PICNet PROVINCIAL INFECTION CONTROL NETWORK OF BRITISH COLUMBIA

Evaluation of the Provincial Infection Control Network of British Columbia's Respiratory Outbreak Prevention and Control Guidelines

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Executive Summary

The BC Provincial Infection Control Network's *Reference for Respiratory Outbreak Prevention & Control Guidelines* were developed in response to a stakeholder proposal in 2005. Stakeholders wanted to avoid duplication, maximize the use of infection control resources and minimize inconsistencies in the recommendations made by regional guidelines. The goal was therefore to develop collaborative, standardized, research-based guidelines that exemplify best practices in British Columbia.

Given the lack of comprehensive evaluation tools, various methods were used to evaluate the guidelines. The evaluation process relied on qualitative and quantitative data to answer four key questions:

The aim of this evaluation, commissioned by Provincial Infection Control Network of British Columbia (PICNet), is to evaluate the strengths and weaknesses of the PICNet's *Reference for Respiratory Outbreak Prevention & Control Guidelines* (ROPC). The results of this evaluation will be used to update the current guidelines document and improve the development process for future documents. Additionally, this exercise will develop an evaluation process that can be used to evaluate other PICNet guidelines.

1. Do the guidelines meet international quality standards of guidelines development?
2. Did the guidelines reach the target audience?
3. Were the guidelines utilized by the target audience?
4. Were the guidelines applicable to the practice of the target audience?

The Appraisal of Guidelines Research and Evaluation (AGREE) instrument was used to answer the first question and an online survey and key informant interviews were used to answer questions 2, 3 and 4.

The AGREE instrument, a validated and recommended guidelines appraisal tool, was applied to the guidelines by three appraisers to determine if the PICNet document met international standards.

Three key informants, who were involved with the development of guidelines, were interviewed to gain insight into the development process, to get feedback on the current state of the guidelines and to identify evaluation questions.

An online survey with 17 items was used to obtain views of the PICNet's community of practice (target audience) regarding the language, content, organization, length and practicality of the guidelines.

Using the AGREE instrument, we found that the document had major weaknesses in the areas of rigour of development and applicability. The online survey data showed that a majority (83.3%) of the respondents were familiar with the existence of the guidelines document. About 60% of the respondents had used the document to develop or update local respiratory outbreak plans. Participants indicated that length of the document and existence of locally developed documents as main reasons for lack of utilization of the PICNet guidelines. Moreover, of the people who were aware of the guidelines, 65.9% reported that the document meets the needs of their organization and 70.2% indicated that the recommendations provided were useful.

Key recommendations were formulated, based on of the results of the evaluation exercise, to improve *PICNet's Reference for Respiratory Outbreak Prevention & Control Guidelines* and develop a standardized guidelines evaluation tool to be applied to future documents. These recommendations are listed below:

1. The inclusion of all relevant stakeholders, including patient and frontline staff representatives wherever appropriate, is necessary during the development process.
2. The AGREE instrument should be incorporated in the guidelines development process.
3. Development of the document should be followed by targeted dissemination.
4. Guidelines should be evaluated before they are updated.
5. Key informant focus groups and online surveys can provide valuable information during the evaluation process.
6. Efforts should be made to improve participation in the guidelines evaluation activities.

We concluded that PICNet's ROPC guidelines document should be updated in collaboration with relevant stakeholders. The recommendations to improve the document should be implemented to ensure that the product meets international standards and is applicable to the target audience and stakeholders.

Background

Clinical guidelines have become a ubiquitous aspect of clinical practice. They fulfill multiple roles, which include increasing the uptake of research findings, facilitating the delivery of healthcare, providing recommendations for healthcare professionals to tackle different scenarios and challenges, and standardizing clinical practices to improve reporting of healthcare data. Factors that influence the successful implementation of guidelines include the development methods, stakeholder involvement, dissemination and implementation (1). This report outlines the evaluation of a guidelines document.

Purpose Statement

The aim of the evaluation, commissioned by Provincial Infection Control Network of British Columbia (PICNet), is to evaluate the strengths and weaknesses of the ROPC guidelines (2). PICNet guidelines development committees will use the results of this evaluation to update the current ROPC guidelines document and improve the development process for future documents. Additionally, this evaluation exercise will develop an evaluation process that can be used to evaluate other PICNet guidelines.

Provincial Infection Control Network of British Columbia (PICNet)

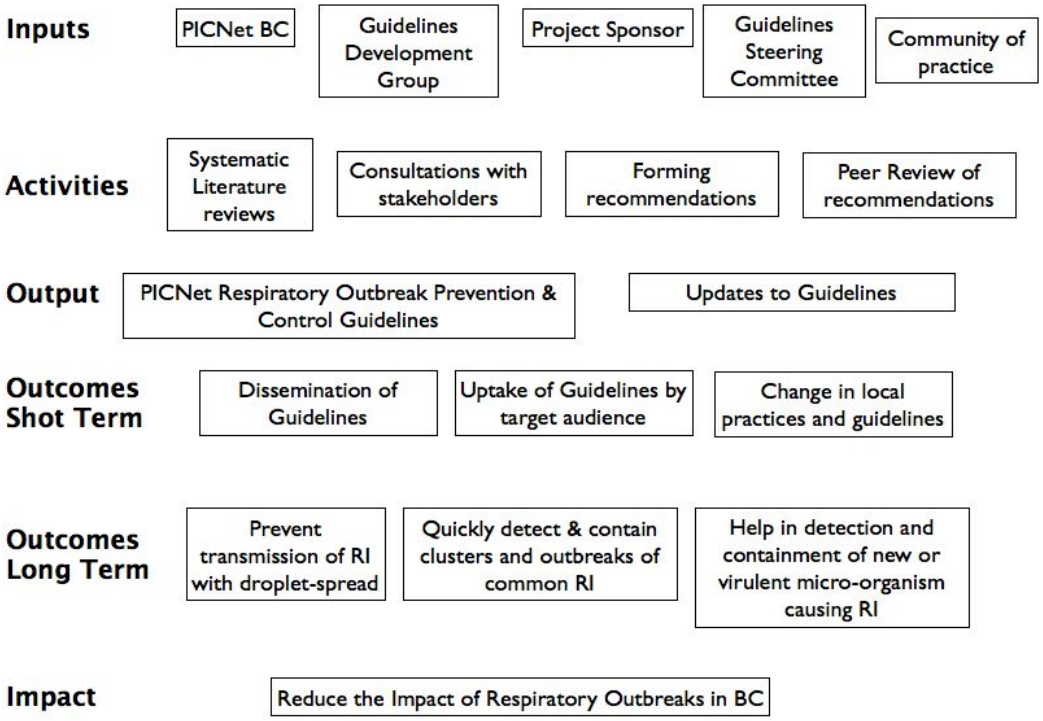
PICNet is a multidisciplinary network of Infection Prevention and Control (IPAC) experts from all regions of British Columbia (BC) that is accountable to the Provincial Health Services Authority. The mission of PICNet is "To maximize coordination and integration of activities related to healthcare associated infection prevention, surveillance and control for the province of British Columbia, using an evidence-based approach" (http://www.picnetbc.ca). One way PICNet aims to achieve its mission is by providing best practice guidelines. Guideline topics are selected from proposals submitted by stakeholders who form the community of practice (CoP). PICNet's CoP includes: Environmental Health Officers, Epidemiologists, Infection Control Professionals, Infectious Disease Physicians, Medical Health Officers, Medical and Clinical Microbiologists, Public Health Nurses, Physicians, Occupational Health Nurses and Physicians, and a range of other healthcare providers representing all Health Authorities in BC.

Respiratory Outbreak Prevention & Control Guidelines

PICNet's ROPC guidelines were developed in response to a stakeholder proposal in 2005. Stakeholders wanted to avoid duplication, maximize the use of IPAC resources and minimize inconsistencies in the recommendations made by regional guidelines. The goal was therefore to develop collaborative, standardized, research-based guidelines that exemplify best practices in BC (2). The guidelines were the first of such documents developed by PICNet and distributed to stakeholders in 2007. The BC Association of Medical Microbiologists, the Provincial Pandemic Influenza Steering Committee, the Communicable Diseases Policy Committee and WorkSafe BC reviewed the guidelines before dissemination. The document is consistent with the Public Health Agency of Canada and the BC Centre for Disease Control's recommendations. The complete document is available on PICNet's website (http://www.picnetbc.ca).

The guidelines were not intended to replace local or regional guidelines, but rather to serve as a reference for all healthcare settings when developing or updating guidelines. The guidelines were designed to address seasonal infections that are primarily spread by large droplets and not intended for influenza pandemics.

Figure 1: Logic Model for PICNet's Respiratory Outbreak Prevention and Control Guidelines



Guidelines Development, Update and Evaluation

Evaluation is an underdeveloped aspect of clinical guidelines. The evaluation process has many benefits, including identification of sections of the document or recommendations that need improvement or updating, and identification of issues of language, dissemination, uptake and usefulness. For these reasons, the evaluation process should be an integral part of the guidelines development process, including an update cycle, to ensure that the documents produced and disseminated are current and of the highest quality. A study by Shanneyfelt et al. (3) highlighted the need for guidelines evaluation. They found that a large number of guidelines published in peer-reviewed literature do not adhere to standards and recommended methodologies. They found major areas of weakness in the development process, the format, the evidence identification and the clinical recommendations.

There is a scarcity of validated tools, which can be used to conduct a comprehensive evaluation of guidelines. Vlayen et al. (4) performed a systematic review of appraisal tools for clinical guidelines and identified 22 instruments. There were great variations between the instruments including differences in validation methods, scoring scales and systems, country of origin, organization of development, and the number of items used in instruments. The authors reviewed instruments according to the 10 dimensions of quality guidelines developed by the Institute of Medicine (5). These dimensions are validity, reliability, clinical applicability, clinical flexibility, clarity, schedules review, development team, implementation, dissemination and evaluation. The authors recommended the Appraisal of Guidelines Research and Evaluation (AGREE) instrument (6), which is based on the Cluzeau instrument (1), to evaluate the methodological quality of clinical guidelines because the AGREE instrument is validated, easy to use, transparent and internationally developed. None of the instruments scored the quality of evidence used to formulate clinical recommendations. A similar review by a Canadian team (7) evaluated 15 instruments and found only one, the Cluzeau instrument, satisfied all 10 dimensions of quality guidelines mentioned above. The review also found similar weaknesses as Vlayen et al. (4) in the guidelines appraisal instruments. It is worth noting that this review was completed before the AGREE instrument was published.

It is important to seek stakeholders' views on the guideline documents to ensure that it meets their needs and is leading to improved clinical practice. Grol et al., (8) conducted an observational study to investigate the attributes of guidelines that influence guideline utilization in practice post-implementation. They found that guideline utilization is higher for guidelines that are specific, describe actions concretely, contain recommendations that are not controversial or hard to implement, and are based on clearly stated scientific evidence. Grol et al. (9) concluded that the absence of quality and evidence, alternate options when evidence is not available, translation of evidence into recommendations for practice, and feasibility and interpretation analysis are key weaknesses of clinical guidelines documents. They suggest using the AGREE instrument to evaluate guidelines for some of these dimensions (Appendix 1).

Determining the right time to update a guideline document is also important. Updating recommendations too early or without sufficient evidence could lead to waste of resources, while delayed updates can lead to diminished use and reduced future uptake by stakeholders. Shekelle et al. (10) have proposed a model for making decisions around timing of guideline updates (Appendix 2). The situations they consider as valid for warranting an update include changes in evidence on benefits and harms, outcomes considered important, available interventions, values placed on outcomes and resources of the healthcare system. Before a decision regarding an update is made, a multidisciplinary group of experts from the guidelines development group should conduct a review using this model.

Methods

Given the lack of a comprehensive evaluation tool, a variety of methods were used to evaluate the guidelines. This was done to ensure that the evaluation covered aspects of guidelines not covered by appraisal instruments. The evaluation process presented here relies on qualitative and quantitative data to answer four key questions:

1. Do the guidelines meet international quality standards of guidelines development?
2. Did the guidelines reach the target audience?
3. Were the guidelines utilized by the target audience?
4. Were the guidelines applicable to the practice of the target audience?

The AGREE instrument was used to answer the first question and an online survey and key informant interviews were used to answer question 2, 3 and 4.

AGREE Instrument

The Appraisal of Guidelines Research and Evaluation (AGREE) instrument was developed by an international group of researchers from 13 countries (11). The instrument was based on a previous appraisal instrument called the Cluzeau Instrument (1). The instrument contains 23 items grouped into six quality domains with a 4 point Likert scale used to score each item. The six domains are scope and purpose, stakeholder involvement, rigour of development, clarity and presentation, applicability and editorial independence.The instrument has been applied to 86 guidelines from 11 countries (12). The AGREE Instrument is generic and it can be applied to guidelines in any disease area or healthcare activity.

There are some important limitations of the AGREE instrument. Firstly, it is not possible to set thresholds for the domain scores to classify a guideline as 'good' or 'bad'. Secondly, the AGREE instrument does not evaluate the clinical content of recommendations or the quality of evidence the recommendations are based on. This is a common weakness of all existing guidelines appraisal tools (4). Furthermore, the AGREE instrument limits its appraisal to the guidelines document and does not allow for collection of data on the dissemination and uptake of the document by the target audience. Even with these weaknesses the AGREE instrument is the most validated guidelines appraisal tool available and is recommended by the World Health Organization (WHO) (13) and others (9) for the evaluation of guideline documents.

For the purpose of this evaluation, the AGREE instrument was applied to PICNet's ROPC guidelines by a group of appraisers. The group of appraisers consisted of 3 people: Manager of PICNet (B.G.) who was involved with guidelines development process, PICNet employee (J.A.) with knowledge of guidelines development and evaluation process, and an external evaluator (S.K.). The domain scores were calculated by summing up all the scores of individual items in a domain and by standardizing the total as a percentage of the maximum possible score for that domain.

Key Informant Interviews

Key informant interviews were conducted with three individuals who were involved with the development of guidelines, to gain insight into the development process, to get feedback on the current state of the guidelines and to identify evaluation questions. The interviews were semi-structured, conducted over the phone and taped, taking about 15-20 minutes to complete. The interview questions are presented in Appendix 3. The interview transcripts were analyzed to indentify common themes and potential evaluation and survey questions.

PICNet Community of Practice Survey

We surveyed PICNet's community to practice (CoP) to gather views on the quality, utility and scope of the ROPC guidelines. The survey was developed using the feedback from the key informants, PICNet's staff and the literature. The survey consisted of 17 items including questions on the respondents' employer, profession, and knowledge and utilization of guidelines. We asked participants to rank their responses on a Likert scale regarding their views on the language, content, organization, length and practicality of the guidelines. Moreover, we asked participants to provide general comments about the guidelines.

The online survey was conducted using Survey Monkey (www.surveymonkey.com). PICNet's CoP was e-mailed the online link for the survey. The participants were given one month to complete the survey. Four reminders followed the initial e-mail. Data collection was done from December 2009 to January 2010. The data was analyzed to indentify the level of usage and support for the guidelines among the respondents, regarding different aspects of the document. We were unable to perform detailed multivariate and bivariate analyses given the small sample size. The comments provided by the respondents were analyzed to better understand some of the common factors that may influence the uptake and utilization of the document.

Results

AGREE Results

The results of the agree evaluation are presented below (item scores can be found in Appendix 4).

Scope and Purpose: The domain score was 89%. There was clear description of the objectives of the guidelines and the target population. Recommendations to improve the guidelines included clarifying the questions covered by the guidelines and stating the populations or age groups not covered by the guidelines.

Stakeholder Involvement: The domain score was 67%. Target users for the document were well defined and the guidelines development group included representative from most stakeholder groups. It is recommended that this group be expanded to include representatives of patient groups and front line staff wherever appropriate. Prior to publication, the document was circulated to a targeted audience for comments and feedback but the process used was not documented in the guidelines. No formal pilot testing was conducted prior to the document's publication.

Rigour of Development: Domain score was 29%. The health benefits and side effects of recommendations were considered in formulating the guidelines. One of the main weaknesses of the guidelines was lack of description of the development process in the document. Also, the document did not describe the methods used to compile evidence and formulate recommendations. The document links evidence with recommendations but this could be improved. External experts reviewed the guidelines, but the review process is not clearly described. Finally, a timeframe and procedure for updating the document is not stated.

Clarity and Presentation: Domain score was 92%. The recommendations presented are specific and unambiguous. The document offers several options for management of conditions, including tools for their application. Presentation of recommendations is in a consistent manner and recommendations are easily identified.

Applicability: The score for this domain was low at 11%. Audit tools were not included, cost implications were not considered and the potential organizational barriers to application of the recommendations in the guidelines were not addressed.

Editorial Independence: The domain score was 50%. The recommendations contained in the guidelines were not influenced by the funding body. No known or possible conflicts of interest among the guideline development group were stated.

Key Informant Feedback

Three key informants involved in the guidelines development process were interviewed. Overall, the interviewees were satisfied with the guidelines development process. The informants also agreed with the recommendation for inclusion of representation of each stakeholder group on the development committee. Two of the key informants also recommended that frontline staff or representatives from their organizations should be included in the guidelines development process to ensure that their views are incorporated (this was not the case during the development of the current document). All the informants agreed that the length of the document could be a deterrent. One informant suggested a shorter document that focuses on the steps required during an outbreak.

The informants were not sure if the guidelines reached the target audience. One informant stated that the presence of locally developed comprehensive influenza guidelines in some health

authorities (e.g. Fraser Health) may limit the utilization of the PICNet document. Two informants recommended the inclusion of pandemic response information in future documents. One informant stated that the appendices included many valuable tools that are helpful in the implementation of outbreak control measures. There was overall support for a provincial guidelines document, which could be used to update local plans.

Survey Results

Quantitative

Sixty-six people took part in the survey and 49 provided complete responses. The characteristics of survey respondents and responses are shown in Table 1. Of the 66 respondents, 21 (31.8%) were from Vancouver Coastal Health, 42 (63.6%) were infection prevention and control professionals, 62 (93.9%) used guidelines to fulfill their roles and 55 (83.3%) were aware of the existence of the PICNet's ROPC guidelines.

Among the participants who were aware of the guidelines, 25 (59.5%) reported that they had used the document to update local guidelines, 27 (65.9%) reported that the guidelines meet the needs of their organization and 30 (N=73.2%) found the recommendations useful.

Table 2 shows participant responses regarding the characteristics of the guidelines. Most respondents felt that the language used in the document was clear, the document was well organized, and it was easy to find information in the document. The appendices included were useful, the document was useful in making practical decisions, and the recommendations in the document were evidence-based and still relevant. The lowest level of support was for the length of the guidelines document. More than half of respondents (51.4%) felt it was too long.

The awareness of the guidelines document was highest among infection control professionals (90.5%) compared to all others (70.8%). Utilization of the guidelines document to update local outbreak plans was lowest in health authorities with comprehensive locally developed guidelines (i.e. Vancouver Costal Health and Fraser Health) (data not shown).

Comments from Survey Respondents

The most common comment from survey respondents was regarding the length of the document (6 participants); 2 participants indicated their desire for a summary document to be included with the current document. The most common reasons given for not using the document to update local plans included the length of the PICNet document and the presence of locally developed guidelines. Several participants indicated the need to incorporate information on pandemic response in a future document. It was also indicated that PICNet should include all stakeholder groups in the development process, develop a clear process for reviewing, updating and disseminating the document, and develop a practical 'summary guide' with the document.

Table 1. Respondent Characteristics and PICNet's ROPC Guidelines Usage

Question (n)	Percentage %	N
Health Authority (66)		
Vancouver Coastal Health	31.8	21
Vancouver Island Health Authority	7.6	5
Fraser Health	6.1	4
Interior Health	16.7	11
Northern Health Authority	12.1	8
Provincial Health Services Authority	18.2	12
Other	7.6	5
Current Role (66**)**		
Public Health	18.2	12
Infections Prevention and Control	63.6	42
Occupation Health and Safety	1.5	1
Other	16.7	11
Is application of best practice guidelines part of your role? (66**)**		
Yes	94.0	62
No/Unsure	6.0	4
Are you aware of PICNet's 'Respiratory Outbreak Prevention and Control' guidelines? (66**)**		
Yes	83.3	55
No/Unsure	16.7	11
Have you used PICNet's Respiratory Outbreak guidelines to develop or update local respiratory outbreak plans? (42**)**		
Yes	59.5	25
No	40.5	17
Did the guidelines address the needs of your organization? (41**)**		
Yes	65.9	27
No	17.1	7
Unsure	17.1	7
Did you find the recommendations in the guidelines useful? (41**)**		
Yes	73.2	30
No	17.1	7
Unsure	9.8	4

Table 2. Respondents Opinion on Quality of PICNet's ROPC Guidelines"[1, 2].

	Agree (%)	Disagree (%)	Response Count
Language used was clear	87.5	12.5	40
Well Organized	78.1	21.9	41
Length was suitable	58.6	41.5	41
Easy to find information	78	21.9	41
Appendices were useful	87.5	12.5	41
Guidelines were useful in making practical decisions	77.5	22.5	41
Recommendations are based on evidence	82.1	17.9	39
Still relevant	74.4	25.7	39

1. Participant responses for "Strongly Agree/Agree" and "Strongly Disagree/Disagree" were combined for the purposes of analysis.
2. Only participants who were aware (n=55) of the guidelines were asked these questions.

Discussion

In this project, we set out to answer four questions. In this section, we will discuss the results of the evaluation to answer these questions.

1. Do the guidelines meet international quality standards of guidelines development?

We applied the AGREE tool to the PICNet's ROPC Guidelines to answer this question. We found that the document's major weaknesses were in the areas of rigour of development and applicability. With respect to rigour of development, the document did not state the methods used to compile and evaluate evidence, the external review process was not fully described and a more comprehensive description of the guidelines development process would be desirable. This should be a relatively easy fix for the current document as the information was collected during the development process.

The document does not consider the applicability of the recommendations. It might be worthwhile for PICNet to consider these issues in order to improve the IPAC practice in the province and to achieve consistency of practice. Future and current guidelines development committees should consider, in collaboration with stakeholders, the potential financial and organizational barriers to implementation of the guideline recommendations.

Additional easy fixes to the current and future documents could incorporate the inclusion of a framework to update the guidelines, declaration of conflicts of interest from the development group, and pilot testing of the document before widespread distribution.

2. Did the guidelines reach the target audience?

We used the online survey data to determine if the guidelines reached the target audience. We found the 83.3% (n=55) of our survey respondents were aware of the document. These respondents included Infection Control Professionals (ICP) and other Public Health professionals representing all Health Authorities of British Columbia. The awareness of the document was 90.5% among ICPs, this was expected since ICPs are a major target population for the document and they are some of the most active stakeholders in developing and implementing respiratory IPAC plans. We interpreted the high level of awareness as an indication that the document did indeed reach the target audience.

3. Were the Guidelines utilized by the target audience?

We found that of the people who were aware of the guidelines, 59.5% responded that they had used the document to develop or update local respiratory outbreak plans. This number was lower than desired by PICNet. Participants indicated that the length of the document and the presence of locally developed documents were the main reasons for the lack of utilization of the PICNet guidelines. The low indicated utilization of the document may be a result of the lack of awareness in respondents; they may not have direct involvement with the development and update of outbreak plans, and may not be aware of any changes to local plans. Further efforts would be needed for PICNet to improve the utilization of the document in BC.

4. Were the guidelines applicable to the practice of the target audience?

Of the people who were aware of the guidelines, 65.9% reported that the guidelines meet the needs of their organization and 70.2% indicated that the recommendations provided in the guidelines document were useful. We also found high levels of support for the document's characteristics (table 2). The lowest level of support was for length of the document (58.6%).

The results of this evaluation exercise showed that the document meets most of the international standards of guidelines development and reached the target audience. Most of the target audience found the guidelines applicable, but awareness or positive views about the guidelines have not always translated into changes in practice.

Limitations

The key limitation of the project was the small samples sizes. Our initial goal was to interview 5 key informants, obtain complete survey responses from approximately 100 members of PICNet's CoP and get 3 groups of experts evaluators to apply the AGREE instrument. We had difficulty in getting key informants, survey respondents and experts to complete the AGREE evaluation.

Two reasons might explain lack of participants. Firstly, the pandemic H1N1 vaccine roll out coincided with the data collection phase of our project. Our targeted audience of IPAC professionals and Public Health professionals were extremely busy during this time. Secondly, some evaluation activities required time commitments from participants. To properly apply the AGREE instrument the evaluators needed to familiarize themselves with the guidelines and apply the tool, this was a time consuming task. Our key informants found it was a challenge to find time for an interview.

Recommendations

This section contains recommendations based on the results of this evaluation process.

Guidelines Development

1. *Include all relevant stakeholders:* Some key groups were missing during the development of the current document. Both key informants and survey respondents made this observation. The AGREE evaluation also showed that not all relevant stakeholders groups had been included. The two main missing groups were the front line staff or their representatives and patient representatives. These two groups are most affected by an outbreak and the measures taken to contain or prevent an outbreak. It is important that their views are sought on the recommendations to ensure that the recommendations are practical and do not have unintended negative impacts. The guidelines development committee should determine the manner and the stage at which input from these groups or their representatives should be sought.
2. *Apply results of AGREE*: The current document should be updated and any weak areas identified by the AGREE instrument should be addressed with a particular focus on the area of 'rigour of development'. A clear format should be used to present evidence weighting. Explicit links should be shown between recommendations and the strength of evidence supporting particular recommendations.
3. *Appendices and Tools*: Tools and appendices provided with the guidelines document should be kept up to date. This includes scenarios, application tools and web links.
4. *Update process*: During the guidelines development process, an update schedule and process should be described. One methodology to update the guidelines is shown in Appendix 2. Any major changes in evidence or practice that are identified in literature, or other federal and international guidelines should be communicated to the target audience and community of practice in the form of an update or an amendment.
5. *Rethink the target audience*: It might be worthwhile at the time of the update to rethink the constitution of the target audience. In consultation with the stakeholders, the development group should decided if the document should focus on addressing the needs of all PICNet stakeholders or only focus on people involved with updating and developing local guidelines and outbreak plans.
6. *Address issue of document length*: A consistent concern of the survey respondents was regarding the length of the document. Efforts should be made to explain to the target audience why the document is so lengthy and comprehensive, and to reduce the length of the document as much as possible. This is important in order to ensure that the length of the document is not a deterrent to utilization. Some suggested steps are presented below.
    a. Re-engage the stakeholders and communicate to them that the document is a "reference for all healthcare settings when developing or updating their own guidelines" and is not intended for day to day use. For this reason the document needs to be comprehensive.
    b. Clearly identifiable recommendations should follow the discussion of the evidence and recommendations for each collated section.
    c. The development committee should consider adding a summary of all the recommendations in the appendix section of the document.

7. *AGREE instrument*: Include this as part of the guidelines development process.
    a. Recruit a panel of experts (3 to 4) that can apply the AGREE instrument to the guidelines after the document has been developed. The experts should be willing to commit the time to read and familiarize themselves with the AGREE instrument and the guidelines document. Each expert should complete the AGREE evaluation separately
    b. Results of the evaluation should be used to improve the document before it is disseminated to the target audience.
    c. The AGREE tool might not be applicable to all guideline documents and all questions in the tool may not be relevant to each guidelines document. This should be kept in mind by the development committee when utilizing the AGREE results.
8. *Dissemination*: The development should be followed by targeted dissemination. Some steps to improve this process are suggested below

    a. General dissemination should be preceded by a pilot dissemination to ensure all issues are resolved before the document is provided to the community of practice.
    b. Individuals involved with the development and updating of local respiratory outbreak and control plans and guidelines should be targeted during the dissemination phase.
    c. Budget permitting, the layout and publication of the final document should be produced professionally and should follow a consistent layout.
    d. The dissemination phase should involve active advertisement of the document by PICNet to their community of practice.

Guidelines Evaluation

1. Guidelines evaluation should be conducted before any update.
2. *Focus group of Key Informants:* Key informants can include individuals involved in the development and dissemination process or technical experts. The focus groups could be conducted via teleconference to reduce participant time commitment. The purpose of the focus group discussions should be on gathering views regarding the dissemination and uptake of the document, and challenges with implementing recommendations. Key informants views should also be used to formulate evaluation questions and design an evaluation process. The size of each focus group should be kept to 4-6 participants.
3. *Target audience survey*: Surveying the target audience is a useful tool to collect qualitative and quantitative data on the use and acceptability of guidelines. Online surveying software provides an economical and efficient method to conduct such surveys.
4. *Outcomes and Impact Assessment*: Resources permitting, PICNet should make efforts to develop a process to evaluate the impact of the guidelines on practice of the target audience and health of British Columbians. Impact assessments are a resource intensive task and require financial and time commitments from many stakeholders. In PICNet's case, collaboration with all Heath Authorities and the BC Centre for Disease Control would be required to collect comprehensive data.
5. *Efforts to improve participants*: A larger sample size is needed to conduct a multivariate analysis. Some efforts to improve participation could include
    a. Engaging the stakeholders and target audience before, during and after the evaluation process.
    b. The data collection processes should try not to coincide with hectic times for the target audience, such as the beginning of the flu season, the end of the fiscal year, and summer

and winter holidays, etc. Furthermore, online data collection should be conducted over a period of few months to allow for larger window for participation.

c. Focus groups or collection of survey data can also be conducted on the sidelines of key infection control events such as the PICNet Educational Conference.
d. Participants should be provided with the outcomes of the evaluation process.

Conclusion

From the results of our evaluation process we conclude that PICNet's ROPC guidelines should be updated in collaboration with stakeholders. The recommendations to improve the document should be implemented to ensure that the product meets international standards and is applicable to the target audience and stakeholders.

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Appendix 1: AGREE Instrument: The Domains Evaluated by the Instrument.

1. Scope and purpose
Contains a specific statement about the overall objective(s), clinical questions, and describes the target population.

2. Stakeholder involvement
Provides information about the composition, discipline, and relevant expertise of the guideline development group and involves patients in their development. They also clearly define the target users and have been piloted prior to publication.

3. Rigour of development
Provides detailed information on the search strategy, the inclusion and exclusion criteria for selecting the evidence, and the methods used to formulate the recommendations. The recommendations are explicitly linked to the supporting evidence and there is a discussion of the health benefits, side effects, and risks. They have been externally reviewed before publication and provide detailed information about the procedure for updating the guideline.

4. Clarity and presentation
Contains specific recommendations on appropriate patient care and consider different possible options. The key recommendations are easily found. A summary document and patients' leaflets are provided.

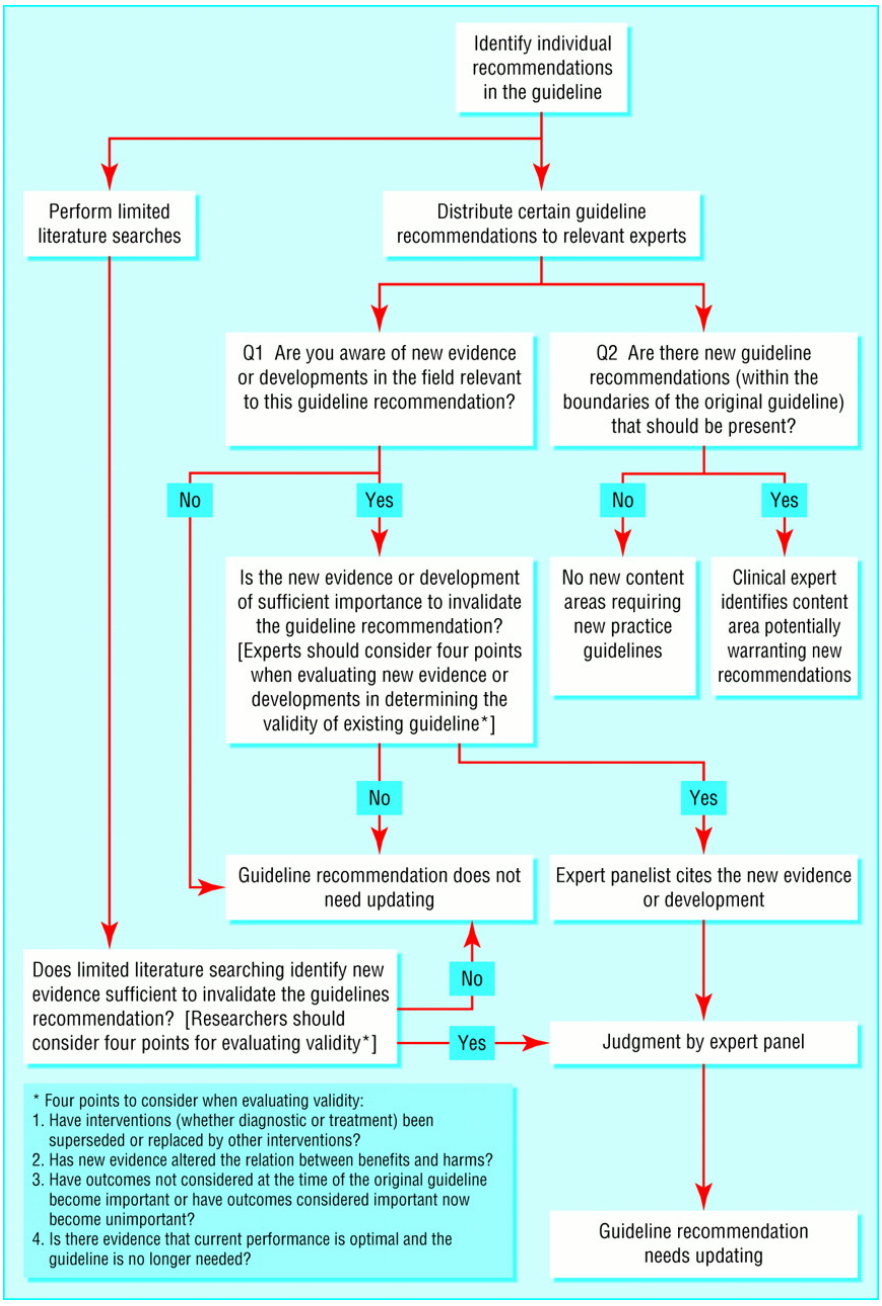
5. Applicability
Discusses the organisational changes and cost implications of applying the recommendations and present review criteria for monitoring the use of the guidelines.

6. Editorial independence
Includes an explicit statement that the views or interests of the funding body have not influenced the final recommendations. Members of the guideline group have declared possible conflicts of interest.

Appendix 2: Model for Accessing the Validity of Guidelines[1]

The model presented below proposes that a multidisciplinary group of experts, selected from the guidelines development committee, should be asked to review recommendations. They are asked if they are aware of new evidence or developments that would invalidate the current recommendations.

Shekelle et al. (2001) also recommended that expert opinion should be supplemented by literature searches to reduce the chances of oversight. Literature searches should be compared with expert opinion to ensure accuracy.



[1] Shekelle et al., 2001

Appendix 3: Key Informant Interview Questions

1. Do you remember being involved in making of PICNet's ROPC Guidelines**?**

2. Do you think the guidelines have been able to achieve their goals? (State goals)
    a. Do you agree with the goals of the guidelines
    b. Should PICNet documents be a reference
    c. Or should they be directed at front line staff

3. Do you think the guidelines have reached the target audience?

4. In your experience, do you believe the target audience is using the guidelines?

5. Do you have any suggestions on how the current guidelines can be improved?

6. Do you have any suggestions on how current guidelines development process can be improved?

7. Do you have any suggestions on questions we should ask when evaluating the guidelines and what aspects of guidelines should be evaluated (explain who will be targeted for the evaluation)?

Appendix 4: The Item and Domain Scores From the AGREE Evaluation of the PICNet's Respiratory Outbreak Prevention and Control Guidelines

	Item Scores	Domain Score
Scope and Purpose		
1. The overall objective(s) of the guideline is (are) specifically described.	4	
2. The clinical question(s) covered by the guideline is (are) specifically described	3	
3. The patients to whom the guideline is meant to apply are specifically described	4	88.9%
Stakeholder Involvement		
4. The guideline development group includes individuals from all the relevant professional groups	3	
5. The patients' views and preferences have been sought	2	
6. The target users of the guideline are clearly defined	4	
7. The guideline has been piloted among target users	3	66.7%
Rigor of Development		
8. Systematic methods were used to search for evidence	1	
9. The criteria for selecting the evidence are clearly described	1	
10. The methods for formulating the recommendations are clearly described	1	
11. The health benefits, side effects and risks have been considered in formulating the recommendations	4	
12. There is an explicit link between the recommendations and the supporting evidence	3	
13. The guideline has been externally reviewed by experts prior to its publication	3	
14. A procedure for updating the guideline is provided	2	28.6%
Clarity and Presentation		
15. The recommendations are specific and unambiguous	4	
16. The different options for management of the condition are clearly presented	4	
17. Key recommendations are easily identifiable ≈	3	
18. The guideline is supported with tools for application	4	91.7%
Applicability		
19. The potential organizational barriers in applying the recommendations have been discussed	2	
20. The potential cost implications of applying the recommendations have been considered	1	
21. The guidelines present key review criteria for monitoring and/or audit purposes	1	11%
Editorial Independence		
22. The guideline is editorially independent from the funding body	4	
23. Conflicts of interest of guideline development members have been recorded	1	50%