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Inter-organizational collaboration among health and social care: TRT©, a transactional approach

Introduction

Inter-organizational collaboration (IOC) supported by information and communication technologies (ICTs) faces challenges on many fronts in 21st century England as well as globally. Between the somewhat desirable ideal of 'joined up' systems providing efficient services to customers and clients on one side of the continuum, and the costs and risk factors associated with integrating data or constructing large databases on the other side, a fundamental tension exists. It is not always socially or politically desirable to join up databases or construct new databases, with ensuing possibilities of security risks, leaks, as well as huge costs of construction and maintenance (Gil-Garcia, 2012).

This paper is comprised of two parts. Firstly, it argues that there is a way forward for information sharing among heterogeneous organizations which does not involve the integration of systems, interoperability, joined up recordkeeping, database linkage, or construction of yet another large database. Transactions in Real Time© (TRT©), the transaction by transaction information sharing approach, satisfies all the requirements of each collaborating organization for information sharing. Collaboration takes place in real time on a transaction by transaction basis, and a temporary record is created from the appropriate parts of each collaborating organization's records. At the appropriate time, the virtual record disintegrates, leaving no trace. No database has been constructed and there are no security risks or data leaks as the record no longer exists. The feature which sets TRT© apart from other information sharing methods is a temporary dataset which dissolves at the appropriate time, leaving behind no permanent record. This feature is important in protection data privacy for individuals, while delivering key information which is used to protect the individuals themselves.

Secondly, this paper briefly considers the future of IOC among health and social care and possible pathways forward through this uncertain area. The health and social care information sharing transaction is often unique among the particular transaction situation, and the micro and macro environments.

Challenges

There is very little in the literature around the area of transactional information sharing among heterogeneous systems in multiple organizations. Larger bodies of research, such as those considering interoperability or data integration, abound.

This paper introduces the transactional approach to information sharing via an introduction of Transactions in Real Time© (TRT©), a process which enables information sharing in real time without systems integration or the construction of new databases. The TRT© model was introduced at the 2014 British Academy of Management [BAM] Conference held at the University of Ulster Business School, Belfast, Northern Ireland. Much discussion and ensuing ideas emerged from breakout discussions of the workshop *Inter-organizational collaboration without integration: a transactional approach for electronic information sharing* at the introduction of the model.

In order to unpack the concept of effective inter-organizational information sharing, it is necessary to consider this complex process from a variety of vantage points.

It can be well argued that effective information sharing is comprised of many elements, primarily those of individuals and technology within a given system or systems. Socio-technical design, dating back to the post World War II era, encompasses the interrelationship of people, technology, and the

tasks necessary for a given system or work environment (Mumford, 2003). Albert Cherns, in his 1976 landmark paper *The Principles of Sociotechnical Design,* crystalised then current sociotechnical thought and organised related concepts into nine sociotechnical principles (Cherns, 1976). These principles have formed the basis of much consideration in systems design, knowledge transfer, information sharing, and related areas seeking to encapsulate successful information system design and effective information sharing systems (Cherns, 1976, 1987; Clegg, 2000; Guzman & Trivelato, 2008).

Ensuing areas of research seek to further identify factors which are crucial for information system and information sharing success. For example, in one case study involving inter-organizational information systems in the industrial sector, Lu et al. (2006) identify seven critical success factors, and organize them into groups or 'clusters': the critical success factors of decision motivation, factors of implementation process, and factors of infrastructure condition. Bigdeli et al. (2013) identify five 'layers' for successful participation in electronic information sharing in the context of local government: environment, organization, business process, technology, and barrier/benefit/risk.

Among health and social care organizations, Tousijn (2012) considers three main areas of controversy in Italian practice: medical dominance and inter-professional boundaries, the managerialism vs professionalism conflict, and the reality of highly autonomous workers guided by different and conflicting professional logics and culture. Of course, little argument would be made that overarching requirements such as trust are foundational in an information sharing collaboration (Lu, 2006; Ibrahim & Ribbers, 2009; Cheng, 2013).

Not to be overlooked are, naturally, the fitness of each organization's system and processes. Trkman (2010) maintains, within the frame of business process management, that factors critical for successful process are flexible, and they are dependent on dynamic elements such as situation and environment. In addition, at a fundamental level, many organizations just prefer continue as they have in the past, for example to 'own' their own silo of information, thus reinforcing barriers to effective practice (Garfield, 2006; Gil-Garcia, 2012).

The above studies are but a sampling of research into the challenge of inter-organizational information sharing, to assist in illustrating the complex picture of the information sharing process. As shown, successful factors for information sharing success cannot be applied to organizations as a 'cookie cutter' approach. This paper argues that, despite challenges in information sharing, the TRT© model provides a way forward in certain collaborative scenarios. Further, there remain possibilities for a wider application of the TRT© model in certain circumstances and particular situations.

Challenges with particular groups: information sharing among health and social services in 21st century England

In the particular scenarios of information sharing within health and social care in general, in addition to the types of challenges listed above, classic challenges remain which are common among many health and social service agencies. They include for example, issues such as medical dominance, widely differing work cultures between health and social services, differing histories of these agencies, financial factors concerning the funding of the agencies, lack of technical infrastructure to enable collaborative working, and low levels of IT skills in some workers.

At the forefront, however, there is one issue which eclipses all others in the information sharing collaboration between health and social care. This issue is confidentiality and all the fears

surrounding data protection and privacy of the patient/ client. Confidentiality in personal information processing often remains at the forefront of the numerous information sharing challenges among health and social care agencies. In spite of the Data Protection Act of 1998, the eight data protection principles, and the continuing guidance from the Information Commissioner, processing and sharing personal data remains a thorny issue. The whole area of patient/ client confidentiality demonstrates confusion, disagreement, and conflicting guidance; courts, ethical bodies, and organizations view patient or client confidentiality and consent quite differently, and they interpret the Data Protection Act in a variety of ways (Tranberg & Rashbass, 2004; Conger, 2013).

As expected, each health and social service agency collects necessary data on each patient or client. Practitioners are called upon to handle and share personal information, possibly of great sensitivity, and to make decisions which, at the extreme, can determine whether an individual lives or dies (Bellamy et al., 2005). Within health and social services, privacy issues are at the heart of the reluctance and anxiety concerning information sharing. This reluctance results in a cumbersome and time-intensive patchwork forming the collaboration process. Agency workers fear not only compromising the patient or client confidentiality, but also castigation by superiors and even potential litigation. Often the process of a complete cycle of information sharing can take a great deal of time involving numerous phone calls, faxed information, case meetings, etc. Weeks may pass before a desirable record is created from the information on multiple agencies records. The impact on the vulnerable or 'at risk' client or patient can be catastrophic.

TRT©, however, protects the individual and complies with data protection principles. Because of its transactional approach, TRT© is able to meet most challenges around information sharing. Because the information is shared transactionally, a much needed record is created in real time, and the appropriate care for the patient or client can be attended to straightaway. When the agreed lifespan has ended, the dynamic record disintegrates, leaving no trace.

Particular interest

There is a crucial need for collaboration across health and social care. One reason this area is of particular interest is because severe ineffectiveness in the information sharing process between health and social services can lead to direct harm in certain populations, such as vulnerable children.

Information is not shared in a timely manner because information from many organisations is needed to complete one complete record showing all pertinent information for one child. Understandably, a complete record or picture of the child is needed on a case before action is taken providing assistance. The result can be damaging for children: further harm, injury, even death while help is awaited.

A striking example is the the Victoria Climbié case of 2000, where a child's aunt and partner horrifically abused and murdered the child. There were multiple problematic issues at stake in this high profile case, however, the lack of timely and effective information sharing emerged as a major targeted area for improvement. Arising from issues identified in the inquiry, Lord Laming, responsible for this case, outlined 108 recommendations aimed at preventing such an event from occurring in the future (Laming, 2003). These recommendations included better sharing of information among organizations; other guidelines outlining the working together of the professionals working with children. In other words, among the recommendations listed, several highlighted information sharing, and the working together of different professionals and organizations. Sadly, however, in spite of the new resulting practice improvements and good intentions, this type of horrific scenario has been repeated.

No longer a luxury or a desirable option for some future technology system, an effective and timely means of effective information sharing is crucial for the health and wellbeing of individuals. TRT© provides such a means for effective information sharing among health and social services agencies provides the way forward among the minefield of collaboration among agencies.

Transactions in Real Time TRT©

As mentioned above, there are challenges on many fronts and on many levels. Transactions in Real Time TRT© is a specialised process for one particular information sharing transaction where a set of unique circumstances converge. TRT© can be adapted and scaled for a number of circumstances but this paper illustrates the process which involves health and social care agencies.

In particular, a social care organisation in particular, such as those providing assistance to children provides collaboration between and among health and social care agencies. The process typically proceeds as follows.

It is the team leader/ key worker/ coordinator who coordinates activities and is the vetted professional who assembles the necessary patient/ client records. Typically a social worker, she follows up on a referral that a child needs help; more information about the child and family during the assessment process is needed. In order to provide knowledgeable assistance, the coordinator may want to know if the child has visited the GP and has had any illnesses or injuries. The coordinator may likewise want to know if the child has been hospitalised recently, and if there are any injuries which might be consistent with abuse or neglect. It may be that the coordinator wants to know if the child has been absent from school. It may be such a situation that the coordinator decides a strategy meeting is in order, and so sets in motion a tentative meeting to be scheduled at a certain time. Figure 1 illustrates where the sources of the needed information may reside, and the separate silos of information which may need to be accessed.

Figure 1. Separate silos of information which may contain urgently needed information.

Many times, the coordinator telephones other organisations, possibly with contact names in these organisations she tries to reach; she is hopeful she can reach the contacts in the other organisations, that the person is in the office, working that day, and available to speak on the telephone. This is a multi-step process whereby a coordinator rings the GP, the hospital doctor and the school officer, each in turn. She speaks to each person separately for information. The recipient of coordinator's call typically consults files for requested information. She may need to drop by and drop off a file or

arrange for the file to be picked up. Or the coordinator may need to arrange for a strategy meeting with multiple participants, if necessary. Putting together an informed plan to help the child and family is often not possible until the coordinator is satisfied she has all the needed information from various organisations to make a knowledgeable decision. Figure 2 illustrates this multi-step process.

Figure 2. Traditional way of obtaining needed information to provide assistance to a child

In the new way of working with TRT©, however, the coordinator does not need to telephone various organisations in order to request information or attempt to schedule a meeting. When a coordinator needs information from other organisations to form a plan to help the child and family, using TRT© she will be able to extract immediately the necessary information from relevant portions of the child's record residing in the GP surgery, hospital, or school.

In the traditional way of working, the coordinator seeking to obtain information, is unable to gather the child's information from the other organisations in a timely manner. In addition, because of limited information sharing practice, she may remain uninformed and any assistance given to the child and family is based on a limited amount of knowledge which may be, as a result, insufficient or inappropriate.

With TRT©, however, the coordinator is able to obtain the information she needs immediately. When she has the complete picture of the child's situation, she can make a plan based on fuller knowledge which is, therefore, likely to be more appropriate to the child and family. An intervention

will be more appropriate and more efficient if the coordinator is well-informed, with all the information immediately available. Figure 3 illustrates the coordinator obtaining all the needed information immediately through the TRT© system.
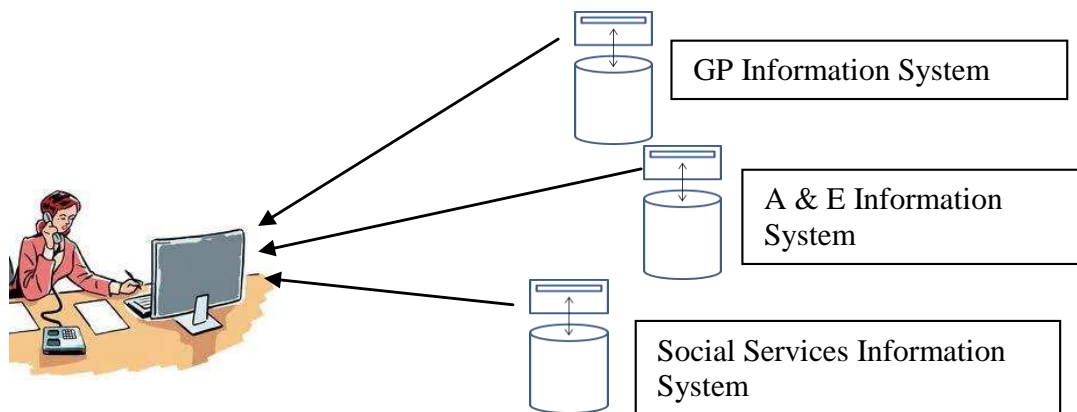

Figure 3. Key worker using the TRT© system with vital information immediately available

The information she receives from the organisations is in the form of a dataset which has a limited lifespan. The expiration date of the limited-life of the dataset, has also been previously agreed upon by all organisations. Since this dataset will disappear at an appointed time, there is no permanent record and the organisations' integrity of records remains intact. Existing protocol according to TRT© frameworks define precisely how long the temporary dataset will exist. When the shelf-life of the dataset has expired, the dataset dissolves.

Thus, as seen in Figure 3 above, creating a virtual record with TRT© enables vital information to be retrieved in real time, a care plan formulated, and appropriate action taken providing immediate help for child. Using TRT©, after 24 hours, no record remains, no database has been created. Through TRT© vital information is immediately shared because each organisation has agreed in advance which portions of the electronic record can be shared, and under what conditions. Post-transaction events as agreed upon as well, such as an audit trail which could remain after the virtual record evaporates. Confidentiality has been respected, data protection principles upheld per organisations' agreements, children are better helped quickly, and possible lives are saved with children and vulnerable populations better protected. Figure 4 TRT© effectively addresses sensitive issues. A record of vitally needed information is created in real time, demonstrating the appropriate care for the patient or client which can be attended to straightaway. When its lifespan has ended, the dynamic record disintegrates, leaving no trace.
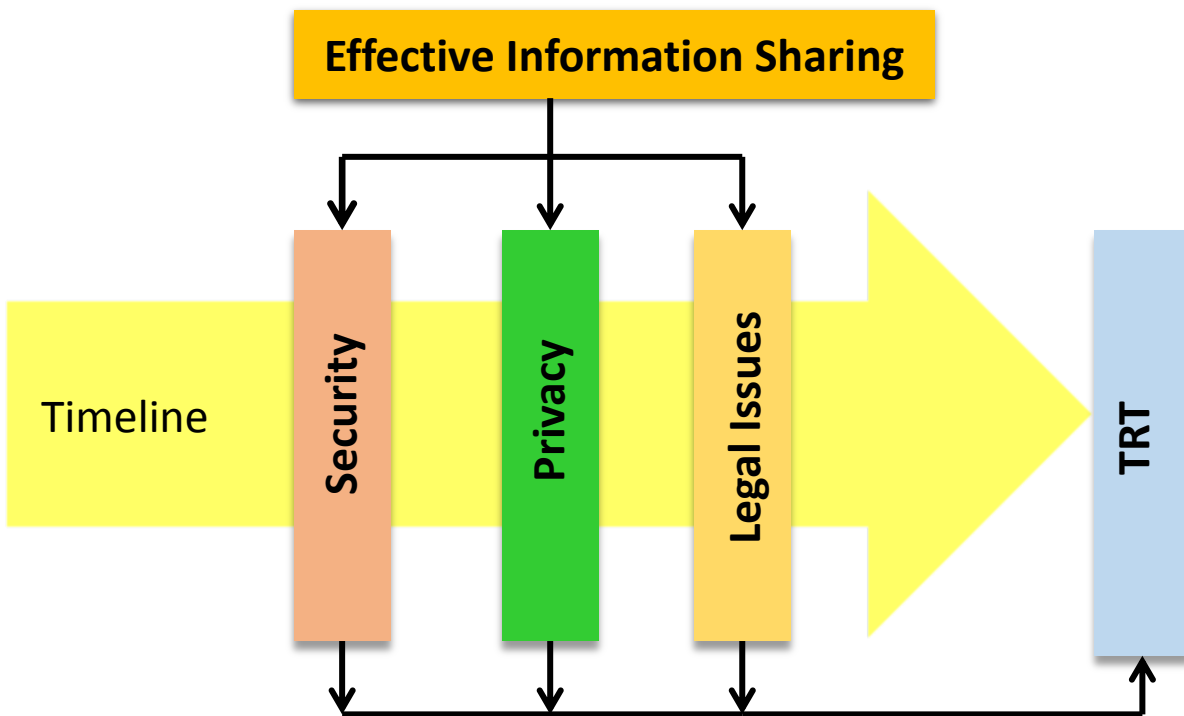
Figure 5. TRT© effectively addresses sensitive issues – immediately.

It is important to distinguish between the TRT© process of producing the limited-life dataset, and the resulting content. In any group of organisations who share information, the dynamic working must remain separate from the application. In other words, the TRT© information sharing dataset from a coordinator's request is distinct from how the coordinator will be using the content of the dataset. It is outside of the scope of this research to attempt to regulate organisations' use of information either inside the information system (for example, in evidence for care proceedings under Section 31 of the Children Act 1989), or once it has been gathered together forming the limited-life dataset.

Also outside the scope of this paper are certain related issues. Technical considerations supporting TRT© may be designed in a number of ways which involve the 1. Searching, locating, and retrieving the required information from organisational databases such as those of a hospital, GP surgery or a school 2. Assembling and displaying a temporary TRT© dataset and 3. Ensuring the dataset dissolves at the expiration time. Each of these elements makes use of existing database technology.

The business framework, likewise, is outside the scope of this paper. Health and social care organisations collaborate in a myriad of [ways] often depending on local practice. It is outside the scope of this paper to speculate and prescribe particular circumstances.

TRT© is particularly relevant today, as it supports economic and social development. New research such as TRT© directly addresses inter-organization collaboration, resulting in greater wellbeing for a vulnerable population, reduced costs, elimination of personal data loss risk, and the enabling of a way forward among organizations whose differing cultures find it difficult to communicate and

collaborate. Further, TRT© is scalable and applicable to a wider environment, as well as to other environments where organizations seeking to share information may find it difficult to collaborate due to the type of information to be shared, differing organizational cultures, lack of common goals, or any number of particular circumstances.

Collaborating organizations agree in advance which information will be shared and the conditions under which any sharing takes place. Because all the requirements for data protection are met to the satisfaction of each organization, data protection is no longer a 'bottleneck' in the information sharing process, and effective and timely information sharing occurs. With TRT©, a virtual record is created 'on the fly' and only exists for the agreed period of time. When the lifespan of this virtual record has reached its end, the record disintegrates, leaving no trace. With the TRT© virtual record, there has been no complicated systems integration nor has another large database been constructed. There are no security risks or data leaks as the record no longer exists.

TRT© is not a panacea for all information sharing issues, but is designed for specific conditions and circumstances where information sharing collaboration remains problematic for particular reasons. TRT© is designed for use for most cases, but there will always be a need for manual information sharing in certain cases. Most importantly, however, TRT© illustrates a one-of-a kind solution to a unique situation consisting of particular organisations, situations, and workers.

Two further health care related examples

IOC consists of unique transactions, depended on the micro and macro environments. When looking to the future of IOC among health and social care, and possible pathways forward through this uncertain area, it may first be necessary to begin by appreciating the wide range of scenarios of health and social care IOCs. To illustrate the wide range of barriers and situations involved in effective collaboration, two examples are included here.

In the the first example, a report by Rosenbaum addresses needed assistance by children with complex needs among collaborating organisations (2008) and states:

> Health care needs for the paediatric population have changed significantly over the past two generations. Immunizations and highly effective antimicrobials have resulted in less acute illness overall and less acute illness requiring hospitalization. Advances in diagnostics, therapeutics and medical technologies have resulted in some children who previously would have died in infancy or early childhood living longer. As a result, the prevalence of children with chronic disease is ever higher, and the complexity of the care needs for these children is increasing dramatically (Rosenbaum, 2008).

Thus, an Expert Panel was asked to develop a care coordination model for children and youth with complex needs who require extensive care coordination to meet those needs. The report described the model which was developed in the hope that it would work well for the needs of the children in their care, and thus ultimately work for other populations as well (Rosenbaum, 2008). Figure 5 illustrates the model from the Rosenbaum report which organises the components of collaboration into domains, deliverables, and enablers.   As shown, the care coordination is managed by the key worker/ coordinator.
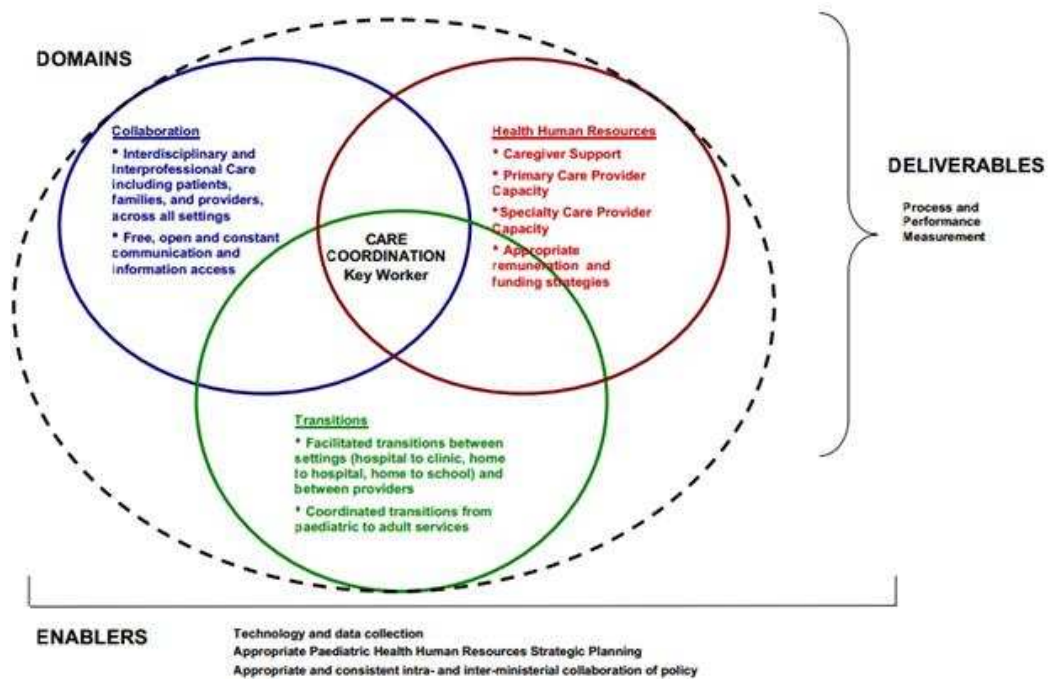
Figure 6. Effective collaboration: Interrelated themes for complex coordination (Rosenbaum, 2008)

In the second illustration, a model of the barriers to information sharing is depicted involving information sharing among organisations providing help for children with special health care needs (Quigley et al, 2014). As shown in Figure 6, Quigley et al organises barriers to information sharing according to 1. Inconsistent policies, standards, and organisational priorities 2. Fragmentation of the health care system and 3. Lack of a common platform (Quigley et al, 2014).
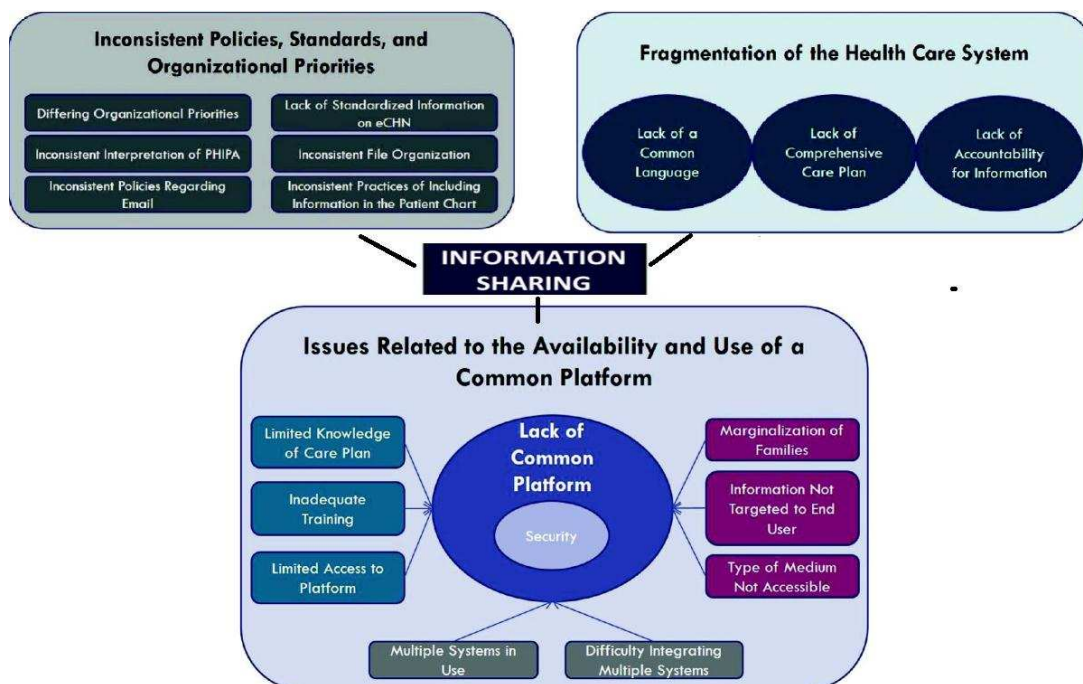

Figure 7. Quigley et al's model for effective collaboration (Quigley et al, 2014)

The two above examples illustrate the diversity and perspective of the multiple layers dimensions of information sharing challenges.

Limitations to TRT©

There are a number of limitations in any theoretical model design, and TRT© is no exception. In particular, some manual, case-by-case information sharing will still be needed in some circumstances. According to the report by Lord Laming resulting from the Victoria Climbié Inquiry, there are three types of situations where face-to-face discussions are recommended (Laming, 2003). It is acknowledged that using the TRT© model there will always be special instances which need to be identified on a case-by-case basis where it is not appropriate to share information electronically, and where face-to-face information sharing is expected.

Another limitation to TRT© is the fact that, for an effective information sharing system, there must be agreement in advance. This agreement must be present concerning not only the information to be shared and issues surrounding the transaction, but also on a more basic level the shared motivation and vision of all organisations involved in the collaboration. This is extremely difficult when the various levels of management may not be in agreement, or when organisations may not be accustomed to maintaining a transparent communication process.

Conclusion

As illustrated throughout this paper, sharing personal information about children is a complex process beset with difficulties, particularly with new technologies and data protection to complicate the issues. The sharing of such personal information held electronically by various organisations involves issues arising from law, professional boundaries, ways of working within and among organisations, and many other related issues, particularly when children are involved.

Many areas of inter-organisational disagreement persist. For example, regarding data protection and giving personal consent for information sharing, the Department of Health favours an "opting out" approach, where patients must specifically state their preference for avoiding automatic inclusion in the sharing of their own information (DH, 2006). Many GPs, however, and the British Medical Association, insist on the "opting in" approach, whereby patients should have the right to specifically state if they want their information to be shared (BMA, 2014). A path through these and other disagreements must be negotiated for better communication and collaboration for information sharing.

Organisations must address the double challenges of information management and sharing. They must create records to comply with government requirements to share information. According to the Information Commissioner, an organisation's record system needs to be managed effectively and consistently. Current practice, however, illustrate systems where personal information is often handled on a time-consuming and inconsistent case-by-case basis. Yet, in healthcare, social care, education, and other children's services, a high-calibre electronic records system for access and sharing information is crucial as the quality of services offered can be greatly increased, and children better helped by a smooth-running system of effective information sharing.

This paper asserts that the TRT© model supports information sharing among organisations because of its limited-life dataset. It is the timeline which would give more control to data providers who would subsequently be more inclined to share information within the legal terms of the Data Protection Act.

For the present information sharing collaborations, however, there is no magic solution. Ultimately, it is the effectiveness of strong leadership and commitment to collaboration which is the first step required of the organisations themselves. A model such as TRT© can only be adopted and implemented where there is the infrastructure and support already in place.

The critical challenge facing organisations is to create well-designed and successful information sharing systems within and among children's service organisations, seamlessly delivering required information in order to assist practitioners in taking needed action in helping and protecting children.

Further Study

At the beginning of the twenty-first century, we now have empirical evidence outlining what is necessary for effective information sharing among organisations; this body of evidence is growing. The field of ST design is a relatively new one as its solutions provide effectiveness whereas technical or "top down" approaches have been shown to offer limited success. The proven usefulness of the ST approach will no doubt continue to be useful in evaluating and building information systems in organisations in general and in children's service organisations in particular.

Therefore, future research is needed to consider the existing body of research involving information sharing among health and social care agencies. What collaboration issues, barriers, and challenges currently exist across health and social care? Further, considering this collated data, Is it possible to identify a set of critical success factors (CSFs) which would be effective for information sharing in most circumstances? I.e., if an empirical framework was available for collaboration among health and social care agencies, would it streamline the information sharing process, saving valuable time for case workers, allowing resources to be more effectively used, and most importantly, saving lives?

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