An interactive integrative approach to translating knowledge and building a "learning organization" in health services management

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Abstract This paper proposes a basic approach to ensuring that knowledge from research studies is translated for use in health services management with a view towards building a "learning organization". (A learning organization is one in which the environment is structured in such a way as to facilitate learning as well as the sharing of knowledge among members or employees.) This paper highlights various dimensions that determine the complexity of knowledge translation, using the problem-solving cycle as the backbone for gaining a better understanding of how different types of knowledge interact in health services management. It is essential to use an integrated and interactive approach to ensure that knowledge from research is translated in a way that allows a learning organization to be built and that knowledge is not used merely to influence a single decision in isolation from the overall services and management of an organization.

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Voir page 656 le résumé en français. En la página 657 figura un resumen en español. يمكن الاطلاع على الملخص بالعربية في صفحة 657.

Introduction

Knowledge normally leads to one or more of three possible outcomes: better understanding of the world around us, useful products or technologies or a guide to making decisions, such as a policy, professional practice or information on how to manage organizations. WHO emphasized the importance of using knowledge for health development (bridging the know–do gap)[1] after the use of evidence-based medicine gained ground among health-care professionals two decades earlier.[2,3] Generally, the emphasis on evidence refers to evidence generated by research studies. Concerns have been expressed about the fact that most decision-makers, health professionals, policy-makers and managers do not make use of evidence or knowledge generated by good quality research but rather use their "personal knowledge" — derived from their own experiences and trusted sources — to guide their decisions.

If we define knowledge more broadly than findings from research,[4] it follows naturally that few decisions are made without the use of some sort of knowledge, particularly knowledge from personal experiences. From a knowledge-management point of view, knowledge that is derived from experience and trusted sources is considered "tacit knowledge" as opposed to "explicit" knowledge, which comes from documented sources.[5] The current interest in knowledge translation stems from concerns that relevant and useful research findings could be better used to guide decision-making.[6,7] Knowledge translation is an attempt by those who have scientifically sound and useful knowledge to try to find more effective ways of moving their knowledge from research into decision-making processes in order to improve people's health. However it would be naive to expect that relevant and useful research findings will be sought out and used by decision-makers.[8] In order to make knowledge translation more effective, it is important to bear in mind that knowledge translation is context specific rather than context free.

Much can be learned from the use of knowledge translation in drug development, where biomedical knowledge is translated during various stages of the process — from discovery to approval for use and then to the marketing of new products.[9,10] In the process of drug development, it takes great effort and resources to generate and translate the various sets of knowledge along the knowledge-value chain. Drug regulatory authorities specify how many steps are needed before a drug will be approved for use; additionally, the various types of knowledge and quality standards needed to move from one step to another along the knowledge chain are also specified. A knowledge-translation chain is relatively better defined than a chain dealing with decisions made in an organization about policies or management. The translation from knowledge to action is not a simple linear process but rather a complex and often unclear value chain. The translation processes that lead to decisions are often so complex that they have been referred to as "black boxes".[11,12] Knowledge translation in drug development may be relatively less complex than knowledge translation in other areas, particularly health services management; this may be due to the fact that drug development is about technology and thus knowledge-translation chains used by regulatory agencies have to be clearly defined and standardized to ensure the quality and safety of technologies derived from the processes. When decisions about policy and services management are made, the end-points (health improvement or more effective delivery of services) are more difficult to define and involve more complex processes that

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are difficult to standardize. The areas of policy and service management make use of various types of knowledge, not necessarily those generated by research, and non-linear processes lead from one step to the next. Policy decisions and health services management are often criticized for not making use of objective or scientific evidence. In particular, decisions about policy and service management need to take into account other types of knowledge not only knowledge generated from high quality research. Decision-making processes are complex and iterative, and multiple feedback loops are involved.

This paper proposes a basic approach to ensuring that knowledge from research studies is translated for use in health services management in order to build a "learning organization". A learning organization is one in which the environment is structured in such a way as to facilitate learning as well as the sharing of knowledge among members or employees. This paper highlights various dimensions that determine the complexity of knowledge translation, using the problem-solving cycle as a backbone for gaining a better understanding of how different types of knowledge interact in health services management. It is essential to use an integrated and interactive approach to ensure that knowledge from research is translated in a way that allows a learning organization to be built and that knowledge is not used merely to influence a single decision in isolation from the overall services and management of an organization. The translation of knowledge from research to support the management of health services will be made more effective if researchers understand the complex nature of decision-making in health services organizations and are aware of the need to use a more interactive mode of translation rather than a linear supply–push model. More importantly, knowledge translation must be seen as a part of knowledge management within an organization so that a learning organization can be created.

Towards this end three key concepts and realities are emphasized; these are often overlooked when researchers try to translate research in order to influence decisions about managing health services.

1. There are at least three different types of knowledge that interact in any decision made in the management of health services and organizations.
2. Each type of knowledge has varying amounts of influence on decisions made at different points in the problem-solving cycle.
3. A learning organization can be created only when people share information and learn from one another's experiences instead of being told only to follow advice or learn from texts.

Three sources of knowledge

Although researchers have classified evidence into five levels according to quality,[13] and it is expected that the best decisions make use of higher-quality findings, most decisions are made with a more complex mix of knowledge derived from different sources. There are at least three major sources from which knowledge is used to influence decision-making by health services managers.

1. Management information systems: Most health services organizations have a system that provides information for management decisions. Such information may be far from adequate (for example, in terms of the data or indicators available) or it may lack certain desirable qualities (for example, reliability and timeliness) when compared with what a good system should be.[14,15] Yet there have been efforts to improve systems, especially in developing countries.[16] However, once a management information system is available, efforts will be made to use knowledge derived from it. Management information systems are the most prominent source of knowledge for health services managers. It provides knowledge about problems as well as information on progress and the coverage of services. However, it normally lacks qualitative information as well as other more in-depth analyses and information on the cost effectiveness of interventions, information that is necessary to arrive at possible solutions or corrective actions.
2. Personal knowledge of decision-makers: This may be based either on actual personal experiences and lessons (or conclusion derived from those experiences) or on knowledge from "trusted sources", as determined by each individual decision-maker. This type of knowledge does not usually involve solid evidence but rather personal advice and experience.
3. Research findings: According to academics and researchers this is probably the most crucial source of knowledge. However it is quite common to find that such sources are relatively weaker or have less influence than the two sources described above, regardless of the quality and relevance of research findings to issues under consideration. One of the important weaknesses in the use of research findings in the management of health services and other organizations is timeliness. When decision-makers need to make decisions, research may not yet be ready for use.

There are no hard and fast rules about which types of knowledge and which sources are more important or influential. The decision about which type or source to use depends on what decisions are being made and in what context those decisions are expected to be made.

Types of decisions and types of knowledge

Managing health services is about making decisions on the best way to provide services to the target population as well as making decisions on the best use of resources (human, financial or technological) to deliver those services. The problem-solving cycle can be used to examine more closely the relative influence of various types of knowledge in order to better understand how knowledge from research can be translated to influence decision-makers. The four stages of the problem-solving cycle are: identifying and analysing the problem, formulating possible solutions, implementing solutions, and monitoring and evaluating. These stages all call for different sets of knowledge content, thus reflecting how different sources of knowledge will have different weights at different stages in the cycle.

During the first stage, decision-makers identify the problem. In this stage decision-makers normally makes use of information available through health management information systems (for example, information on the health situation and epidemiological data). In most cases the existing health information system does not cater for in-depth analysis of a problem so decision-makers will also need to depend on research, personal experiences or other trusted sources to

provide insight into a problem. In some cases, an in-depth analysis is not carried out but instead decision-makers look for the quickest possible explanation. In certain circumstances, existing information systems provided scanty and inadequate information, thus creating opportunities for research findings to shed more light on problems faced by decision-makers. Much of the research into health services management focuses on providing better insights at this stage of the problem-solving cycle.

During the second stage, decision-makers attempt to find solutions to the problem. Researchers expect that decisions made at this stage will be derived from the findings of scientifically sound studies. Decision-makers tend to be open to input from studies compared with input from other sources of knowledge. This stage thus creates opportunities for researchers to communicate with decision-makers about relevant research. However, as also occurs during the other stages, there is no guarantee that decision-makers will actively look for or request input from studies regardless of whether researchers consider this to be crucial. The mechanisms that support decision-making, such as planning and advisory groups, also determine how researchers contribute to the decision-making process. Those working in planning or advisory groups (such as research managers or policy advisers) may have a crucial part to play in facilitating the translation of research to support decision-making.[17] Decision-makers may not only be looking for knowledge about solutions but may also be looking at the suitability of proposed solutions; thus they may require knowledge about other aspects of a solution, such as cost effectiveness, feasibility and affordability.

During the third stage, decision-makers use existing resources to implement the actions needed for the solution they have adopted. This is the stage where decision-makers (managers of the system) are influenced mostly by their personal experiences and managerial knowledge. Whether a decision is influenced by personal or other sources of knowledge also depends on what types of decisions are being made and what knowledge has been made available through research in identifying or recommending solutions. Most researchers who have an academic background tend to dismiss this stage as "management" and not "academic" enough to merit input from research. In most instances, research provided at the second stage of the cycle is inadequate for this third (implementation) stage, especially in terms of delivering public health services or for actions that require a longer time-frame. Researchers are not usually interested in working on the implementation phase since it requires a lot of time, and much of the work may not be considered to be publishable in academic journals. Thus, this third stage will invariably be influenced heavily by personal experience and knowledge.

During the fourth stage, decision-makers must monitor and evaluate their decisions or choices. This is the stage during which decision-makers will again resort to using an existing information system to shed light on their actions. In-depth studies examining staff motivation, the demands and perceptions of target populations or analyses of the flow of financial resources may be needed to supplement information provided by the existing information system. In most cases, the speed at which information can be acquired is crucial since it will be needed to guide decisions in the ongoing process of problem solving. Many factors limit whether researchers are able to provide study results in time to cope with the speed of the decisions being made. Evaluating a decision at the end of a problem-solving cycle may provide a more relaxed time-frame and create more opportunities for researchers to contribute to the decision-making process.

These four stages of problem solving continue in an iterative loop that moves towards the goal of health management. If properly carried out, the translation of knowledge from research can be expected to lead to better learning among those involved in solving the problem. Understanding the four stages of problem solving and acknowledging the relative influence of knowledge from the three major sources will help decision-makers to better handle attempts to translate knowledge from research while creating room to accommodate other sources of knowledge, especially those that are tacit in nature.

For researchers, knowing how much research will be needed and how much studies can be used to guide decision-making depends on two factors: the relevance and quality of the research findings and the communication strategies adopted. Of course, there are also demand-side factors, which encourage decision-makers to enquire beyond personal experiences and ideas. However, gaining a thorough understanding of the decision-making process (the problem-solving cycle) and the types and sources of knowledge involved will help researchers to better integrate research findings into the decision-making process of health services management by actively guiding the process of translating knowledge from research.

Four dimensions of translation and decision-making

Since there are three sources of knowledge in the four stages of the problem-solving cycle, we can identify at least four inter-related dimensions. These dimensions will help guide those who are interested or involved in knowledge translation to achieve a more integrated approach and also contribute to developing a learning organization.

Dimension 1

The nature of the decisions is determined by the stage of the problem-solving cycle. This is the backbone of decision-making in health services management, the aim of which is to improve people's health. The problem-solving cycle addresses a variety of decisions and thus reflects the relative importance of various types and sources of knowledge. Researchers need to be aware of the knowledge that is available from other sources and also the perceptions and preferences of those making use of the knowledge.

Dimension 2

Dimension 2 describes the context in which decisions are made. The same decisions made in different contexts will be influenced differently by different types of knowledge. When knowledge is translated from research findings it is necessary to consider the contextual reality of the situation in which the knowledge is to be applied.[18] Contextual factors may include the sociopolitical situation, the perceptions and preferences of the population and the resources and influence of external or global actors, such as donors or international agreements and organizations. In terms of knowledge content, this implies the need for diverse types of evidence, knowledge or information to address the concerns that may be raised by stakeholders involved in the context in which decisions are being made. On the other hand, considering the context

helps to better plan the process by which knowledge should be disseminated or communicated to the intended users by involving stakeholders or mediating the dialogue process. Understanding the context of a situation is the key to planning a better interaction between knowledge providers and intended end-users (see Dimension 4).

Dimension 3

Dimension 3 describes the nature of the knowledge or evidence that is available. Much effort has been made to ensure that evidence available for decision-making is as scientifically sound as possible. Properly managed information systems can be as scientifically sound and valid as research studies. However, certain situations may favour the use of personal knowledge and experience, knowledge from trusted sources or knowledge about the perceptions and preferences of key stakeholders, who may not be representative of the population. Researchers can be better prepared to make relevant knowledge available in the most scientific way if they are more receptive to the varying nature of the need for knowledge. Although it is important to ensure that scientifically sound evidence and knowledge are presented to the intended users, the reality is that the best knowledge is never available but decisions need to be made and they will never be perfect. The quality of information and knowledge improves through the utilization and interaction among those who need to make decisions and those who are ready to provide knowledge and evidence. Therefore, it is important that researchers present their findings and conclusions in the most objective way possible while clearly identifying the limitations of their findings, rather than trying to minimize these. It is also necessary for researchers or those generating evidence to avoid overinterpreting or overstating their findings. Management decisions often involve many components and require different sets of knowledge and evidence, and there are always competing sources of knowledge. Researchers may claim to have the best quality knowledge, but it may not be cost effective to try to improve the quality of knowledge in a complex decision-making process when time is important and other sources of knowledge exist.

Dimension 4

This dimension describes the process by which knowledge is translated and communicated to intended users. Researchers can raise the visibility and increase the relative influence of knowledge derived from studies if they pay more attention to the process. There is no single pathway or model by which knowledge is translated to guide decision-making. Effective translation processes emerge when researchers gain a better understanding of the first three dimensions. The emphasis of this dimension reflects the fact that knowledge translation cannot and should not be a passive process. Nor should it be supply driven. But it should be able to accommodate other sources of knowledge in the process.

This dimension confirms that knowledge translation is not a simple linear process. The assumption that good quality knowledge that has been properly packaged will be sought out and requested by decision-makers is an outdated and simplistic linear model of translation. The linear model may hold true for research that is to be disseminated among research or academic communities, whose aims are to look for the better and more refined knowledge. But it will not work in the setting of health services management, where the urge for action calls for the use of any type of knowledge and where research studies may not necessarily provide the most relevant and timely knowledge.

Those who manage information systems need to understand the process dimension and plan a proper translation–dissemination process rather than hoping that data will find its own way into the final decision. This dimension highlights the fact that some degree of process planning and management will be needed in the chain of knowledge translation, and some mechanism must exist or be assigned to carry out such planning and management functions. Properly planned and managed processes are key to bringing about a learning culture, which is fundamental to creating a learning organization.

Interactions

These four dimensions interact and determine the complexity of knowledge translation. Moreover, they reflect the fact that knowledge from research cannot be translated in isolation from other sources of knowledge; additionally, researchers cannot ignore the importance of context. But it is most important to pay attention to the process of knowledge translation and see where it can be improved to ensure that the best use is made of research knowledge and that its use also contributes towards building a learning organization.

Managing an integrated interactive process

Despite the complex nature of decision-making, researchers can expect to be better able to translate knowledge from research in a way that influences decision-making if they properly manage the two major processes in the knowledge-value chain. One is the process of research production, from planning to conducting research studies. The other is the process of knowledge translation in the problem-solving cycle. Both need to take place through interactive processes that give priority to the nature of the problem-solving cycle rather than the research-production process. This can be referred to as an integrated interactive model of knowledge translation. It is integrated in the sense that it needs to take place during the problem-solving cycle rather than following researchers' own cycle of work. It is interactive because it requires close interaction among groups of stakeholders during the problem-solving cycle as well as during the research-production process. It is both integrative and interactive because it attempts to include other sources of knowledge and to consider such knowledge rather than placing less value on it or trying to exclude it.

Experiences in different countries show that when the interaction is confined to only two parties — researchers and decision-makers — it may not lead to proper knowledge translation. A model known as "the triangle that moves the mountain"[19] calls for a more inclusive interactive process that also involves affected stakeholders. Involving stakeholders helps to ensure that relevant and valid knowledge generated through the research process will be translated for broader audiences and will thus help decision-makers appreciate the contextual factors in which their decisions need to be made. Although the triangle model was introduced in a societal context, it can be readily adapted to narrower contexts, such as health services and the management of organizations.

Some of the benefits of applying the triangle model in terms of translat-

ing knowledge and building a learning organization are that:

- the receptivity of intended users and researchers to the problem is increased and thus common goals for exchange can be described;
- research sources gain influence and may better supplement or replace other sources of knowledge, especially those based on personal experiences;
- stakeholders become informed and involved in the synthesis and utilization of knowledge from various sources;
- various stakeholders in a health services organization are mobilized and prepared to take more effective and concerted actions during implementation;
- continuous learning by various groups of stakeholders and researchers is ensured through continuous interaction.

The primary goal of the integrative and interactive process is to ensure that all stakeholders, including researchers, gain more knowledge more effectively. And all members of the organizations involved gain knowledge because this is an inclusive process.

There are three key aspects to achieving interactive learning through the knowledge-translation process. The first is planning. An important part of the planning phase is that stakeholders map the knowledge that is relevant and useful. The second is moderating. For this aspect it is important to identify a moderator who is unbiased and who has an ability to listen and encourage dialogue and the sharing of knowledge (explicit and tacit) among various groups. The moderator should steer decision-makers towards their objectives and summarize meetings so that all concerned will be adequately informed and learn from the process even when disagreements arise. The third aspect is capturing. All knowledge brought to the process should be captured, not only the original research knowledge. The tacit knowledge captured should be recorded and packaged for further sharing and use. Most important is the possibility of capturing the key messages that will be crucial to further decision-making and actions.

Conclusion

Knowledge translation should not be viewed as an isolated process that leads directly from research to utilization once repackaging and presentation have been addressed. There are other competing sources of knowledge, and the translation of knowledge gained from research will need to take into account the contextual factors of any decision being made. In health services management, decisions are made and knowledge is translated within the problem-solving cycle with the aim of improving people's health. The complexity of the knowledge-translation process may be untangled by gaining a better understanding of the nature of the decision-making process in the problem-solving cycle, the relative influence of various sources of knowledge and the context in which decisions are made. The best approach to bringing about more effective knowledge translation is to use one that is interactive and integrative.

Researchers will have a better chance of translating their knowledge in order to guide decision-making in health services management if they can integrate their efforts into the knowledge management and learning processes of an organization during the problem-solving cycle. Creating mechanisms within health services organizations that address knowledge management and translation, rather than leaving them to researchers, may help ensure that effective knowledge translation continues and is used to create a learning organization. This will be an important strategy for WHO, among other organizations, in its efforts to bridge the know–do gap. ■

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Résumé

Approche intégrative et interactive pour la mise en pratique des connaissances et la mise en place d'une «organisation de l'apprentissage» dans les services de santé

Le présent article propose une approche générale visant à garantir la mise en pratique des connaissances issues de la recherche afin qu'elles servent à l'établissement d'une «organisation de l'apprentissage» pour la gestion des services de santé (on appelle organisation d'apprentissage une organisation dans laquelle l'environnement est structuré de manière à faciliter l'apprentissage et le partage des connaissances parmi les employés). Le présent article fait ressortir les diverses dimensions qui déterminent la complexité de l'opération d'application des connaissances, en utilisant un cycle de résolution de problèmes comme trame pour mieux comprendre comment les différents types de connaissances interagissent dans la gestion des services de santé. Il est essentiel de recourir à une approche intégrée et interactive pour s'assurer que la mise en pratique des connaissances issues de la recherche s'effectue selon des modalités permettant l'établissement d'une organisation de l'apprentissage et que ces connaissances ne servent pas simplement à influer sur une décision, en l'absence de communication avec les services généraux et l'encadrement de l'organisation.

Resumen

Método integrador e interactivo para trasladar los conocimientos y crear una «organización de aprendizaje» en la esfera de la gestión de los servicios de salud

Se propone en este artículo un método básico para procurar que los conocimientos derivados de los estudios de investigación se trasladen a la gestión de los servicios de salud con miras a crear una «organización de aprendizaje». (Una organización de aprendizaje es aquella cuyo entorno está estructurado para facilitar el aprendizaje, así como el intercambio de conocimientos entre los miembros o empleados.) En este artículo se resaltan diversas dimensiones que determinan la complejidad de la traslación de conocimientos, usando el ciclo de resolución de problemas a modo de piedra angular para comprender mejor cómo interaccionan los distintos tipos de conocimientos en la gestión de los servicios de salud. Es fundamental adoptar una perspectiva integrada e interactiva para garantizar que los conocimientos derivados de las investigaciones se trasladen de manera que permitan establecer una organización de aprendizaje, y que dichos conocimientos no se usen simplemente para influir en una decisión concreta ignorando los servicios y gestión generales de una organización.

ملخص

أسلوب تفاعلي متكامل للانتفاع بالمعارف وبناء ((منظمة تعليمية)) في إدارة الخدمات الصحية

تقترح هذه الورقة أسلوباً أساسياً لضمان الانتفاع بالمعارف الناتجة عن الدراسات البحثية وتطبيقها في إدارة الخدمات الصحية، بُغْيَةَ بناء ما يطلق عليه ((المنظمة التعليمية)). (تعرَّف هذه المنظمة التعليمية بأنها تلك المنظمة التي يتم تنظيم بيئتها بما ييسِّر عملية التعلُّم وتبادُل المعارف بين أعضاء المنظمة أو العاملين فيها). كما تبرز هذه الورقة مختلف الأبعاد التي تحدِّد مدى تعقُّد عملية تحويل المعارف إلى الشكل الذي يتيح الانتفاع بها، مع استخدام دورة حل المشاكل بوصفها الدعامة الأساسية لتحسين فهم طريقة التفاعل بين مختلف أنماط المعرفة في عملية إدارة الخدمات الصحية. وخلصت الدراسة إلى أهمية انتهاج أسلوب تفاعلي متكامل لضمان الاستفادة من المعارف الناتجة عن البحوث بما يتيح بناء منظمة تعليمية، ولضمان ألا يقتصر دور المعارف على التأثير على قرار وحيد بمعزل عن النظام الإداري للمنظمة والخدمات العامة التي تقدِّمها.

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