit about the purpose and target audience for our PLSSs.** We can then adapt the content and style to that audience. Many people said that laypeople and professionals want different things from a PLSS. We could target our PLSSs to laypeople since we already have abstracts that contain many of the details professionals want.
2. **Develop a standardised template and ask everyone who writes Cochrane PLSSs to use it,** including Cochrane Groups. This may include 1 to 1.5 pages of text with bullet points; a 'news

style' main heading stating what we found; a key messages section at the start; standard sections for every PLSs and subheadings phrased as questions.

3. **Check that every PLSs follows plain language guidelines.** We could use a checklist to make sure that PLSs use short sentences, bullet points and numerals for all numbers (0, 1, 2). We could use a 'reading age' checker like the version available in Word. We could ask a layperson to check each PLSs. Many people volunteered to continue to help.
4. **Focus most on clear take-home messages.** This might include reducing how much we describe our methods and focusing on just the main outcomes. We could insert a link to the full abstract for more details. We could also include generic implications, like encouraging people to talk to their health professional where evidence is mixed or unclear.

What are the take-home messages?

This is a special section prepared for us by the external organization responsible for carrying out the understandability assessment.

1. We were able to get useful feedback quickly

We found that it was feasible and useful to ask people for feedback about our Summaries. There was no shortage of people willing to volunteer. **We gathered feedback from 461 people in about one month.**

These people were not only the 'usual people' from whom Cochrane gets feedback. People from many different countries took part and many had a main language other than English. About half knew little or nothing about Cochrane.

2. We can keep improving our Summaries, no matter who writes them

There were many positive comments about the Summaries written by science writers. People liked how these Summaries used more simple language, bullet points, shorter sentences and defined technical terms. Many also liked the 'question and answer' style of using subheadings phrased as questions. Some liked having 'key messages' listed up front.

Even so, people did not overwhelmingly think that Summaries written by science writers were easier to understand than those written by Cochrane Groups. Some people definitely thought this, but others felt that there was not much difference.

We might expect at least three-quarters of volunteers to say that Summaries prepared by science writers are easier to understand if there was a meaningful difference between the Summaries. 53% of volunteers actually thought this, which is still a good result, but perhaps not 'clear cut'. 29% thought Summaries written by Cochrane Groups were actually clearer and 18% thought both types of Summaries were equally easy to understand.

On one hand this means that 7 out of 10 of people thought that Summaries written by science writers were as clear or clearer than other Summaries. On the other hand it means that 5 out of 10 thought that Summaries by science writers were no clearer than other Summaries, so were not adding any value to understanding over and above what is already available from Cochrane Groups.

The reasons that people did not always think Summaries written by science writers were easier to understand were:

- they thought these Summaries were too long and detailed
- they said that these Summaries contained a lot of repetition
- they thought that these Summaries often had longer sentences
- they said that there was not a consistent style across the Summaries

- some did not like that these Summaries used unfamiliar heading titles
- they said that some of the wording oversimplified the content
- they said that the implications were sometimes not as clear
- they said that some other Summaries described the practical meaning of the certainty of evidence more clearly

These give us very tangible things to focus on.

3. People like our Summaries overall

When interpreting this feedback we need to bear in mind that **people were very positive about Cochrane’s Plain Language Summaries overall**. They thought that most of the Summaries were easy to understand. They rated our Summaries a median of 8 out of 10 for ease of understanding, which is high.

People listed many positive things that all our Summaries did to communicate well. They gave feedback about areas for development because we specifically asked them to tell us what we could improve. We are already planning to do some of the things people recommended, such as having clear guidance for anyone writing a Summary and having definitions and phrases to explain common terms. We could consider some of the other practical suggestions, like using a checklist after writing and assessing the reading age.

Exploring whether our Summaries are easy to understand is just one component of evaluating the value of having dedicated science writers. The take-away message is that **most people think that Summaries written by science writers are at least as good or clearer than other Summaries, and there are practical things that we can do to make them even better**.

4.5 Translatability

Background

Cochrane Groups in different parts of the world translate Cochrane evidence to make it more accessible, and to reduce the linguistic barrier to global evidence-informed health decisions. Cochrane has published more than 34,000 translations of Cochrane Review PLSs and/or abstracts across 15 languages as of February 2021. Therefore, we believe that it is crucial to assess not only the understandability of PLS but also the translatability. As part of the translatability assessment, we wanted to know whether translators think PLSs produced by science writers (Project PLS) are easier to translate than PLSs produced by Cochrane Groups (Control PLS).

Methods

We identified all PLSs written by science writers between 1 September 2020 and 25 January 2021, plus all corresponding completed translations and the translators responsible. We then checked which of these translators had also translated or edited a PLS written by a Cochrane Group within the same timeframe. If translators had translated or edited more than one PLS from each category we attempted to select a PLS on a similar topic and by the same review group, where possible. We identified 75 eligible translators.

We designed a quantitative survey asking about translator demographics, assessment of each of the selected PLSs based on specific criteria, and the ease of translatability (see [Appendix D](#)). We improved upon the survey we used in the mid-year evaluation. We made this survey more quantitative since we wanted to reach more translators and maximise our capacity to analyse the data.

We contacted each translator individually via email, introduced the project and invited them to participate in the evaluation. The email contained instructions on how to participate, a link to the questionnaire, links to the two selected PLSs in Memsources (the Translation Management System used for initial translation or editing of the PLS), and a deadline. Participants were not informed which PLS was the Project or the Control PLS. We

followed up twice with reminders before the deadline approached. We also reached out to translation managers, so they were aware of the project and that we were contacting their translators.

Limitations

- PLSs are known to be heterogeneous. If we compare the translatability of the PLSs of different reviews and a small set of PLSs, the conclusions we can draw from that are limited.
- We attempted to match the selected Project and Control PLSs by subject based on the title and/or review group if more than one PLS per category had been translated. We did this to limit the possibility that one PLS topic might be easier to understand and therefore translate. Since PLSs can vary depending on factors such as topic complexity, number of included studies, methodology, and overall length of the review, these selection criteria do not guarantee the homogeneity of the selected PLS.
- Cochrane's translation teams are heterogeneous. Different languages have different particularities, morphological, syntactical and grammatical structures, cultural settings, and healthcare and system contexts. The experience of translators varies in terms of how much they have translated, health/Cochrane knowledge, English skills, translation, and language skills. Some translators complete one translation within a few months, others five per month. Different language teams use different machine translation engines, routinely for all translations or on a more ad hoc basis.
- Most translators have a health background, not a language or translation background. When we asked our translation project managers for feedback on PLS as part of a PLS project in 2017, they were more likely to comment on terminology and methodology than language, grammar, or syntax.
- We assume that translators need to translate a PLS to be able to give meaningful feedback on translatability. 'Translatability' is however not well-defined and is highly subjective. Whether individual translators judge a PLS as easy or difficult to translate will vary depending on their native language, skills, knowledge, and personal preferences, and on whether the translation workflow involves machine translation. The same PLS may be judged as easy to translate by one person, and difficult to translate by another.
- We rely on translators to participate in the evaluation as volunteers (and most of them are translating on a volunteer basis already). Central Executive staff time to co-ordinate and analyse the evaluation is also limited. We needed to be pragmatic about what is possible under these circumstances.

Findings

Demographics

In total, 52 out of the 75 selected translators we contacted completed the survey. We received a mix of respondents who translate into 12 different languages (see **Figure 5**). Most respondents had been translating for Cochrane for a substantial amount of time; 59.6% had translated Cochrane evidence for a year or more. Most (96%) hold a bachelor's degree/undergraduate diploma or higher level of education. Most (80.7%) had an educational or professional background and/or work experience in medicine, health, or a related field. Only 23% of respondents had an educational or professional background and/or work experience in translation, languages, or communication; 26.9% respondents are currently students.

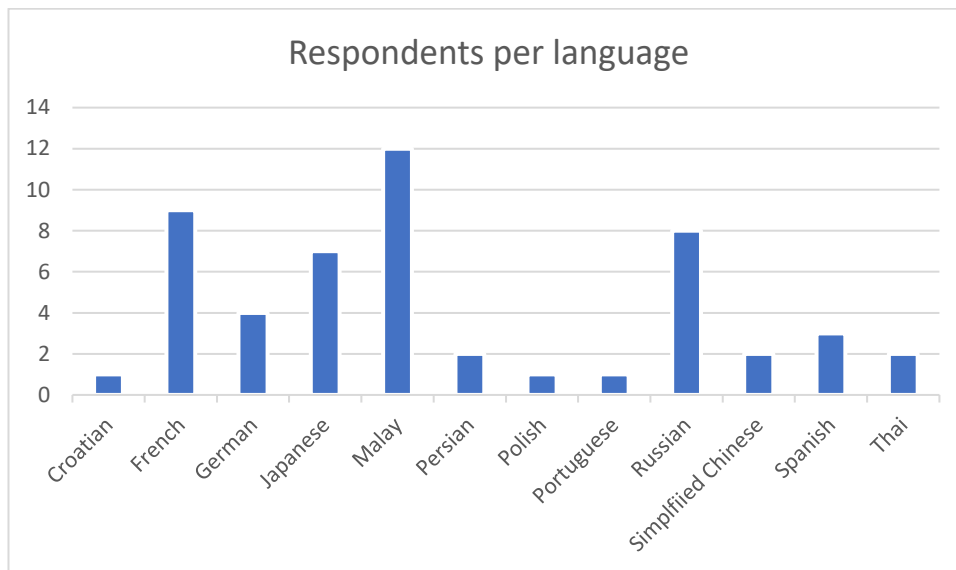


Figure 5: Respondents per language for translatability assessment

Evaluation of Project and Control PLSs

In the next section of the survey, we asked respondents to indicate if they agreed with a range of statements for each of the two PLSs. In total, 50 respondents completed this section (results for Project PLSs in purple and Control PLSs in blue):

- 58% versus 56% of respondents indicated that they didn't know a lot about the topic before translating the summary;
- 96% versus 100% thought that the summary was easy to understand;
- 90% versus 94% of respondents found it easy to translate;
- 86% versus 86% indicated that the medical and other technical terms in the summary were easy to translate;
- 92% versus 90% said that the grammar and sentence structures were easy to translate;
- 70% versus 66% indicated that they had to look up words or phrases (for example through an online search) to make sure they understood them correctly or found the adequate translation for their local context;
- 56% versus 50% felt that they had to add words and phrases or explanations in the translated version to help people understand the medical or methodological aspects of this summary in their language or country;
- 68% versus 64% of respondents had to adapt or restructure some of the text in the translated version to make it work in their language.

Table 7: Responses to translatability survey questions asked about PLSs written by writers vs. written the usual way (results for Project PLS in purple and Control PLS in blue)

Do you agree or disagree with these statements about this summary?								
	Strongly agree		Agree		Disagree		Strongly disagree	
I already knew a lot about this topic before I translated the summary	6%	6%	36%	38%	48%	40%	10%	16%
The summary was easy to understand	34%	24%	62%	76%	4%	0%	0%	0%
The whole summary was easy to translate	18%	24%	72%	70%	10%	6%	0%	0%
The medical and other technical terms in the summary were easy to translate	22%	18%	64%	68%	14%	14%	0%	0%
The grammar and sentence structures were easy to translate	30%	26%	62%	64%	8%	10%	0%	0%
I had to look up words or phrases (for example through an online search) to make sure I understood them correctly or found the adequate translation for my local context	16%	12%	54%	54%	20%	22%	10%	12%
I had to add words and phrases or explanations in the translated version to help people understand the medical or methodological aspects of this summary in my language or country	18%	10%	38%	40%	26%	38%	18%	12%
I had to adapt or re-structure some of the text in the translated version to make it work in my language	20%	18%	48%	46%	26%	24%	6%	12%

Comparing Project and Control PLS

Which summary was easier to translate?

In total, 49 respondents answered this question:

- 34.7% indicated that both summaries were equally easy or difficult to translate;
- 34.7% thought that the Project PLS was easier to translate;
- 30.6% indicated that the Control PLS was easier to translate.

Was there anything that made one of the summaries easier to translate?

In total, 29 respondents answered this question. Of these, 48.3% indicated that the Project PLS was the easier to translate because of easier sentence structures, simpler language, short sentences, commonly used terms, a good knowledge of the subject matter, use of bullet points, and the use of active voice.

By comparison, 41.4% of respondents indicated that the Control PLS was easier to translate because of a good knowledge of the subject matter, easier sentence structures, fewer technical terms or clearer terminology, and shorter sentences.

Was there anything that made one of the summaries harder to translate?

In total, 32 respondents answered this question. Of these, 37.5% indicated that the Project PLS was harder to translate. Reasons for this included: the complexity of the review, less familiarity with the topic, more complex sentence structures, and technical terms.

By comparison, 40.6% of respondents indicated that the Control PLS was harder to translate. Reasons for this included: longer sentences, use of passive voice, less familiarity with terms, terms that were difficult to translate, and the complexity of the review.

Is there anything else that you would like to say about this activity?

Most participants who answered this question thanked us for asking them to participate in this project and appreciated that Cochrane is trying to find ways of improving their PLS writing. One participant suggested providing ‘a permanent place (for example an online platform for translation managers or a translations’ ombudsman) where we could submit our comments or make suggestions on how to improve the original English texts of specific PLSs as we are revising translations and spot errors/difficulties. That way, the original authors could quickly be informed that some sections of their PLS are confusing/unclear/difficult to understand (and translate) and they could be encouraged (by Review Group managing editors, for example) to modify/improve these sentences to make them more reader-friendly.’

Implications for decision making

Overall, all Cochrane PLS have been rated as easy to understand and translate. However, although understandability (96% for Project and 100% for Control PLS) and translatability (90% for Project and 94% for Control PLS) of both types of PLS were rated very highly, the majority of translators (70% for Project and 66% for Control PLS) still had to look up words or phrases to make sure they understood them correctly or find an adequate translation for their local context. Moreover, a high proportion of translators (50% or more) still needed to make a substantial amount of changes by adding words or phrases and adapting or restructuring their translations to make them work in the target language. When asked which PLS was easier to translate, the results were split almost evenly, with a slight trend towards Project PLS.

Based on the comments and suggestions provided by the respondents the following recommendations can be made for future PLS writing:

- short, simple sentences;
- clear sentence structure;
- use of active instead of passive voice;
- use of bullet points;
- explanation or definition of technical terms;
- glossary for words and expressions commonly used in Cochrane PLS writing.

4.6 Readability

Background

We wanted to find out whether the PLSs produced as part of the pilot project were easier to read than the PLSs typically produced at Cochrane and whether this had any implications for the length of PLSs.

Methods

We identified all the PLSs assigned to writers and published prior to 2 February 2021, according to the data in the writers’ logbook. For each of these PLSs, we identified a control, i.e. a PLS:

- of the same type (intervention review, diagnostic test accuracy review, etc.);
- produced by the same group;
- on a similar topic (i.e. same intervention(s) for similar problem(s), or vice versa; or similar interventions for similar problems, e.g. alternative medicine for a musculoskeletal problem); and
- published between 2018 and 2021.

We selected these criteria in an attempt to minimise the impact of factors other than writers’ input (e.g. groups’ approaches to writing PLSs, topic difficulty or changes in guidance) on our analysis. When several PLSs met the four criteria listed above, we selected the most recent PLS as the control.

When finding a control PLS that met the eligibility criteria was not possible, we chose:

- the most recent PLS produced by the same group as the pilot PLS;
- for the same type of review;
- and not already identified as a control for another PLS.

We used the SMOG index (<https://readabilityformulas.com/free-readability-formula-tests.php>) to calculate the readability of PLSs. The SMOG index estimates the years of education needed to understand a piece of writing. For example, a SMOG score of 11 means that the text can be understood by someone in 11th grade (US), i.e. someone aged 16 to 17 years old. The word count of each PLS was checked in Microsoft Word for Mac (version 16.43).

In Stata (version 14) we plotted SMOG scores and word counts to check their distribution, and used the two-sample t-test to compare the average SMOG scores and word counts of pilot PLSs versus control PLS.

We re-ran the SMOG analyses separately for:

- PLSs where it had been possible to find a control that met the four eligibility criteria listed above;
- PLSs where it had not been possible to find a PLS that met all four of these criteria.

The aim of this analysis was to check whether the criteria for selecting controls made a difference to results.

Limitations

Our analyses may have been affected by cross-contamination. For example, we know that some PLSs that were not part of the pilot project incorporated standard text written by the writers (e.g. the PLS for review CD002783 produced by the Vascular Group re-used the headings and a description of methods routinely used by a writer).

Findings

A total of 190 PLSs contributed to our analyses (95 pilot PLSs and 95 controls). Nearly a third (28) of controls were on a similar topic to pilot PLSs. SMOG scores and word counts were normally distributed.

The average SMOG score was:

- 10.8 for pilot PLSs (min: 7.5, max: 13.8). This means that pilots PLSs can be understood by someone in 11th grade (US), i.e. someone aged 16 to 17 years old;
- 12.1 for control PLSs (min: 6.3, max: 17.3). This means that pilots PLSs can be understood by someone in 12th grade (US), i.e. someone aged 17 to 18 years old.

Sensitivity analyses did not indicate that the method of selecting controls made a difference to averages (when only PLSs on similar topics were analysed, average SMOG for pilot PLSs was 10.9 and for control PLSs 12.1; when the most recent controls only were analysed, average SMOG for pilot PLSs was 10.8 and for control PLSs 12.2).

The average word count was:

- 672 for pilot PLSs (min: 265, max: 1324);
- 520 for control PLSs (min: 183; max: 1192).

Implications for decision making

The PLSs produced as part of the pilot project were easier to read and lengthier, on average, than the usual PLSs produced by Cochrane.

4.7 Time to write a Plain Language Summary

Background

One of the aspects that we wanted to test in this project was how long writers would take to produce PLSs. We originally wanted to know whether writers would take substantially more or less time than the current process at Cochrane to produce PLSs. It is not possible to assess how long it takes to write a control PLS as this process is conducted by many different author teams usually prior to submission to the CRG. Once submitted CRG editorial staff and consumers contribute varying levels of time to edit the PLS. Nevertheless, for the ongoing sustainability of the project it is worth assessing for project PLSs.

Methods

The PLS writers roughly estimated how long it took them, on average, to produce a PLS.

Limitations

Writers did not time actual writing time for each PLS, but kept a record of the date the PLS was assigned and date it was submitted. This also took into account time taken to check and make amendments within the PLS writing team, not just writing time. Writers did not usually work with CRGs, so any changes CRGs made were also not counted.

Initially, PLS writers worked with one Network (or with Central Editorial Service), so there was an opportunity to become familiar with certain topics, which may have reduced writing time.

Findings

Time to write a PLS reduced over the course of the project (see **Table 8**).

Table 8: Time to write PLSs

	First evaluation	Second evaluation
Copy Editing Manager assigns PLS	5-10 minutes	5-10 minutes
Writers retrieve review	5-10 minutes	5-10 minutes
Writers draft PLS: 1 day	1 day	3-5 hours
Copy Editing Manager gives feedback	1 hour	20 minutes
Writers address comments and send to copy editor	½ day	1-2 hours

Implications for decision making

Overall, time to write a PLS reduced over the course of the project. This is possibly due to a combination of familiarity with the task – how to set about it, what’s important, etc – and the use of standard headings and format. It also took less time for the Copy Editing Manager to check the PLSs and less time for the writers to address her comments and make changes to drafts as the project went on.

Timings for writing PLSs vary because Cochrane Reviews vary in length, complexity and quality. It is difficult to pin down exactly how long it takes to write a PLS. The most time-consuming part of writing a PLS is becoming familiar with the topic. This could potentially be reduced if a review author, for example, were writing the PLS, however there may then be a payoff with the quality and ‘plainness’ of the writing.

5 Conclusions

This pilot project had two aims:

- 1) recruit a small team of scientific writers to produce PLSs with the objective of improving the quality, understandability, translatability, and consistency of the PLS; and
- 2) produce a set of guidance and templates for writing PLSs at Cochrane, building on pre-existing knowledge and guidance, using the writers' own skills and expertise, and incorporating the results of this evaluation.

This evaluation was developed to test aim 1. We evaluated the process and impact of having scientific writers (referred to as 'writers' throughout this report) produce PLSs for Cochrane, when compared against the usual method of producing PLSs. This report summarised various aspects of this evaluation and aims to facilitate evidence-informed decision making on how to proceed with PLS writing at Cochrane.

Based on the results of this evaluation, we can conclude:

- 1) **The PLSs the writers produce undergo changes prior to being published, that the writers do not make.** Therefore, published PLSs do not necessarily reflect the direct output of what a writer would produce. This has implications for the evaluation (we end up evaluating an 'impure product' from writers) and for improving PLSs at Cochrane.
- 2) **CRGs value having access to a scientific writer and believe that the PLSs were improved in terms of readability and consistency.** Despite the PLS writers not having clinical expertise and some changes to the PLS being required, CRGs noted improved quality on the PLSs and generally little impact on editorial processes.
- 3) **PLSs by writers seem to be easier for many people to understand, but this is not clear-cut.** About half of our volunteer testers thought that other PLSs were at least as good or even clearer.
- 4) **People already think our PLSs are relatively easy to understand and useful.** This could perhaps account for the slight preference for PLSs written by writers, instead of seeing a larger difference (the better something is to begin with, the harder it is to see major improvements!)
- 5) **There are practical things that we can do to make PLSs even better.** These include a range of minor and more substantial changes to the content, structure, and purpose of PLSs. These recommended changes will be covered in a separate document and are incorporated into the guidance and templates resulting from this project.
- 6) **There was a contradiction between what users told us they want in the final evaluation, and the changes we made after the mid-year evaluation.** We raised the word limit at the mid-year evaluation to allow for more space to write in plain language (the team felt they needed more words to be able to explain things adequately). Yet in the final evaluation, the most common feedback we received was that people preferred short PLSs.
- 7) **Translators are split almost evenly on which type of PLS are easier to translate, with a slight preference towards PLSs written by writers.** It is possible that the margin of improvement in plain language writing between PLSs by writers and PLSs written the usual way is not substantial enough to affect ease of translation. Other interventions may be needed to affect the ease of translation more than just how the PLS is written.
- 8) **The PLSs produced as part of the pilot project were easier to read (according to a SMOG score) and slightly longer, on average, than the usual PLSs produced by Cochrane.**
- 9) **Overall, time to write a PLS has reduced over the course of the project.** This is possibly due to a combination of familiarity with the task – how to set about it, what's important, etc – and the use of standard headings and format.

10) **With dedicated resources, we were able to conduct a more robust evaluation.** This is especially true of the understandability assessment, where we were able to reach a broader audience, process more respondents, and do a more detailed analysis than the first understandability assessment that was carried out 'in-house'.

We attempted to design an evaluation that was appropriate to measure aim 1, and pragmatic and reasonable given project resources and timeline – and we believe we succeeded in this. It is worth stating that conducting an evaluation around a complex process like writing PLSs at Cochrane was not easy, and required dedicated resources, knowledge in evaluation, and buy-in from decision makers to be successful. However, it is worth doing, as it yields evidence and data that can be used in decision making, so we can be confident that we are acting as an evidence-informed organization when making decisions.

Appendix A: Chart of recommendations from mid-year evaluation

Recommendation	Comments/Rationale
<p>Increase word count to 850 as soon as this is possible. It needs to be easy for the managing editors to manage, so will require changes to software.</p>	<p>**#1 request of ER + writers. This would:</p> <ol style="list-style-type: none"> 1. enable inclusion of data; 2. improve phrasing of the results; 3. reduce ambiguity for translators; and 4. permit a fuller explanation of methods, particularly certainty of the evidence. 5. Important information would not need to be left out!
<p>Enable formatting = heading levels and bulleted/numbered points – requires changes to software, at some point (RevMan Web, Archie, Cochrane Library?)</p> <p>Possibility of collapsible headings.</p>	
<p>Thrash out a GRADE/EPOC wording that works for PLSs.</p>	<p>Once we have an increased word count, we can include a standard paragraph in the PLSs to explain certainty (results will/won't change etc), then present results using standard phrases that reflect the certainty of each. We will use an EPOC-like table to draw these up. These phrases would need to be run past translators and possibly aired more widely before being officially accepted, but could speed up the writing and translating significantly once they have been decided.</p>
<p>Append survey to PLSs to establish who is using, and other salient points</p>	<p>Would require some input from programmers, and we would need to decide what we wanted to know. We might be able to use this in future for evaluations, for example, we could ask:</p> <ol style="list-style-type: none"> 1. Were there any words or concepts that were difficult to understand? (NOTE: we'd have to have capacity to analyse potentially a lot of responses here) 2. What language are you reading in? (might be able to find this information out without survey?)
<p>Translators to produce a list of 'unspecific terms with multiple meanings' and ambiguous phrases so we know what to avoid/use. Cochrane France has done some work on this. We will seek feedback from other teams.</p>	<p>Done soon, directly between writers and translators via meetings or email</p>
<p>Formalise the organisation of storage of disease descriptions and treatments – possibly by CRG? To facilitate reuse of text that's already been written.</p>	
<p>Writers are going to produce a mission statement that covers:</p> <ol style="list-style-type: none"> 1. What is a Plain Language Summary? 2. What is it for? 3. Who are we writing for? 4. What do we hope it delivers? 	

Future training for writers (Dissemination Checklist training? Connecting with Claire Glenton etc?)	JA - I suggest Nicole and Denise join the Dissemination Checklist cohort two training webinar series in early 2021
Next (and final) evaluation: Feb/March	<p>Since this will be the final evaluation, we should focus on what we need to evaluate this project and not seek feedback for improvement (project 1.0 ends in May).</p> <p>Need to ensure that evaluation meets the needs and concerns of entire project team.</p>
Remove accuracy evaluation from next evaluation	‘The point was to make sure that writer-written PLSs were as accurate as control PLSs, and they are. No need to measure further.’ Toby’s suggestion to remove, everyone in agreement.
<p>Include a different population in the next understandability assessment, such as:</p> <ul style="list-style-type: none"> - younger readers (10-15 years?) - people interested in the topics of the PLSs they are reviewing - more lay readers 	<p>Lynda Ware (UKCC) may be able to assist with including younger readers.</p> <p>Young readers – 10-14 is the reading age we are writing for, but can we evaluate PLSs in this reading age without working with 10-14 year olds? Ethical considerations about recruiting this group (parental consent, hard to reach this audience because we currently don’t produce things for them, is it OK to include people in an evaluation where the results don’t directly benefit them because they aren’t readers of our materials?). Think about how this is possible, what the ethical considerations are, and how feasible it is to reach this audience.</p> <p>People interested in topics of PLS they are reviewing – Tried to do this in the other evaluation, but found it too difficult to recruit and match based on interest for 20 different PLS topics (each consumer needing to be interested in 2 different topics). Hard to quantify ‘interest’. Think about how this is possible – how to quantify interest, how to recruit and match patients, and how to do this for 20 PLS topics.</p> <p>More lay readers – would like consumers who are more lay language. Will recruit differently next time, not through Task Exchange. To get geographical reach, will ask Toby and Judith about whom to contact that may be able to help us with convenience sampling. Jo suggests we reach out to more than just consumers this time – health/science journalists, guideline developers, clinicians (suggests we can recruit for all of these through CRGs and contacts from COVID evaluation). How to balance more people with the time it takes to recruit/analyse data?</p>
UKCC, via ARGO, is running a project to see whether they can help authors to write better Abstracts. Need to establish to what extent it might be helpful to work alongside them.	
Remove track changes option to provide feedback from understandability and translatability assessment. Replace with more quantitative questions and more	

focused questions on words or phrases that are hard to understand	
Be sure to include results from COVID-19 evaluation that pertain to PLS feedback	
Impact on CRGs questions – change to get more in-depth feedback and reduce ambiguity	No other CRGs to join the project officially unless EPOC and Tobacco Addiction jump in

Appendix B: Survey measuring impact on editorial processes

CRG information

Name of CRG:

Name of person filling out the questionnaire:

Position within CRG:

The quality of PLSs

To what extent has having access to a professional PLS writer affected the quality of your PLSs?

Much worse quality	Worse quality	No difference in quality	Better quality	Much better quality

With regard to content (please write as much as you like in the text boxes below):

1. Which aspects were improved?
2. Which aspects were not improved?
3. Which areas of professionally written PLSs do you think still need work?
4. If you made changes to the PLSs before you published, please tell us something about the sections you changed and why you made the changes.
5. What has the feedback on the quality been from your consumers, authors,

editors?
6. Is there anything else you would like to tell us about the content of professionally written PLSs?

The process of writing PLSs

With regard to the efficiency of the editorial process:

What kind of impact has having a professionally written PLS had on your editorial processes?

Very bad impact	Bad impact	No impact	Positive impact	Very positive impact

1. Which aspects of the process did you find helpful?
2. Which aspects of the process did you find unhelpful?
3. If PLS writers were to be available long term, when in the editorial process would it be best to use them, and why?
4. What has the feedback on the process been from your consumers, authors, editors?
5. Is there anything else you would like to tell us regarding the pilot processes/administration?

Final questions

Overall, if access to professional PLS writers were to continue, how would you regard this?

Very negatively	Negatively	Neutrally	Positively	Very positively

Is there anything else you would like to tell us?

Thank you for completing this questionnaire, please return it by **Monday 1 March 2021** to:

eroyle@cochrane.org

jhilgart@cochrane.org

roses.parker@ouh.nhs.uk

Appendix C: Full understandability assessment

The understandability assessment full report can be found here:

<https://www.dropbox.com/s/kn9a8rdf6itexh3/Understandability%20assessment.docx?dl=0>

Appendix D: Survey for translatability assessment

Help make Cochrane Plain Language Summaries easier to translate

Thank you for offering your time and feedback to help us make Cochrane Plain Language Summaries easier to translate. We value your input and will use it to improve how we write Plain Language Summaries. Please refer to the two Plain Language Summaries you were sent via email when you provide your feedback. It should take about 15 minutes. If you have any questions, please email Judith Deppe (jdeppe@cochrane.org).

1. What is your first and last name? (We will only use this information to check who has already provided feedback or not)
2. How long have you been translating Cochrane evidence?
 - a. Less than 6 months
 - b. Between 6 months and 1 year
 - c. Between 1 and 3 years
 - d. More than 3 years
3. What is your highest level of education?
 - a. School
 - b. Professional / vocational training or apprenticeship
 - c. Bachelors degree or undergraduate diploma
 - d. Masters level degree or diploma
 - e. PhD/doctorate level degree
4. Do you have an educational or professional background and/or working experience in one of the following fields?
 - a. Medicine, health, or related field
 - b. Translation, languages, or communication
 - c. Other, please specify
5. Are you currently a student?
 - a. Yes, in medicine, health, or related field
 - b. Yes, in translation, languages, or communication
 - c. Yes, in another field (please specify)
 - d. No, I'm currently not a student

First Plain Language Summary

Please read one of the Plain Language Summaries from the email you received and answer the questions below about this Plain Language Summary.

6. Please indicate the CD number of the Plain Language Summary:
7. Do you agree or disagree with these statements about this summary?

	Strongly agree	Agree	Disagree	Strongly disagree
I already knew a lot about this topic before I translated the summary				
The summary was easy to understand				
The whole summary was easy to translate				
The medical and other technical terms in the summary were easy				

to translate				
The grammar and sentence structures were easy to translate				
I had to look up words or phrases (for example through an online search) to make sure I understood them correctly or found the adequate translation for my local context				
I had to add words and phrases or explanations in the translated version to help people understand the medical or methodological aspects of this summary in my language or country				
I had to adapt or re-structure some of the text in the translated version to make it work in my language				

Second Plain Language Summary

Please read the second Plain Language Summary and answer the questions below.

1. Please indicate the CD number of the Plain Language Summary:
2. Do you agree or disagree with these statements about this summary?

	Strongly agree	Agree	Disagree	Strongly disagree
I already knew a lot about this topic before I translated the summary				
The summary was easy to understand				
The whole summary was easy to translate				
The medical and methodological terms in the summary were easy to translate				
The grammar and sentence structures were easy to translate				
I had to look up words or phrases (for example through an online search) to make sure I understood them correctly or found the adequate translation for my local context				
I had to add words and phrases or explanations in the translated version to help people understand the medical or methodological aspects of this summary in my language or country				
I had to adapt or re-structure some of the text in the translated version to make it work in my language				

Comparing the two summaries

11. Which summary was easier to translate? Please think about how clear the summary was, regardless of the topic you liked best. Please enter the CD number of the summary that was easier to translate here. If both summaries were equally easy or difficult to translate, please write 'BOTH': [open text]

12. Was there anything that made one of the summaries easier to translate?

[open text box answer]

13. Was there anything that made one of the summaries harder to translate?

[open text box answer]

14. Is there anything else that you would like to say about this activity?

[open text box answer]

THANK YOU FOR YOUR FEEDBACK!