Knowledge Management: The Need for a Total Knowledge Transfer Model to Diffuse Innovation of the Public Health Workforce

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Abstract—The purpose of this article is to propose a model designed to achieve Total Knowledge Transfer in the public health sector. The Total Knowledge Transfer Model integrated four essential organizational factors which have been under examined in totality in the literature. The research design was inductive in nature and used a case study for accomplishing the research objectives. The researcher investigated the factors that created a base to design a framework for total knowledge transfer in the public health sector. The results of this study are drawn from a fairly large sample in only two hospitals. A further research can be conducted to cover more responses from a wider health sector. The Total Knowledge Transfer Model is essential to improve the transfer and application of total common health knowledge.

Keywords—Health Care, Knowledge Management, Knowledge Transfer.

I. INTRODUCTION

IN today's changing world, people need to realise that what did well in the past is no longer providing effective results; they need to change and come up with new innovative ways. 'In health care, a well-recognized gap exists between what we know should be done based on accumulated evidence and what we actually do in practice' [1]. Beesley and Cooper say 'innovation corresponds to the application of new and creative ideas and the implementation of inventions' [2]. 'Invention brings something new into being, while innovation brings something new into use' [3]

'The mid 1990s, saw a surge of publications, conferences and consultant activity in the knowledge management (KM) area, and many organizations woke up to the challenge of managing their knowledge' [4]. Managing organizational knowledge goes through a series of steps and processes or what most Knowledge management publications called it KM life cycle. The most common practices are creating, organizing and transfer of knowledge. Dixon found that organizations can update their common knowledge through two main activities. 'First they have to find effective ways to translate their ongoing experience into knowledge –create common knowledge. Second, they have to transfer that knowledge across time and space- leverage common knowledge' [5]

Organizations come to realize that the creation and transfer of knowledge in an organization is a critical factor for their success. 'Unfortunately, research findings are often not applied in practice and, consequently potential improvements in the standard and quality of patient care are not being realized'[6] 'In health care there has been increasing recognition of the need to facilitate the transfer of research evidence into clinical practice and policy development' [7].

II. RESEARCH METHODOLOGY

This study was based on an inductive qualitative methodology. Based on existing body of knowledge regarding knowledge management and transfer, the researcher deduced four main points to achieve Total Transfer. The researcher investigated the current initiatives regarding the four points needed to achieve total transfer in two hospitals of Mid Essex Hospital NHS Trust. Analysis of the gathered research data (79 questionnaires out of 210 distributed and 24 semi structured interviews) were combined with the existing body of knowledge to give the base for proposing a new Total Knowledge Transfer Model.

This research is mainly concentrating on health workers and excluded patients and members of the public. The researcher based this study on a sample which covered different health work force groups (managers, consultants, junior doctors, nurses, radiographers, health support worker e.g., Admin & clerical, secretary).

Since the population for this research is large, where it is impossible to survey all health workers, the researcher decide to choose six directorates from the hospital as been agreed with the Research and Development Department. They are: Pathology, Radiology, Acute Medicine, General surgery, Plastic Surgery and Obstetrics & Gynaecology. This is one of the limitations of this study. However, the chosen departments covered the busiest and largest departments in the hospital.

Due to the pressurized time of health workforce, Research and Development Department recommended limiting the number of questionnaires in order to collect realistic achievable number of completed questionnaires. The sample size was not based on a mathematical or statistical method. The researcher surveyed 210 participants (as was agreed upon with the ethical committee). This is considered as one of the limitation of this study.

The distribution of questionnaires within each directorate, was based on the (stratified random sampling) procedure. The

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target population (health workforce) was divided into a number of groups or strata (managers, consultants, junior doctors, nurses, radiographers, health support worker, e.g.; Admin & clerical, secretary).

A sample of each group was selected by the manager of each department to match approximately the percentages of each group within the population. Within each department 35 questionnaires were distributed. Attempt was made to match the distributed questionnaires (number 35) to the real percentage of the hospital staff. For example, 17 questionnaires (48%) were given to nurses, where it approximately matches the nurses' percentage (47%) in the Trust. The sum of all the samples of the different groups from the six directorates formed the final study sample.

The questionnaire was sectioned into ten headings. To facilitate the analysis of the questionnaires, we analyzed each of the headings separately. The frequencies and percentages of each statement were calculated.

Since the interviews number is very small, they were used to seek new insights on how health workforce employs knowledge transfer in their day to day operation and to obtain future recommendations. The interviews were used to explore the factors that can create a base to design a new model for Total Knowledge Transfer. To analyze the data, the guide lines on content analysis were used. It relies largely on converting qualitative data into a quantitative format (frequencies).

III. DEVELOPING THE PARAMETERS OF THE ESTABLISHED TOTAL KNOWLEDGE TRANSFER MODEL

This study investigated the four main points needed to be integrated to achieve a total transfer and deduced that there is a need for a Total Knowledge Transfer Model that can be called Total for its ability to achieve four main points needed for a total transfer:

1. Total in transferring both explicit and tacit knowledge.
2. Total in considering knowledge management pillars when managing the transfer (strategy, culture, people, technology and structure).
3. Total in involving transmission, absorption and put transferred knowledge into practice.
4. Total in considering the flow of knowledge at all levels (from one place, person, group, organization to another).

The models discussed in the literature review may have achieved one or two of the above four points, however, there is no existing model that achieves the above four points together. Fuchs et al., 2000 cited in [8] say that 'in an age when capabilities are generally accepted to be the backbone of sustainable competitive advantage, integration is one key capability that remains under used'. Before proposing the model, a discussion of the above four points and the grounding theories and relevant literature review that led to the deduction of these points will be presented.

A. Knowledge Management Pillars

Beijerse defined Knowledge management as the 'management of information within an organization by steering the strategy, structure, culture, and systems and the capacities and attitudes of people with regard to their knowledge' [9]. 'KM is the coming together of organizational processes, information processing technologies, organizational strategies and culture for the enhanced management and leverage of human knowledge and learning to the benefit of the company' [8]. Sharifuddin et. al. in their study performed on knowledge management and knowledge transfer in the public sector has revealed the need to consider (people, culture, technology, structure) when designing knowledge management strategy. They say that 'organization should always see it as a total' [10]. Rhodes et al. also considered that 'the effectiveness of organizational knowledge transfer is influenced by key organizational factors such as structure, culture, processes and strategy, and information technology (Ives et al., 2003 and Spender, 1996)' [11]. Based on that, the researcher will consider (strategy, people, culture, technology and structure) when managing the transfer of knowledge.

B. Explicit and Tacit Adoption in Knowledge Transfer

Looking at knowledge management approaches, Sanchez found that there are two main approaches that organizations follows, 'The *tacit knowledge* approach emphasizes understanding the kinds of knowledge that individuals in an organization have, moving people to transfer knowledge within an organization, and managing key individuals as knowledge creators and carriers. By contrast, the *explicit knowledge* approach emphasizes processes for articulating knowledge held by individuals, the design of organizational approaches for creating new knowledge, and the development of systems (including information systems) to disseminate articulated knowledge within an organization' [12].

Kalling and Styhre say that 'knowledge is seen as socially embedded, expressed in practices of communication and through storytelling, in brief as highly dependent on what is commonly referred to as human capital, i.e. human beings. On the other hand, knowledge is regarded as an organizational resource that is primarily to be captured and distributed through various technological systems such as computer databases and Intranets' [13].

Based on the above two views, different models for knowledge transfer has emerged. Some of the models concentrated on the social perspective while others emphasize on technological application when transferring knowledge.

Stacey emphasizes the every -day conversation and says that managers' key role is to facilitate different ways of conversing. He says 'new themes emerge as people struggle to understand each other and as their conversations are cross-fertilized through conversations with people in other communities and disciplines. Organizations change when the themes that organize conversation and power relations change. Learning is change in these themes. Knowledge is language and meaning emerges as themes interact to form conversations' [14].

Those who adopted the tacit approach believed that knowledge can be transferred through participation in social networks. 'It is important to say that technology does not

connect us. Our relationships connect us, and then we eagerly use the technology. We share knowledge because we are in relationship, not because we have broader bandwidth' [15].

On the other hand, many authors when managing the transfer of knowledge, they concentrated on the explicit approach. Sanchez says 'explicit knowledge approach assumes that the useful knowledge of individuals in an organization can be articulated and made explicit' He continues that 'explicit knowledge assets can then be disseminated within an organization through documents, drawings, standard operating procedures, manuals of best practice, and the like' [12]. Since technology can facilitate that, many organizations such as SAB, Caterpillar, Ford Motor Company have adopted technology solutions as a mean to transfer and manage their organizational knowledge.

From the above, two approaches have been conducted in organizations. Newell et al. say 'those who believed in the tacit approach assumed that the critical success factor is trust, collaboration and social networking. While those who believed in the explicit approach assumed that technology is the critical success factor' [16]. The researcher strongly believes in the importance of totality in looking at matters. Therefore, it is essential to adopt both tacit and explicit approaches to achieve the best of both worlds. De Lusignan et al. proposed a model for clinical practice that is based on balancing 'both explicit as well as tacit knowledge using both the information-centered and learner-centered styles' [17]. In this research both approaches are needed, since advantages can be obtained through both the tacit and explicit approach and as Sanchez say 'the advantages of each approach can be used to help offset the disadvantages of the other' [12]. 'The benefits of both tacit and explicit knowledge can be gained if soft and hard mechanisms are allowed to interact' [18]. ' Thus, the eventual goal for most organizations will be to devise and implement hybrid knowledge management practices in which explicit knowledge management practices complement and significantly extend their initial tacit knowledge practices' [12]

In health care organizations there are different types of knowledge that need to be transferred and that applying one approach of knowledge transfer may not be sufficient. In this study, both the explicit and tacit part of knowledge will be considered. All these types of knowledge need to be transferred so that a health work force can accomplish his/her task towards the patients. In this research it will be called "*Total common health knowledge*" to encompass all types of knowledge that need to be totalized, commonly and regularly used so that a health work force can do his/her job effectively.

The researcher concluded that technology alone or social networking alone can not achieve transferring all types of knowledge. Davenport and Prusak say that 'technology alone won't make a person with expertise share it with others. Technology alone won't get an employee who is uninterested in seeking knowledge to hop onto a keyboard and start searching or browsing. The mere presence of technology won't create a learning organization, a meritocracy, or a knowledge-creating company' [19].

Part of what a health workforce can do is largely dependent on how to practice the art of doing that task. Rules, guidelines, documents can be useful but can't determine how to practice that task. They can be integrated with a practical practice to achieve improving the knowledge of doing that task. Example, for a surgeon to become an expert and to fully capture the art of surgery, there is a need for a long practice and detailed training. This learning by doing can be enhanced through capturing other different views and concepts, existing in articles books and journals.

C. Flow of Knowledge at All Levels

On the other hand, and despite what has been said above, technology can also be used to transfer the articulated part of knowledge that can lead to the improvement of service delivery. Health care organization is not a single organization. In any organization, not all staff is working the same hours and in the same locations. The researcher concluded that there is a need to improve all forms of communications and knowledge flow. Hitt et al. Say that 'sharing knowledge among employees does not diminish its value for any one person. To the contrary, two people sharing their individualized knowledge sets often can be leveraged to create additional knowledge that, although new to each of them, contributes to performance improvements for the firm' [3] they added that 'the firms challenge is to create an environment that allows people to integrate their knowledge individual knowledge with that held by others in the firm so that, collectively, the firm has significant organizational knowledge' [3].

There is a need to benefit from technology for its ability to help knowledge flow horizontally among service delivery sites, departments, and colleagues as well as vertically up and down the chain of command. Add to that technology can help crossing organizational boundaries by flowing to and from other organizations.

To be successful, when IT solution is introduced to an organization there is a need to manage this process effectively. 'Information systems are useless without skilled people to build and maintain them, and without people who can understand how to use the information in a system to achieve business objectives' [20].

As seen above, the domain of knowledge transfer has often been approached from either Information Technology (IT) perspective or through social interaction perspective. In this study, the researcher concluded that taking into account KM pillars, both explicit (that concentrates on technology) and tacit (that concentrates on people and relationships) approaches need to be integrated to achieve the flow of knowledge at all levels.

The above discussion was about what to transfer (both explicit and tacit knowledge), where (flow at all levels) and how (using both technology and people interaction). To complete a total transfer there is a need to consider (what to do with what has been transferred).

D. Transmission, Absorption and Putting Transferred Knowledge into Practice

According to Davenport and Prusak 'knowledge transfer involves two actions: transmission (sending or presenting knowledge to a potential recipient) and absorption by that person or group' [19]. They further argued that 'the goal of knowledge transfer is to improve an organization's ability to do things, and therefore increase its value. Even transmission and absorption together have no useful value if the new knowledge does not lead to some change in behavior' [19]. Buchan says that 'making better connections between knowledge generation, knowledge delivery, and practical action is the challenge that now faces the health care industry if it wants to improve performance and deliver better care. Our efforts this century should focus on designing the can and the can opener in parallel' [21].

Health care for all Americans, noted several types of problems in health care that include 'avoidable errors, underutilization of service, overuse of services, and variation of services'[22] 'Unfortunately, research findings are often not applied in practice and, consequently potential improvements in the standard and quality of patient care are not being realized' [6]. Turner says that 'if you carry on doing what you have always done, you will carry on getting what you have always got' [23]. Schilling and Kluge identified three major blocks that contribute to preventing the organization wide implementation of novel insights '(a) the lack of motivation on the part of the innovative organizational unit (b) the lack of top management support and (c) active resistance from other organizational departments towards the innovation' [24]. Change could happen if 'Knowledge workers take the lead in selecting, creating and determining the changes needed throughout the organization. This empowerment and trust will then unleash the energy, knowledge and creativity of the workforce and, above all, they will have ownership' [25]. Storey and Salaman say that the ability to innovate is a 'consequence of the way the organization as a whole worked: the structure, culture, systems, processes, history and technology of the organization' [26].

The researcher concluded that there is no benefit from the transferred knowledge if it is not applied in practice and there is a need to bridge the gap between research and practice.

Based on the previous discussion, and through different knowledge management, knowledge transfer covered models in the literature review the researcher deduced that to achieve total knowledge transfer there is a need to integrate the following four points:
1. Transferring both explicit and tacit knowledge.
2. Considering all knowledge management pillars when managing the transfer.
3. Involving transmission, absorption and put transferred knowledge into practice
4. Considering the flow of knowledge at all levels (from one place, person, group, organization) to another.

IV. DISCUSSIONS OF QUESTIONNAIRES AND INTERVIEWS

In reviewing the results of both the questionnaires and the interviews, it is fair to say that there are a number of excellent knowledge transfer initiatives to transfer knowledge. However, it is also fair to say that these initiatives are characterized with a common four issues that if been avoided, the hospitals can achieve Total Knowledge Transfer.

The first key issue is the lack of balance between technology-driven and social networking-driven tools and processes to transfer knowledge. The delivery of health care and the avoiding of clinical errors depend on a highly knowledgeable health workforce. Health professionals rely on different types of knowledge- both tacit and explicit- when delivering care to their patients. Technology can be used as a tool to ensure that explicit knowledge is available to the right health workforce at the right time. It can be used as a tool to allow effective communication across boundaries and time zones. Virtual communities and the online environment offer enormous potential for transferring health knowledge. However it is not enough to transfer all types of health knowledge. Tacit knowledge can be transferred through connecting people with people, through social networking and through the interacting of health workforce together. In this Study, Most of the health workforce communicates well within the department with each other, however they do not cross the department's boundaries to communicate much with other communities. Managers seem to give health workforce little time to communicate and transfer their knowledge. There is a need to participate more in free flowing conversation among groups within departments, with other departments and with managers who have the power to plan, organize, lead and control the change. Tacit knowledge is transferred through better human interaction, story-telling and face to face networking. Meetings informally and talk about work in a casual stress free environment allows health workforce transfer their thoughts and ideas and create opportunities to produce new knowledge in unpredictable ways. Therefore the hospitals need to incorporate more than one tool into the organizational knowledge transfer strategy to transfer both explicit and tacit knowledge, which in this research is called "Total common health knowledge" to encompass all types of knowledge that need to be totalized, commonly and regularly used so that a health work force can do his/her job effectively.

The researcher concluded that technology alone or social networking alone can not achieve transferring all types of knowledge. Thus, the hospitals need to implement hybrid knowledge transfer tools and processes in which both explicit and tacit knowledge can be transferred.

The second issue is that many of the tools and current initiatives given were ensuring the transmission part of knowledge and neglected the (put into practice) part. The results showed that health workforce are not regularly updating their work activities, applying what is best and changing the old way of doing things. Health workforce needs to improve his or her own practice and spread it around the organization where it can be used to do things differently and better for the benefit of all. In the literature, many studies

showed that patients do not receive appropriate care, or receive unnecessary or harmful care. This is due to the gap between today's scientific advances and their application in practice. The whole point of knowledge transfer is to improve the performance of the organization. Transferred health knowledge can only add value when it is being used and applied in the hospital. From that, the researcher concluded that there is a need to improve the current initiatives regarding putting transferred knowledge into practice. There is a need to pay more attention to improve the application of different techniques and processes that will lead to the updating of doing things. The real challenge is not only to transfer new knowledge but to put transferred knowledge into practice and action and learn from mistakes. Knowledge transfer process should be followed with a continuous utilization and uptake in order to achieve total transfer. Knowledge transfer and uptake need to be embedded within the whole NHS organizations to help them improve their practice. And it needs to be an ongoing activity.

The researcher concluded that there is a need to apply different techniques and processes that will lead to the updating of doing things. The real challenge is not only to transfer new knowledge but also to put transferred knowledge into practice and action and learn from mistakes.

The third key issue is the lack of adequate knowledge transfer tools, mechanisms and processes to transfer health knowledge at all levels. Organizational knowledge, expertise and skills not only reside among colleagues within one organization, it also crosses organizational boundaries. Most of the respondents used Internet, Intranet and mails to communicate with each other. However to communicate with other health organizations and other communities of practice via Extranet and the use of Collaboration technologies where groups can work on the same documents at the same time is not used effectively within the hospitals. Organizational knowledge, expertise and skills not only reside among colleagues within one organization it also crosses organizational boundaries. A health workforce need to be encouraged to understand what other parts of the health organizations are doing to identify and replace poor practices, to avoid reinventing the wheel and to continuously be aware of new ways of treatments and development of health-care innovations. From that the researcher concluded that transferring knowledge with other hospitals and health organizations or health professionals located outside the organization need to be improved. There is a lack of a comprehensive single integrated system that can support the transfer of knowledge among different health organizations (NHS organizations, GPs, etc.), that will allow health workforce access up-to-date knowledge, expertise and information needed to promote health service and patient care.

The researcher concluded that there is a need to improve all forms of communications and knowledge flow (from one place, person, group, organization to another) and improve the tools that allows health workforce at all levels to achieve that.

The fourth key issue is that many of the current initiatives of KM pillars- (culture, people, technology, strategy and structure)-within the hospitals revealed the need to be improved in order to achieve the ultimate results of knowledge transfer. It is found that employees are willing to share and transfer their knowledge but are facing some obstacles that inhibit this desire. They believe there is no tool or process that encourage health workforce to continuously innovate, learn and share. They believed that the hospital does not encourage and reward curiosity, creativity and innovation. Employees lack communication with each other, and above all they have insufficient time to learn and share their knowledge. If the culture has not been effectively facilitated for everybody at all levels, new knowledge is not going to be transferred. Intranets, mails, meetings, brain storming sessions, tutoring and systems should be available if people want to share knowledge. Knowledge transfer and use happen if health workforce is willing to do it; if they share a culture of motivation, trust, openness to change and innovation and if they have the suitable tools and media that allow them to share. If this culture does not exist, the organization needs to undertake the required actions in order to change the values and norms towards knowledge transfer and needs to stimulate appropriate knowledge behaviors. These behaviors can sometimes be influenced by incentive systems, awards and promotions.

The management of knowledge transfer is highly influenced by having a well formulated knowledge transfer strategy. Most of the respondents were not sure if the hospital does have a knowledge transfer strategy and they see the lack of a 'knowledge transfer strategy' as a minor obstacle. From that, the researcher concluded that they lack the awareness of the importance of having a knowledge transfer strategy. Knowledge transfer strategies need to be formulated to minimize chaos and maximize result. A good, clear knowledge transfer strategy gives the organization and health workforce a clear, communicable plan about how to manage their knowledge better, where they are now, where they want to go, and how to plan to get there. Therefore, the organization needs to create awareness about the importance of knowledge transfer and needs to formulate strategy, policy and a shared vision regarding knowledge transfer.

The hospitals are part of a large health sector that can not be separated from. They contain a hierarchical structure with many levels of management. The structure and the organization of the offices create minimal formal and informal contact between health workforce and form a barrier to knowledge transfer in the hospital. Fixed management layers, reporting lines and management control that are too rigid disable knowledge transfer. Therefore there is a need to have more flattened structure that allows health workforce and managers communicate more with each other. There is a need to design offices and meeting rooms that can encourage employees to transfer knowledge. The hospital needs to work through coordination and consultation and managers need to encourage internal and external collaboration since a competing relationship will be a barrier to knowledge transfer.

Health workforce is using different tools to transfer their knowledge. However the use of these tools is not under an organized knowledge transfer process. In addition, these tools

are not used frequently and they lack some important characteristics that if provided will increase the success of knowledge transfer. The hospital needs to integrate existing information systems since disconnected systems are useless. The speed of the used networks, the access of a full document that is free from jargon needs to be provided. Transferring knowledge with other hospitals and health organizations or health professionals located outside the organization needs to be improved. Health workforce needs more formal and informal face to face communicating tools to transfer knowledge, such as organizing task groups, formal and informal meetings, learning events, coaching and mentoring, and others. There is a need to improve the tools that are used to suggest improvements, transfer new ideas and solutions to existing problems, and constantly update and renew knowledge and its use. Another important point to mention is that some tools exist however employees lack the awareness of its existence. There is a need to increase the awareness about its existence and benefits and encourage its use. Different departments have different needs and face different challenges. Different instruments can be used effectively and beneficially in some departments but not in others, so the hospital needs to formulate a well planned approach that meets the needs of everybody at all levels in the organization.

The researcher concluded that knowledge transfer would succeed, if health workforce were provided with their needs, the right environment, and the sufficient time for it. It succeeds if the hospitals consider all knowledge management pillars when managing the transfer.

V. THE PROPOSED (TOTAL KNOWLEDGE TRANSFER) MODEL

In this study, the two hospitals are part of United Kingdom larger health system which is also part of a larger international health system all over the world, all are facing continuous changes; patient wider expectations, new ways of treatments, new medical discoveries and scientific advances, new ways of managing, new rapidly evolving technologies and new learning opportunities. In today's highly competitive and changing environment people need to realise that what did well in the past is no longer providing effective results; they need to change and come up with new innovative ways. They need to manage, create and transfer knowledge continuously. Transferring knowledge in organizations has been a key concern for practitioners across a wide range of sectors of the knowledge economy. Although knowledge transfer has been widely discussed in the literature, however there is relatively little knowledge transfer studies in health sector.

Reviewing the literature, there is no model that aims at achieving a Total Knowledge Transfer. This study proposed the four main points needed to be integrated in order to achieve a total transfer and deduced that there is a need for a Total Knowledge Transfer Model; that can be called Total for its ability to achieve four main points needed for a total knowledge transfer:

1. Total in involving transmission, absorption and put transferred knowledge into practice.
2. Total in transferring both explicit and tacit knowledge.
3. Total in considering the flow of knowledge at all levels (from one place, person, group, organization to another).
4. Total in considering knowledge management pillars when managing the transfer (strategy, culture, people, technology and structure).

The models discussed in the literature review may have achieved one or two of the above four points, however, there is no existing model that achieves the above four points together.

Most of the models tend to focus on only the first part of knowledge transfer and that is moving knowledge from one place to another through the use of different approaches and media. However, these models ignored the other relevant part of knowledge transfer; that is to put that transferred knowledge into practice. The researcher in this study concluded that transferring different types of knowledge is not enough to ensure better patient care. There is a need to benefit from the transferred knowledge through using different approaches and strategies to put it into practice. Knowledge transfer actually occurs when the received health knowledge is used by health professionals and this use results in changing their behaviors and actions.

Furthermore, the existing models tend to focus on either the social networking based approach or on the technology based approach, and seldom on the combination of two approaches to transfer knowledge. In this research, the researcher concluded that it is essential to adopt both tacit and explicit approaches to achieve the best of both worlds. Health organizations need to implement hybrid knowledge transfer tools in which explicit knowledge transfer tools and processes complement tacit ones.

In addition, all forms of communications and knowledge flow were not considered by all existing models. The researcher of this study concluded that transferring health knowledge among different communities of practice, among different groups in different health organizations and crossing different boundaries, is essential for this knowledge to evolve and be integrated to the benefit of all. A health workforce needs to be encouraged to understand what other parts of the health organizations are doing to identify and replace poor practices, to avoid reinventing the wheel and to continuously be aware of new ways of treatments and development of health-care innovations.

Despite the large number of knowledge transfer models, very few ensured the importance of considering knowledge management pillars when auditing the organizations' current knowledge transfer activities and initiatives. Total Knowledge Transfer Model revealed the importance of creating an environment to encourage knowledge transfer and to achieve that requires the right management of (strategy, culture, people, technology and structure).

Based on these four points the researcher proposed a Total Knowledge Transfer Model as illustrated in Fig. 1.
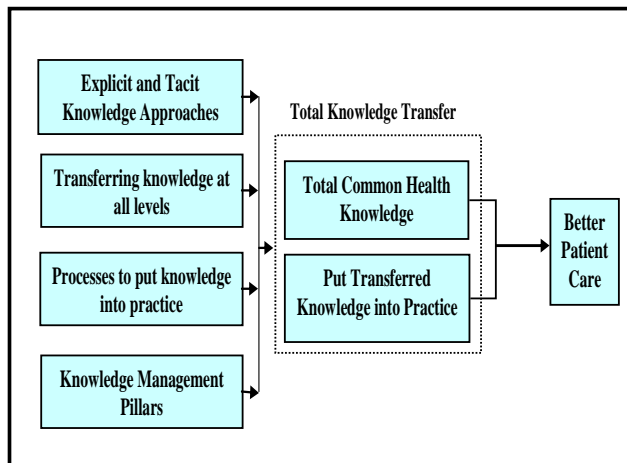
Fig. 1 Total Knowledge Transfer Purposed Model

For the success of patient care delivery, transferring and application of total common health knowledge requires the involvement, support and teamwork of every health professional in the organization. This framework provides a valuable new lens through which health workforce, managers and practitioners can view Total Knowledge Transfer. Change does not happen overnight and perfection is not easily achieved. Knowledge transfer and application need to be tied to the health professional daily work and be embedded in the health systems. The knowledge based environment is formed and nurtured by people in all parts of the organization and their work and commitment are the determinant for achieving that perfection.

VI. FUTURE DIRECTIONS

The results of this study are drawn from a fairly large sample in only two hospitals of Mid Essex Hospital Services NHS Trust. A further deep research can be conducted to cover larger sample in the two hospitals and other health organizations. If more time and funding are available, it may be a good idea to conduct a further research to cover more responses from a wider health sector and to use more data gathering instruments such as; focus groups and observation

In this study the researcher explored the transfer of knowledge at all levels in the health care system (from one place, person, group, organization to another). Based on that, there is a need for a larger study to explore how to achieve that in this wide fragmented sector to allow Total Knowledge Transfer to succeed.

Finally, a second study can be conducted to test the hypotheses on which the 'Total Knowledge Transfer Model' has been developed.

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