

## Article

# Bridging the gap between theory, practice, and policy: A decision-making process based on Public Health evidence feasible in multistage research on biology risk factors in Poland

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**Abstract:** Stakeholder input into the decision-making process when developing public health programs and policies is crucial. This article presents an innovative approach, involving online participation with a wide group of stakeholders located in different geographic locations, for policy consensus by research methodology. The results of the project have been used to propose assumptions regarding a strategy for preventing blood-borne diseases in Poland. The research was conducted iteratively using a multi-stage qualitative methodology to explore risk assessment involving blood borne infections. The final output of the entire project is a list of key problems/challenges and solutions associated with medical and nonmedical services that are connected to the breakage of tissue continuity. Qualitative research is rare in risk assessment as priority is usually given to statistical data and end-points (quantitative studies). Statistical data on health risk allows to assess the health implications, while the methodology applied also allowed diagnosis of the processes leading to these effects. In addition to policy preparation for blood borne illnesses, the methodology employed in the study can also be used to successfully explore other areas of public health policy decisions.

**Keywords:** continuous quality improvement; healthcare sector; biology risk control; patient safety; research to practice.

## 1. Introduction

The need to bridge the gap between science, practice, and policy in public health has become more urgent in recent years [1-5]. Often, policymakers' decisions are a result of their goodwill and knowledge along with social and economic pressures. It would be optimal to make decisions based on scientific circumstances and facts; however, in practice, this is not always feasible. An additional barrier to a conscious approach to policy related decision-making in the field of healthcare is that the effects of actions are shifted in time, whereas cost considerations exist at very early, though critical, stages such as preliminary analyses of information and strategy preparation. Therefore, convincing arguments, informed by theory and practice on the part of researchers, are needed in order to persuade legislators to make decisions the effects of which are, at times, visible only after their tenure ends. Innovative program proposal requires a thorough analysis of each of the stages of its development, so that the obtained portrayal of a problem and the proposed process of change can be implemented. Indeed, strategies to implement evidence-based practices at a healthcare system

level have been recently explored in terms of facilitators and barriers to the implementation process[6].

Information is a crucial element in decision-making [7-9]. When program proposals are prepared, attention should be paid to the element of participation by actively seeking inputs from those concerned with the analytical decision-making process through social consultancy in order to ensure that wider expectations have been taken into consideration. Therefore, as an argument for the critics of evidence-based public health, the intention of the current authors is to present a possible method that reduces the gap between science and policy making through a systematic approach to problem-solving.

Many researchers and legislators believe that it is necessary to involve stakeholders into the decision-making when developing programs and policies [10,11]. Likewise, a preliminary definition of the rules regarding the directions of reasonable decisions, related to the current knowledge about clinical sciences and public health, has also become tremendously important [12-15]. In this regard, a recent review by Mathieson and colleagues uncovered a number of factors that serve as either barriers or facilitators to the use of theory and evidence when planning, guiding, and evaluating the implementation of policies and innovations [6]. The authors found successful implementation results not only from a well-prepared plan (what), but also from information on the process (who, how) from previously obtained knowledge about barriers and facilitators. According to authors, perceived barriers to implementation may result from fear of introducing innovations, which may initially seem destabilizing (e.g., organizational restructuring that might be construed as either decentralization or centralization). Another barrier reported by authors was impaired organizational system, involving issues of hierarchy, leadership, management, and the flow of data and information. Equally importantly, they cautioned that proposing innovations without prior organizational preparation (infrastructure, people) might end up as a “falsestart” [6].

The objective of this article is to present a method for a multi-stage analysis process using qualitative studies, specifically interviews, as well as quantitative data. Our research aimed to prepare assumptions for a public health program strategy with wider inputs to gain policymakers' support, especially in terms of prioritizing the goals of the program. It aimed to prepare a foundation for the analysis of related problems (strategy proposal). Several submitted proposals were incorporated into the policy. The specific focus chosen was prevention of blood-borne illnesses. While, medical progress has made it possible to diagnose and cure most blood-borne diseases however, some of these conditions are not completely understood at present, making prevention especially important, including due to the economic costs involved [16-18].

## 2. Materials and Methods

The current research was proceeded by a pilot study[19,20]and included 16 regional epidemiology consultants, representing all voivodeships, i.e., health administrative regions, at the national level in Poland. Approval for the research was received from the Research Board (steering committee of the Project KIK 35) of the National Institute of Public Health. The Institute was established almost a century ago as the National Institute of Hygiene-with disease prevention as one its key goals . The study protocol ensured voluntary participation and anonymity of all participants. Informed consent was obtained before study from all participants.

The study was conducted in three stages, as illustrated in Figure 1. These stages helped with the identification of the problem, process, and proposed solutions as well as with task prioritization. Data collection for the study was conducted to inform the three stages.



**Figure 1.** Project Scheme – Research Project Stages

### 2.1. Sample

Stakeholders were defined as individuals who had a substantial role in advancing the development of a blood-borne infection (BBI) prevention program. Stakeholder opinions were obtained from a broad group of experts and practitioners located throughout the country. A total of 111 participants, representing all 16 Polish health administrative regions, took part in the study. Three groups of experts were invited to participate: practitioners, employees of supervising authorities (administrative supervision) at the regional level and policy-makers at the national level (central), and opinion leaders. The study was carried out in the form of a two-panel internet forum discussion, and a focus group.

The first two groups participated via forums that were conducted using IdeaBlog (*first part individual input and last part common fora*), an independent online interviewing company, whereas the third group of stakeholders, i.e., opinion leaders and administrative supervisors, provided inputs through focus group interviews (FGI). The use of an online platform was deemed important as it provided participants with a degree of flexibility to express their views and at a pace that was manageable with their individual schedules. Furthermore, participation through an independent interviewing company and the anonymity of experts helped to reduce the risk of biases in views expressed.

Participants in Stage-1 comprised of management staff and practitioners, specifically experts, epidemiologists, and service providers whose daily work was associated with the risk of BBIs, both exposure to the risk and risk generation. The perspective of an authority that oversaw the observance of regulations regarding the minimization of risks, i.e., Sanitary Inspectorate, was also obtained. Participants were invited using a list prepared by the National Institute of Public Health. The official invitation contained a presentation of the research project, its objectives, and a request to participate in the study. Due to the novel nature of the vehicle of their participations, i.e., online forums, it was important to over-recruit in order to ensure a suitable response rate. To date, little is known about adequate response rates involving online forums. However, studies involving focus groups suggest a minimum of five participants as acceptable (Webster, 1992) and this benchmark served as a guide for Stage-1. Hence, for this stage, 80 individuals were contacted of which 42 agreed to take part in the first online forum (Forum-1). [21]

For Stage-2, representatives of supervising agencies such as state administration authorities, medical center managers, experts from academic centers, and specialists and experts from the field of public health were contacted. Of the 125 people invited to participate, 41 took part in the study and formed the cohort for the second online forum, i.e., Forum-2. The rationale for conducting the aforesaid fora was underpinned by the need to obtain information both from the level of service implementation (Stage-1) as well as management level (Stage-2). The main reason for refusal to participate in the study at each stage was an excessive number of other obligations, which made it impossible for participants to be completely involved in the project.

Lastly, Stage-3 consisted of FGIs. Generally, FGIs are a qualitative method used to discuss particular themes in a group of invited participants in an open atmosphere; the proposed scenario was prepared earlier [22,23]. In total, 11 opinion leaders and administrative supervisors were

invited, all of whom participated in the study. Table 1 provides a detailed outline of participants in the study.

**Table 1.** Profile of interviewees and knowledge supporters.

Descriptor	Breakdown <sup>1</sup>
Online Forum-1 participants (n=42)	Practitioners and staff who had everyday contact with the subject of supervision, prevention, and combating BBIs. Representation covered 100% of the Polish health administrative regions.
Online Forum-2 participants (n=41)	Representatives of supervisory institutions; state administration offices, medical centers, and academic units (public health specialists). Representation covered 88% of the Polish health administrative regions.
Focus Group Interviews of opinion leaders, administrative supervisors (n=11)	Organizations represented: Ministry of Health; Agency for Health Technology Assessment and Pricing; National Health Fund; Country Public Health Consultant; Chief Sanitary Inspector of the Country; NGO (patient representatives and clients); Supreme Medical Chamber; Supreme Chamber of Nurses & Midwives; representatives of medical university and National Institute of Public Health-National Institute of Hygiene

<sup>1</sup> an individual breakdown is not provided to protect participant anonymity

## 2.2. Data Collection

In-depth views (individual and collective) and opinions were obtained focusing on two key areas: (1) the problem of reducing the risk of infections in services and procedures connected with abrasion and damage of tissues; and, (2) risks associated with the spread of infections and protection of patients, staff, and clients. The exploratory nature of the study lent well to a qualitative research framework as it allowed understanding the decisions made by participants regarding a particular policy stance and factors underpinning the decision-making process [24,25]. Table 2 depicts the topic guide that was used with each of the three groups of stakeholders to collect the necessary data.

**Table 2.** Topic guide used with specific participant groups

Online interview and forum-1: Practitioners (epidemiology field) <sup>1</sup>
<ol style="list-style-type: none"> <li>1. Role of participant in BBIs<sup>2</sup> in daily work</li> <li>2. Level of awareness of BBIs</li> <li>3. Provisions to reduce the risk of BBIs</li> <li>4. Practical implementation of the guidelines</li> <li>5. Reporting incidents of infections of staff and patients in medical and non-medical sectors</li> <li>6. Good practices in everyday work routine</li> <li>7. Education and training on BBIs</li> <li>8. Role of finance in preventing BBIs</li> <li>9. Importance of the disinfection process in reducing BBIs</li> <li>10. Awareness of the risk of BBIs among patients and clients</li> </ol>
Online interview and forum -2: Management staff (public health field) <sup>1</sup>
<ol style="list-style-type: none"> <li>1. Prevention of BBIs in respondent's respective region</li> <li>2. Awareness and knowledge about BBIs</li> <li>3. Practical implementation of regulations concerning prevention of BBIs</li> <li>4. Infrastructure and the role of the employer and the state</li> <li>5. Conducting control</li> </ol>

Opinion leaders, administrative supervisors
1. Prophylaxis and prevention of BBIs
2. Goals and priorities setting on legislation, organization, education, and financing
3. Time plans towards achieving the set goals

<sup>1</sup>The topics were discussed in the open forum and users could see each other's statements, but all user names were pseudonymized.<sup>2</sup>blood borne infections

Informed consent was obtained from all focus group participants prior to the actual proceedings. The focus group lasted for about 90 minutes. Welcome comments and presentation of the project details were followed by general discussion on the subject of prophylaxis and prevention of BBIs. Next, a list of priorities, selected during the previous two stages of the study, was introduced along with a discussion exploring approximate timelines that would be needed to achieve any chosen priorities. Such an arrangement was aimed at redirecting specific tasks to the listed areas of national policy and administration. Participants were encouraged to freely discuss all topics that came up during the proceedings. There was a note taker and independent observers supervised the FGI.

The first stage of this research project (i.e., online Forum-1) was carried out between July 18 and August 20, 2016. Throughout the forum, the invited experts were given two questions every day through which they were asked for their opinions. For each task, the necessity to support answers with evidence was emphasized; for example, from practice, figures, statistical data, and particular examples reflecting problems and good practice. The presented information was verified by participating experts, including their own publications, practice case description and synthetic expert opinion. These elements constituted the quantitative information provided by the participants. Over the next four days, individual interviews were collected. The last day consisted of a joint discussion on the information developed by everyone. Each participant had access only to general statements, without access to source data (SD) on the last day of common fora.

The data collected were verified through supported material (SD) and they constituted an extensive collection of research material that was arranged in a SWOT (strengths, weaknesses, opportunities, and threats) analysis and used in a form verified for the subsequent second stage. The SWOT analysis allowed organizing the first- and second-stage data in detailed reports, as suggested by interviewees in the common forum part of this stage. The information obtained was available for review by all participants in the final stage of the study. At the same time, all items were assessed by strengths or weaknesses, as well as how participants saw opportunities and limitations from their professional perspective.

Information for Stage-2 was gathered via the online Forum-2 between September 5 and November 7, 2016. The methods used were similar to that of Stage-1. Participants received one topic per day for five days and were asked to express their opinions regarding the topics. Figures and data collected and verified (from Stages-1 and -2) constituted the basis for the subsequent analysis. In the second stage of the analysis, the first-stage data were consulted while also obtaining new data. The information was assigned to the following topics: management, legislation, education, and financing. Then, the collected information was synthesized, and 33 postulates (proposed solutions) were proposed that formed the basis of discussion for the third stage of this research project.

Finally, an FGI that summed up the first and second stages of this study was completed on November 30, 2016, at the National Institute of Public Health, in Warsaw. The meeting was attended by opinion leaders who represented patients interests, service providers, public payers, the Agency for Health Technology Assessment and Tarification, and the Ministry of Health. The purpose of the FGI was not to identify solutions, but rather to understand various perspectives so that they could be considered at a later research stage. The proceedings were overseen by a moderator whose role was to create conditions favorable for discussion.

Since the FGI was supposed to be a panel discussion with a group of key decision-makers to sum up the two earlier stages of this research project, based on the findings obtained in the earlier stages, the 33 proposed solutions were prepared and divided into four categories: legislative, educational,



organizational, and financial. These were emailed to the FGI invitees prior to the meeting so that they could adequately prepare for the discussion.

At the meeting, participants were asked to prioritize the 33 proposed solutions. Then, they assigned priority in terms of time and urgency of implementation according to the principle of the highest scoring. A rough rank ordering was used for the prioritization process. For example, one task could get a maximum of 3 points. In this way, the postulates were assigned a rank. In the first group of most important priorities (i.e., high number of credits [11-18]), four postulates were included. In the second group of moderate priorities (4-7 credits), there were seven postulates. Finally, in the third group of low importance (1-3 credits), 15 postulates were included and seven were rejected. In addition, in the prioritization of tasks, similar to the earlier stages, the adopted topic areas were classified into legislation, education, organization, and finance, recognized areas from the policy perspective and arrangement of administration.

In the research methodology, we selected at first an epidemiological analysis – the evidence from the perspective of service providers, and then the decision-making processes analysis related to the submitted issues ("bottom-up" -collecting data). The next step was the presentation of both the problems and their management. In the last stage, FGI participants gave the ranks/priorities for the collected findings.

### *2.3. Data analysis- Quality and verification*

A broad thematic approach was applied to the gathered data. Research staff reviewed all notes (SD) and proceedings of the online fora and the FGI (as well as the tracks of interviews). The research team met to discuss the broad themes that arose from the proceedings and refined these to arrive at the postulates and their categorization under the four areas: legislation, education, organization, and finance. The proposed data ordering at stages 1 and 2 according to SWOT and division according to the proposed criteria, were carried out jointly by the respondents-experts from their professional perspective.

## **3. Results and Discussion**

Due to the practical nature of the current research, a qualitative method that enables the collection of various opinions, evidence, and postulates from all stakeholders was selected. This approach is in line with the new method of managing public health proposals, as qualitative methods provide participants with a space for free expression of thoughts while being evidence-based [26]. The techniques and web tools employed in qualitative research also provide a space for discussion and exchange of opinions such as time for consultations, locating evidence, and protecting anonymity, thereby, allowing to obtain responses from participants, reflecting not only the direction of their views (e.g., what they find to be positive or negative), but also their substantiation (e.g., explanations for their thoughts) supported by examples and evidence. Therefore, the application of free-discussion techniques, such as the use of an online platform, was necessary.

Unlike standard interview techniques, the online platform enabled a flexible reaction to participants' responses and the expansion of resultant information. In the field of public health, qualitative techniques comprise an additional, valuable source of information that enables the rationalization of a decision-making process, by providing an opportunity to take a broader view of the problem, and includes other stakeholders in the interpretation and decision-making process [27-31]. To that end, the use of the online platform IdeaBlog turned out to be a useful research tool in the context of this study.

The evaluation of the reliability and quality of data analyses is usually based on quantitative approaches. For example, known methodologies such as GRADE and AGREE are largely related to the implementation of results from other studies into policy [32-35]. In the analysis of data, especially in relation to the assessment of efficacy and safety of treatment, these studies are of indisputable importance. Relatively less importance has been attached to qualitative studies, which also require different methodologies and indications for their application. An ideal solution is to reach a consensus by combining simultaneous analyses of qualitative and quantitative studies in the

development of recommendations, as shown by the fact that the analyses of these approaches are differentiated.

The methodology of the multi-stage process of research and analysis presented in this article combines the approach of qualitative data research with selective analysis of quantitative data, as was provided by participating experts through their repository of statistical data, research results and expert opinions, case studies, publications, etc., which were a condition for participating in the first and second stages. The project included a sequence of diagnosis of the situation, results from the first stage and diagnosis of decision-making processes ensuing from the second stage, and a discussion on a coherent catalogue of the developed data of the first and second stages, which then led to results of the third stage. At each stage of the study, there were references to the practical links between theory and practice, both at the stage of problem diagnosis and at that of programs/procedures. This approach is consistent with the opinions of many other researchers and includes both the creation of recommendations and their updating based on data.

The present analysis, divided into status diagnosis (stages 1 and 2) and decision-making processes (stage3), was an attempt to systemize information about the extent of the risks associated with BBI and the essential stages of analysis for the preparation of further stages (i.e., proposed solutions). This is consistent with a methodological "mixed research approach" represented by other researchers in the field of public health and healthcare policy [36-40]. Rather than employing quantitative methods to measure a phenomenon, the current study aimed to understand the extent to which the identified problems and opinions are common among the group of participating experts. However, respondents were asked for their opinions and to provide supporting evidence in the form of statistical data and other sources.

First, the study collected qualitative data and figures and diagnosed the status of knowledge (practical and theoretical) and the functioning of the system of services with regard to a problem researched. The web tool, IdeaBlog, ensured that respondents' anonymity and schedules were respected, while allowing mutual discussion between respondents on selected topics and adequate time for collecting evidence for external consultations. The tool was especially helpful with respect to widening participation, as study participants were located in different parts of the country. In the final stage, collected data on the diagnosis of the system and assessment of the scale of the risk of BBIs was systematized, and priorities were identified through rank.

In terms of public health evidence, the results of this research project, in the form of extensive reports from each research stage, were submitted to the Hepatitis C-virus Project Board to propose a new strategy. These reports were also presented to all stakeholders as a source of information on the issue of blood-borne diseases in Poland. The selection of solutions resulted from substantive reasons i.e., the intention to collect possibly the most extensive material about the foundations and the actions taken by various institutions in the context of the prevention of BBIs, as well as organizational and technical reasons since the target group covered and represented almost all health regions in Poland and people with different professional backgrounds and responsibilities (tab.1.). The dissemination of the result of the analysis to the stakeholders resulted in a greater degree of awareness and legislative changes; for example, of a greater sanitary regime in non-medical services and educational changes related to the inclusion of a range of issues in vocational education programs. In this regard, results were incorporated into policy and programs by the Ministry of Health, The Chief Sanitary Inspectorate, National Training Centre for Nurses and Midwives, and National Institute of Public Health.

Particularly in this study, the discussion focused on biology risk factors, but the methodology employed in our research might be useful to explore other risk factors. In the first stage, the risk of infection in services was assessed. In the second stage, infection risk issues related to processes and procedures were evaluated. In the third stage, decision-makers were asked to summarize and prioritize the lessons learned in the previous stages. Additionally, new techniques were applied that guaranteed anonymity according to the project protocol. Economic realities and the dynamics of changes in the field of epidemiology, as well as pressure from patients, clients, and service providers, who are aware of the risk, provide the possibility of numerous decisions. This increases

the obligation of experts to prepare recommendations for public health programs and policies considering broader insights around the particular problem.

This research project also had certain limitations. The detailed analysis did not consider current regulations or organizational and financing structure; instead, it only indirectly referred to the opinions of experts and the information provided by them. Moreover, some of the invited experts were unable to participate due to their professional duties, while others refused due to doubts concerning the possibility of political persuasion and limitations in the implementation of prepared proposals.

Nevertheless, the findings of the present study provide directions for further research. In the future, the current authors will verify the extent to which the present results contributed to improvements in the field, for example, health condition in terms of BBIs and whether the presented method of priority selection will find supporters.

#### 4. Conclusions

Evidence-based public health is routine. There is also an ongoing need to seek methods for evaluating the effects and processes of action taken in public health management. A standard sentinel system and epidemiological research provide strong statistical evidence and are the basis for rational decision-making. Improvement of the quality of statistical data and the need to broaden knowledge with new and better diagnostic tools inspire the search for better qualitative and quantitative methods in public health. This is particularly important in areas of public health in which there are similar risks and different approaches in terms of prevention as well as different legal responsibilities.

This study examined some of the aforesaid principles through the lens of the challenges involving the problem of blood-borne diseases from the perspectives of medical and non-medical services particularly to see how stakeholders approached issues of prevention surrounding BBIs in the services sector.

The methodology can be useful for the development of a strategy for the prevention of BBIs, but also for other risk factors. The methodology applied and the results obtained also inspired changes in the education programs for employees in both the medical and non-medical service sectors in terms of the prevention of BBIs. This allowed the consolidation of various professional and social environments in order to reach a common consensus regarding the development of an infection risk reduction program.

The report from the tri-stage analysis was presented for decision-makers at various levels of management (in the medical and non-medical service sectors). As an outcome of the study, a proposal for a health policy prevention strategy for BBIs was then prepared with input from the research. The policy included extension of education programs based on analysis and educational material in direct e-learning. Additionally, specialized training programs for nurses were amended, indicating the need to modify the training programs for other professional groups.

**Supplementary Materials:** The following are available online at <http://www.aaem.pl/Author-Anita-G%C4%99bska-Kuczerowska/147403>

**Author Contributions:** Conceptualization, A.G.K. and methodology, A.G.K; validation, A.G.K, S.L. and R.G.; formal analysis, A.G.K.; investigation, A.G.K; resources, A.G.K; data curation, A.G.K; writing—original draft preparation, A.G.K, S.L., R.G.; writing—review and editing, A.G.K., S.L., R.G.; visualization, A.G.K.; supervision, A.G.K., S.L; project administration, A.G.K.; funding acquisition, A.G.K, R.G.

**Funding:** The Study was supported by a Swiss Contribution and Ministry of Health grant (KIK35). The tasks under that project were assigned to an outsourcing company (financed) to avoid conflict of interests. The founders of the study had no role in study design, data collection, data analysis, data interpretation, or writing of the report. The outsourced independent research agency performed research according to project protocol (presented methodology). At each stage, research workers monitored the course of anonymous interviews and discussion moderation, restructuring it depending on the necessity to focus discussion on particular problems.



**Acknowledgments:** We thank the sponsors of the research for their financial support. The authors thank persons from Kantar Mill Word Brown for their professional cooperation in this research, especially Dr. Magdalena Stec, experienced interviewer and facilitator, for her extraordinary merit-based support. We sincerely thank our invited experts and specialists for their availability, time, and contributions. We thank the Public Health and Epidemiology Consultants for their support. We give special thanks to EDITAGE by Cactus for professional help in English editing of the article.

**Conflicts of Interest:** The authors declare that they have no competing interests.

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