

Factors Influencing Health IT Policy in New Zealand: Evidence, Pragmatism, Money and the Policy Process

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Abstract

Aim *An evidence-based approach can support policymakers in using various forms of evidence to aid in priority setting. This study explores the role of evidence and compounding factors in health information strategy in New Zealand.*

Methodology *Semi-structured interviews were conducted with nine New Zealand health information policy experts who have played a role in informing or contributing to health information technology (IT) strategies.*

Findings *Scientific evidence, clinical leadership, economic resources and the political process all play a role in policy decision-making. The role of evidence in health IT decision-making is starting to change.*

Conclusions *There is a growing realization of the importance of incorporating evidence in the policymaking process. Improvements can be made through integration of evidence in policymaking. However, it is not feasible or advisable to base decisions on scientific evidence alone. Other influential factors need to be considered and integrated as the policy process is fast-paced and diffuse.*

1. Introduction

There are rapid and extensive changes occurring within the healthcare sector. Although the way healthcare is provided varies globally, among all countries there are common factors that are influencing healthcare delivery [1]. Furthermore, there are challenges faced by decision-makers creating health and healthcare policy. Rich or poor, all countries are seeing populations with longer life spans, which means an increase in chronic diseases and a higher demand for healthcare services. At the same time, healthcare professionals are retiring, leading to shortages within the healthcare profession [2]. Furthermore, the health system itself is facing concerns around quality of care, medical errors, and waste of resources [1]. The use of information technology has become necessary to manage these demands on global healthcare [3].

Clinical computing, for example the use of health information systems such as electronic health records (EHRs), is receiving attention as a crucial solution to these healthcare sector issues. Over the past decade, New Zealand has therefore undergone a substantial shift from paper-based records to an electronic form of keeping patient and medical data. This shift has had a significant effect on the health system in New Zealand, allowing the country to become a frontrunner in its use of computerized health IT [4]. Policy was an essential facilitator in the adoption of those health IT systems.

However, there is often a gap between policy and practice when it comes to putting health information strategies into place [5] [6]. Implementation and benefits have been wide-ranging but there are often varying factors that affect EHR uptake and success [6]. Of particular interest for us was to examine what role scientific evidence plays in developing New Zealand health IT strategies. ‘Evidence’ in the health context refers to the characteristics of the scientific knowledge that exists, e.g. reporting through methods such as randomized control trials (RCTs), meta-analysis or systematic reviews [7]. Evidence-based practice (EBP) or medicine (EBM) is the careful use of the best available evidence to inform decisions [8]. However, there is contention within EBM on how to categorize the different types of evidence, opinion, knowledge, etc. [9]. This is supported by the fact that there are different categories and levels of evidence. EBM and hierarchies are widely discussed in the literature but what happens in practice is influenced by a variety of factors. Our research sets out to identify and explore what those other factors are.

2. Method

Qualitative methods, particularly in-depth interviews, allowed for exploratory investigation of the role of evidence in New Zealand health IT strategies. To identify the use of evidence in decision-making, we conducted individual interviews with nine experts who were identified as influential among health IT policymakers. Semi-structured interviews helped elicit opinions and stories about each individual's experiences. The principles of interpretive research were used as a guide for our research process [10].

Table 1 shows a sample structure of the questions asked during the interviews. Probes were intermittently used to drive further questioning and aid discussion. While the general script of the interview was uniform between the interviewees, the questions were semi-structured so that further lines of enquiry could be explored. This method allows for new questions to be elicited by each participant's answers. Additionally, as beliefs and opinions result in part from prior experiences, it was important that the method was capable of capturing such information. The semi-structured interviews also allow the co-construction of shared experiences and meanings, which is a useful tool in this study where a series of one-on-one conversations was conducted among a wide group of participants [11].

To ensure that participants came from diverse backgrounds, the characteristics of the six domains of knowledge were used [12], and adapted for this research. Recruiting participants who have experience in one or more of the knowledge domains lent sufficient scope for conclusions to be drawn. The six domains are: Innovation, Innovator, Implementer, Individual, Investor and 'Environment'. Table 2 shows how the nine participants fit under the six domains. The characteristics and sub-characteristics of the six domains are described below:

1. **Innovation:** Refers to the health information strategies and particularly the health IT systems utilized within New Zealand. The Innovation is expected to be sufficient and dependable within the particular 'Environment'.
2. **Innovator:** Innovators can be defined as creators but can also be further identified as innovators of improvement.
 - a. *Creator:* A creator is one who invents the Innovation. They develop the health IT systems which make up the infrastructure of any health IT strategy.
 - b. *Improvement:* Innovators of improvement are people, whether clinicians or policymakers, who suggest changes and new features to an Innovation after it has been put into practice, in order to drive improvement.
3. **Implementer:** Those who facilitate the implementation and adaption of the Innovation.
4. **Individual:** Individuals are people who use the Innovation within the 'Environment'.
5. **Investor:** An Investor is someone who invests time, money or clinical expertise to make decisions on implementation of the Innovation within the 'Environment'.
 - a. *Financial:* Financial Investors make decisions regarding the allocation of financial capital. They often consider opportunity cost, cost-effectiveness, and health priorities to assess where funds should be allocated.
 - b. *Resources:* Investment of intellectual resources and knowledge as well as time.
 - c. *Clinical Knowledge:* Investment of clinical knowledge encompasses the specific domain of both medical expertise and familiarity and experience with the Innovation.
6. **'Environment':** The 'Environment' is the larger landscape within which the Innovation is developed and implemented. It takes into account political and economic influences which shape the role of the Innovation within the healthcare system.

Table 1 - The semi-structured interview schedule

<p>Question 1. Discuss in general the New Zealand Health Information Strategy and the role of evidence in developing these strategies.</p>
<p>Question 2. What are considered sources of evidence (scientific versus other sources)? <i>Probe:</i> What is desirable evidence? Is the desired evidence available? Is sufficient evidence available?</p>
<p>Question 3. Is the policy process open to taking in evidence?</p>

Table 2 - Participant characteristics using the six domains of knowledge

PARTICIPANT CHARACTERISTICS								
PARTICIPANT (EXPERT)	DOMAIN							'Environment'
	Innovator		Implementer	Individual	Investor			
	C	I			F	R	CK	
A		•	•					
B		•	•					
C			•			•		•
D	•							•
E	•		•		•	•		
F		•						•
G					•			
H			•	•		•	•	
I				•		•	•	

Each individual interview was transcribed and analysed thematically to draw out common themes [13]. Re-reading and studying of the transcripts helped identify emerging themes [13], [14]. Each transcription was rearranged in Excel based on the clustering of themes and topics of interest. A coding frame was developed and key themes were identified and categorized. Coded text (usually a series of sentences) from each interview was then inserted into each frame. Each new transcript was subsequently rearranged and comparisons were made to previous dialogue. Overlapping themes and issues were identified and allowed for familiar connections and relationships to be integrated. A description and meaning of each theme was created and applied. The four key themes, under which some sub-themes are arranged, shape how the overall findings are presented and discussed [14].

3. Findings

In approaching the role evidence plays in developing policy, we posed the following question: Does evidence play a role in developing health IT strategy in New Zealand? This can yield a straightforward yes or no answer and that was evident in most of the responses. All of the participants indicated that evidence does not play a large role in developing strategy. However, all respondents indicated that the industry is looking for evidence to change decision-making. A few of the participants wanted clarification of what our definition of evidence was. This raised an interesting point and the question was then posed for them to define or explain their understanding of the term. In most cases, they spoke of evidence in scientific terms. It then became relevant to address the following question: What role should evidence play in the development of these strategies? The point of contention then became what role evidence should play versus what role evidence does play.

Although many of the health policy experts wanted evidence to play a larger role in developing strategies, there were certain factors affecting the extent to which evidence is used. Therefore, the discussion shifted to identify and explore the factors that influence what role evidence currently plays. From this research, four main factors emerged: foundational, leadership, funding variables and the policy process itself. Their relationship is represented in Figure 1. Essentially, these factors impact on one another (in varying degrees) with the foundation being the evidence base. Each variable is discussed in more detail below.

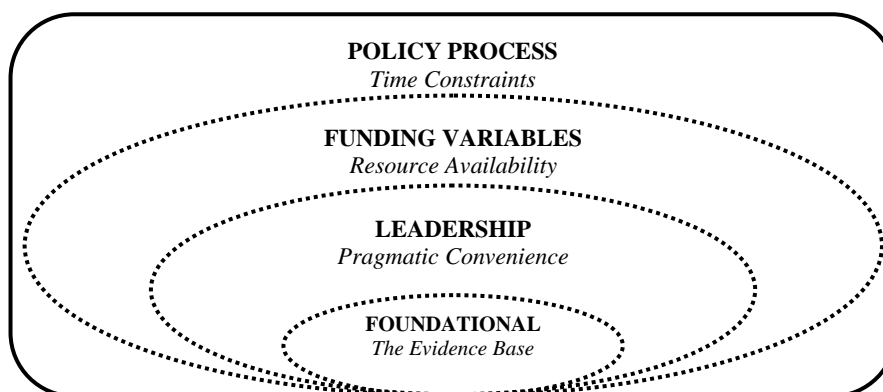


Figure 1 - Relationship between the four factors influencing evidence use in policy

Table 3 - Factors influencing the role of evidence in New Zealand health IT strategy

FACTOR	THEME	SUB-THEME(S)
Foundational	<i>The Evidence Base</i>	Availability of evidence Type of evidence
Leadership	<i>Pragmatic Convenience</i>	The role clinicians and politicians play The influence of clinicians
Funding Variables	<i>Resource Availability</i>	Economic viability Financial evidence as knowledge base
Policy Process	<i>Time Constraints</i>	Time cycle of the policy process versus the research process

3.1. Factors Influencing the Role of Evidence in New Zealand Health IT Policy

This section presents four influential factors that influence the role of evidence in developing New Zealand health IT strategy. Table 3 helps summarize each factor and the themes discussed, outlining how they will be addressed in the subsequent discussion. Table 3 breaks down the relationship between the factors outlined in Figure 1. The foundation is the evidence base from which decisions can be derived. The leadership and funding variables incorporate the political judgements, clinical leadership and the financial capital available to inform policy (either in lieu of or in combination with evidence). These factors are encompassed and influenced by the pace of the policy process itself.

3.1.1. Foundational

After the first question was posed, three of the experts asked ‘How do you define evidence?’ It was clear that when explaining the role of evidence, all participants automatically discussed it in research-oriented terms. Interestingly, what was consistent between the interviews was the explanation that there are only a few areas within health IT where that amount of detailed and validated information is available. As a result, based on their experience and intimate knowledge of the strategies affecting their roles, it was constantly indicated that evidence is currently playing only a small role. Most of the participants believed that the scientific evidence needed is not always available. In lieu of published research findings, it was mentioned that sometimes white papers were used. This further substantiated their viewpoint of the minimal role evidence is playing in health IT strategy development.

However, each expert emphasized that there are a multitude of factors within research itself that impact on the role evidence plays. The degree to which it was believed these factors played a role varied between each interview. In some areas there is some limited international evidence but an absence of a specific health IT evidence base [15]. Many of the experts emphasized that this means that there are a few scattered examples of health IT system utilization. However, the findings can be skewed to support, disregard or be inconclusive in regard to a health IT solution. This distortion, in addition to the fact that there are already not enough studies to build an evidence base, makes it unviable to build policy decisions on these research findings. This reality was all too common to almost all of the experts.

Evidence availability is another issue that was consistently brought up in most of the interviews. Almost all of the participants agreed that, because the country is leading the way in using health IT solutions, it is sometimes difficult to know exactly what evidence should be used to build it up. Often, when appropriate scientific evidence is available, there is a divide between its support of the clinical workflow and the health IT system itself. Each expert, whether they were examining cost-effectiveness or providing clinical knowledge, also stressed that New Zealand is implementing systems that have not been used before. Therefore, being ahead of the curve makes it difficult to find outside examples to draw from.

Evidence is quite complex and it is made more so because of the need to integrate clinical and healthcare delivery with IT solutions. There are complexities in combining clinical workflow and decision-making with IT systems [16]. All of the participants mentioned to some degree their agreement with this statement. Clinicians are looking for evidence that using the IT system will improve healthcare delivery. They want to make sure that the system will facilitate their work, making their process more efficient and resulting in better outcomes for the patient.

Interviewees were of the unanimous opinion that even when evidence is available it is sometimes limited. This is particularly true in regard to healthcare organizations that have had a long commitment to building up an internal health IT system. These systems are often tailored to their organization’s goals and requirements. The evidence derived from research on these internally developed programs is not always readily or necessarily transferrable to other organizations or countries. Most participants made the distinction between scientific evidence on health IT systems collected by internally developed systems (as discussed above) versus national implementations. Although not always directly

transferable, seeing what another nation has done lends more credence as evidence. It can help identify what can and cannot be done and further indicate areas where changes can be made.

As discussions around the evidence itself went on, each expert stressed that these challenges point out the need to define a range of sources to support the development of evidence-based policy. As a result, the policy process and decision-making cannot remain stagnant and unyielding to the ever-growing evidence base. Although limited in some cases, it does not warrant the disuse of scientific evidence. What it does indicate is that the type of evidence that can inform policy has to be drawn from different locales and incorporated into decision-making.

3.1.2. Leadership

As each participant's dialogue shifted away from scientific evidence to other sources of evidence, the role of leadership started to enter the discussion. The shift went primarily onto the role of clinical as well as political leadership. Based on the interviews, the leadership factor refers to the pragmatic convenience in using government leaders' judgments and clinical leadership either in lieu of or in combination with scientific evidence. Pragmatic convenience is the consensus approach that plays a role in driving policy. Markedly, the general discussion on evidence in developing health policy revolved around what is believed to be the larger role the clinician plays in strategic decision-making. For pragmatic reasons, the interviewees all spoke of the fact that clinical input in fact became the information source (the source of evidence). However, surprisingly, the interviewees with the most clinical background indicated the need for more care in regard to what evidence from these sources is integrated into policy measures.

This raised the point that due to practicality and the lack of availability or validity of some of the scientific evidence, clinical experience and leadership takes an all-embracing role. Each participant indicated that, to a large degree, clinical experience is often relied on as the evidence. Their knowledge and experience become significant, especially when the evidence needed is unavailable or inaccessible. In lieu of scientific evidence, you search for information from the next best thing – the clinician. The clinicians then become one of the leaders in governance. The indication was that this is often in cooperation with the political leadership involved with the projects. It becomes a consensus approach between those with a leadership role, which they all re-emphasized as being more pragmatic, especially when scientific or other sources of evidence were not available.

Although a variety of groups are involved, it appears that clinicians also have a strong voice within the consultation process undertaken in the development phase of strategic decisions. However, there is mixed opinion on this. A majority of those interviewed believed that there are great strengths in this form of decision-making. Some of the IT professionals and those without health or science backgrounds stated that they relied on the clinical leadership behind policies and projects to know how to access and use information, as well as relying on their clinical expertise. Clinical input in this regard can then help provide the everyday experience and knowledge of the clinical workflow to provide a resource for better health IT system integration. This is a substantial resource for policy and supports the widely held opinion between the participants that clinical leadership has a large role to play in strategic health information system development. Again, the degree to which they should have input was contested between the experts and lent even more support to the view that there should be a combination of evidence sources to aid decision-making. Nonetheless, the consolidation process by the National Health IT Board was praised for recognizing the importance of integrating evidence that goes beyond scientific evidence and clinical knowledge alone.

3.1.3. Funding Variables

Resource availability refers to scarcity of financial resources leading to policies being informed by economic imperatives instead of or in combination with scientific evidence. In this case, cost in general, cost-effectiveness, and cost benefits drive the choice of interventions. Outside of the relevant clinical knowledge and expert opinion guiding policy, economic resources are an integral part of the policy process. Throughout each interview, the point was raised that resource availability has a big impact on what role evidence plays in developing policy decisions. The issues around funding and resource availability centred around three discussion topics: financial availability as a source of evidence in lieu of scientific evidence, financial evidence used in combination with scientific evidence and financial evidence used to trump scientific evidence even when it is available.

Each participant clearly identified interplay between the consensus opinion of clinical leaders with financial availability in driving health IT policy. They all indicated that the public health system has limited resources to achieve a multitude of national priorities. Decision-makers have much to consider and there are a vast number of ongoing health IT projects and initiatives (some of which were described in great detail by those interviewed). As a result, they have seen that the limited time and resources drive the disincentive to always source and attain scientific evidence. It is easier to do what has been decided based on the knowledge and feedback from clinical leaders, with the financing that is available as the lead driver.

Recognizing that the use of clinical and financial sources is often the status quo, about half of the participants indicated that this was the case because of the fear of basing decisions on financial evidence alone. Basing decisions on economic variables only was believed to lead to the possibility of throwing away a lot of valuable resources if the resulting implementation did not work. Furthermore, there was concern that this could detract from the incorporation of other forms of evidence in the health policymaking process. In particular, the participants with financial expertise in health policy decisions indicated that viable financial evidence is scarce in many of the cases presented. Specifically, clear evidence on the cost-effectiveness of the suggested initiative is not always available despite its importance in tackling a prioritized health issue. Almost all the participants could identify a few occasions when funding opportunities are present for one initiative regarded as a higher priority despite sound scientific evidence supporting another project. In these cases, political leadership deems a certain priority much more worthy of the funding with the belief that the policy process can take action to intervene. These are instances when financial evidence supported by those in leadership positions trumps sound scientific evidence.

3.1.4. Policy Process

The participants indicated that they wanted the health IT policy process to work with evidence and with technical capabilities, an idea that can be theoretically supported as a health IT intervention. However, the policy process occurs at a rapid pace, a pace they all indicated as much faster than the research cycle. The policy process factor refers to the time constraints and variation between the two cycles inhibiting the degree to which policies are informed by available scientific truths. What all the participants emphasized was that there is an urgency to act and develop health IT policies in this country. Often there is not enough time to wait for or generate the evidence base relevant to the health issue being addressed.

When conducting research, especially using an evidence-based approach, you have to prepare the research and findings, produce a well-written paper and then set the guidelines based on that information. That is a difficult task on its own but to go further and incorporate IT into it makes it much more difficult. All the participants indicated this is one of the reasons why it is standard procedure to make policy decisions without first finding the scientific evidence. Government (e.g. political leaders) is under a lot of pressure and a multitude of factors drive the policymaking process. One participant was emphatic about the urgency normally experienced in the creation of policy. Policymakers have much to consider and it was unanimously felt that often the scientific evidence is often not in an easily accessible format for what is needed.

If the requirement is to have a strong scientific evidence base to inform strategy, then some participants indicated that it is then believed that a lot of time will be spent on that process. This partly explains why strategy does not always have a very strong scientific evidence base. Some of the reasons behind this have been discussed previously, including the lack of evidence around the particular benefits policymakers expect the strategy to deliver on. At other times, because of the urgency to make policy decisions, there is not enough time to conduct or collect existing scientific evidence to guide policy decisions.

Some participants, in particular an Innovator who invested intellectual resources and knowledge, spoke of instances within New Zealand where literature reviews have been commissioned and presented. Others recollected times where the commissioned reviews were used and that information was fed back to the Ministry of Health to aid in policy development. A mixture of examples was given by the interviewees with some even recollecting cases where evidence from pilot projects within the country was incorporated into the policy process. These are instances where for some interventions there is an integration of pilot programmes in certain locations before moving them to wider implementation, i.e. combating the lack of evidence by creating projects where that information can be collected. Piloting through test implementation was mentioned by a couple of the participants, who have played a consulting role, as the way some health IT projects are explored before implementation. This feature was commended as a way to leverage the evaluation component in the early or pilot stages of strategic priorities so that at least a degree of an evidence base is developed. The reasoning was that the experiences from those projects would be used to inform broader national implementation of that project.

4. Discussion

Through a series of interviews with policy experts who have played a key role in various aspects of the policy process our research indicates that different modes of evidence exist in informing policy. In exploring what role evidence plays in informing policy decisions, the findings indicate that although scientific evidence plays a role in decision-making, leadership and the policy process also impact on how evidence is utilized, often to a larger degree than the scientific evidence itself. Nonetheless, the foundation of policymaking is the evidence base. It is core in lining up health priorities

with the necessary health IT system infrastructure. However, the scale of the availability of evidence varies, and there is a need to consider all the best available evidence and options to inform better policy decisions.

There are numerous reasons for the gaps in information, including that the research or evaluation has not been undertaken yet, results of relevant research have not been published yet, or the evidence is not readily located [17]. These were all points mentioned by the interviewees. New Zealand is trying to advance and build onto the infrastructure that it has spent years working on. Making research evidence available is vital to realizing the value of new information to guide interventions [18]. No one nation can wait for evidence to accumulate on which to base their decisions. Policymakers have much to consider when formulating policy decisions, prompting the need for other sources of evidence such as economic and impact assessments [19]. The combination of different sources of evidence can enhance the evidence base and help lessen uncertainties in decision-making.

The evidence-based approach starts with the identification of the best available evidence, appraising that evidence and then tying that information together for use to aid decision-making [20]. Decisions can then be drawn from the best available evidence and translated into strategic actions to deliver healthcare outcomes. This can help deter any one factor from having too much influence on policymaking. As Figure 1 shows, it is an amalgamation of the different factors that interplay to affect how decisions are made. This is universally agreed between the participants as the best course of action. They highlighted the fact that the demand and use of evidence in informing policy allows for a more skilled approach to policymaking.

One of the information sources is clinicians, who play a large role in New Zealand health IT strategy development. Consultation processes with these clinical experts can provide valuable knowledge and information. This is a way to form a link between the shared responsibility of the clinical and political leaders. The resulting ideas and interests are often the opinions or views of professional experts largely based on their experiences. Interestingly, according to Cochrane Collaboration criteria, evidence obtained from expert opinions is considered Level V evidence (the lowest in the hierarchy) [20]. However, the degree to which clinicians play a role in decision-making is again affected by several factors. When the evidence is available, it is hard to use it as a singular resource to build a sufficient strategy. In New Zealand, clinical leadership plays a large role because scientific evidence is not always available or readily usable. Health IT is very much clinically based and therefore it is relevant that clinicians' expertise is incorporated as a form of knowledge to inform policy [16]. The integration of their research and clinical knowledge as well as their contact with the patient population is a resource for including the needs of the population. The scientific paradigm says that evidence is key, and one very important part of that is clinical judgment [21]. Although integral, this should not be the only source of knowledge.

The cost of policy options, their economic impact and population health benefits can also be considered forms of evidence to inform policy [17]. It is particularly important to use scarce financial resources efficiently especially within a public health environment. As the research has indicated, the integration of financial knowledge is necessary to drive policymaking. At times it supports the use of evidence and aids its integration within policy [22]. It can drive questioning as there is competition for resources. At other times it is used in lieu of research evidence. In combination with the pragmatic approach through political and clinical consensus, financial viability can be an important type of evidence that informs health IT policy decisions. Recognizing the availability of financial resources is an essential component of the policy process itself. The increased interest in the economic viability of health interventions also stems from the fact that the policy decision-makers have to make cost-conscious decisions while outlining research implications [23], all of which occur at a rapid pace and require fast action – a characteristic not usually associated with the research cycle.

Thus, another influential factor on the use of scientific evidence in health IT policy is centred around the fact that the timelines of the policy versus the research cycle are quite different. The policy process is generally quicker than the research cycle [17] [24]. As a result, real time evaluations have little influence on policy development. Policymaking is much more haphazard and constrained by budgetary and time issues [25], points raised by all interviewees. However, the rapid time cycle for health policy can sometimes see policymakers turn to systematic reviews. In concert with EBM, the use of systematic reviews is becoming more prevalent within health policy and practice, especially with the advent of the Cochrane reviews [17]. This helps synthesize a wide range of available evidence to aid in policy development.

There are changes occurring that many consider will improve decision-making. Funding and financial resources are scarce, so resource availability is a conjunctive factor with evidence (including research) in developing health policy. Identifying key stakeholders and building partnerships helps lead to shared decision-making. Specifically, incorporating research evidence from systematic reviews or meta-analyses can fortify the collection of evidence from multiple sources. That is why it may be useful to engage universities and researchers in the policymaking process, a first step in improving decision-making. Synthesizing researchers into the policymaking process can help support efforts of evidence-informed health policies [26]. The integration of knowledge from different perspectives can help inform better decision-making.

5. Conclusion

In conclusion, the article examined the insights from policy experts on how evidence is used in New Zealand health IT policy. The following factors were explored by the interviewees: scientific evidence, the leadership role, financial evidence and the policy process itself. There are some deficits in how evidence is used, affecting policy formation. Nonetheless, the policy environment works collaboratively within the health sector not only to foster innovation and health IT uptake but also to gather valuable input. Over time, greater incorporation of the various evidence sources will help improve policy formulation.

The implications for the future of policymaking in terms of using evidence as a foundation is heightened by the fact that the health IT system infrastructure needs to line up with the nation's health priorities. The scale of the availability of scientific evidence varies, indicating the need to consider all the best available sources of knowledge and options to inform better policy decisions. There is keen interest in using evidence to inform policy decisions, even though reliable evidence may be hard to find or slow to accumulate. The World Health Organization has realised the importance of research and has dictated the theme of the 2012 World Health Report to focus on how to make better use of research to inform health policies.

As a result, a direction for future research can include the further exploration of the factors influencing evidence use discussed in this article, as there are complexities that lie within each factor. Further examination is also warranted to identify what other possible sources of knowledge can help inform policy measures. This can provide the resources necessary to advance the quality of advice to make better decisions, with further exploration of how that knowledge can be obtained and used effectively. In particular, current doctoral work is being undertaken to examine the best way to integrate the various sources of knowledge to establish frameworks for health IT policy formulation and implementation. The aim is to identify what is needed to create sufficient policy measures to provide the foundation for the desired intervening effect. This could result in providing suitable knowledge to help reduce the often-present failures in health IT system implementation.

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