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Need for a New Care Model - Getting to Grips with Collaborative Home Care

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Abstract

In this paper we discuss the fact that more and more patients are treated in their homes by a set of organizations, sometimes with different ownership, and how this fact places new and severe demands on health care and home service staff to communicate and collaborate. We point to the need for managers in different organizations to agree on ways of communicating and collaborating on the operational level and how this aspect needs to be considered during procurement of home care services. Most importantly, by reasoning around a set of problematic areas, we derive a set of related problems and suggest solutions for dealing with them. The solutions are a mix of organizational/administrative measures and IT support for communication and coordination.

Keywords:

Collaboration, Home care, Home health care, Home service.

Introduction

In Swedish health care more and more patients are treated and taken care of in their own homes instead of in hospitals or nursing homes. This includes severely ill patients who require several different professions to be involved in the care process. The involvement of many different organizational units, often with different owners, complicates the situation even further and creates high demands on collaboration and coordination among the involved care givers in order to achieve high quality care for the patient.

In an earlier paper [1], we described an investigation in two Swedish communities, Stockholm and Umeå. The results indicated problems in inter-organizational communication and cooperation in home care. Most of the problems were due to organizational and social obstacles resulting in a lack of communication among the units and individuals involved. In three subsequent papers [2, 3, 4] we have analyzed the requirements this places on collaboration and coordination. The findings stress the need for improved collaboration among managers and among staff at the operational level. In particular, managers from different organizations need to collaborate more effectively in order to set up goals and routines for collaboration. In addition, our results showed that collaboration has to be considered during procurement of health and social care, and that managers need to follow-up the quality of delivered services. The necessity for substantially enhanced e-services to support coordination and collaboration was also evident. The aim of the present paper is to explore further the needs for collaboration between different health care and home service units and professions, and to suggest organizational and IT-based solutions, based on a patient and process oriented perspective, focusing more on patient related processes than on organizational structures and processes. This focus involves:

- Arguments are grounded in the Understanding, holistically, the forces influencing how collaborative care processes should work;
- Identifying the need for new ways of communicating, and for mobile and immediate access to both medical and administrative information;
- Understanding the need for allocation and acceptance of different types of responsibility among the care givers;
- Suggesting changes in information support, which due to the nature of home care work has to be mobile and based on process-centered information models that support collaboration.

authors' previous research, i.e. on focus group meetings, interviews, questionnaires, observations and analysis of archive data conducted in the projects Intercare [5] SAMS [6, 7], MobiSams [8], VITA Nova [9] and VVP [10]. These studies focused on collaboration within and between organizations involving respondents with a long experience of health care or social care but varied experience regarding IT and IT use. The respondents were doctors and nurses from primary and specialist care, assistance assessors, IT strategists, managers, patients, relatives and representatives of patient organizations. More than 35 in-depth semi-structured interviews were conducted within the projects.

In the following we define how certain terms are used in this paper.

- ***Home health care*** involves:

  basic health care – provided by nurses or nurse auxiliaries, in Sweden the responsibility of municipalities, sometimes outsourced to the county councils' primary care units.

advanced health care – operated by the county councils, led by doctors and provided by multi-professional teams. This care often concerns severely ill children or patients in palliative care.

- ***Social care*** is personal care that involves help with the daily living activities (cleaning, shopping, feeding etc), and care that physically supports the patient (outdoor activities or personal hygiene). In Sweden this is the responsibility of the municipalities and may be provided by their own units, or by a contracted private company.
- ***Home care*** as used in the title of this paper denotes the combination of home health and social care.
- ***Patient care process*** is the sequence of activities carried out for the patient by health care or social care personnel and in which the patient and often his relatives/friends participate. The process can be seen as a project with the aim of producing better quality of life for the patient, while at the same time maintaining patient safety. Each activity in the project should contribute to create this value-based aim.

Collaborative home care

Two or more parties collaborate when they work together in order to achieve a common goal, i.e. perform a task that each one cannot cope with alone or at least not as well or to as low a cost. This implies that the mutual goal must be understood by all parties as well as the basic circumstances, demands and restrictions that the other party faces. Each party must be clear over how tasks are distributed and how ones own tasks contribute to the common goal. Thus, collaboration between organizations is a complex matter. Existing research has focused on a wide variety of aspects. In research concerning collaboration within health care, van Eyk and Baum [11] have studied what they name as interagency collaboration. Hudson [12] has studied joint commissioning across the primary health care-social care boundary in the UK. El-Ansari et al. [13] have focused on public health nurses' perspectives on collaborative partnerships in South Africa. El-Ansari et al. [14] investigated collaboration and partnership and the problems with measuring collaborative outcome. Lichtenstein et al. [15] have studied the effect status difference has on individual members in cross-functional teams. Mash et al. [16] have studied team learning in healthcare that sees the organisation as a living system in which information flows. Participation and the development of team work are key aspects. If managers of the health system wish to enhance organisational change, then their goal may need to shift from optimizing health care delivery in a mechanistic model to optimizing health care workers in a living system.

In the field of mobile work and information processing, Ammenwerth at al. [17] explore how mobile artifacts can be used for information processing in a hospital. Pascoe [18] describes how mobile artifacts increase the amount and speed of data being recorded in everyday work; Najjar et al. [19] describe how wearable computers might increase the performance of quality assurance inspectors. Guerlain et al. [20] describe personal information systems for roving industrial field operators, and Heath and Luff [21] examine the ways in which mobility is critical for collaborative work.

When several parties collaborate it may be difficult to formulate one single objective, since each organization has its own goals. It is, however, important that all involved are aware of the overall purpose of the activities concerning an individual patient and make sure that this is in accordance with their own and with the patient's goals. Cooperation needs to take place both at the top and at the middle management level and among the staff carrying out the care. These levels exist within all health and home service organizations.

Some problems and suggested solutions

There is not much research dealing with the problems of collaboration in home health care, their causes and effects. Apart from works by Winge et al. [3- 5], one example is Åhlfeldt [22] who, based on interviews with health care staff and patients, derive a set of information security related problems in connection with collaborative care. Most of these are related to administrative routines and policies, not to technology. Åhlfeldt and Söderström [23], discuss the need for coordination in collaborative home care. They call for a "coordinator" with an overall responsibility for the patient's care planning. On a more general level, one well-known problem as organizations grow concerns administrative specialization and integration [24]. Health care is also subject to medical specialization, which places special emphasis on the need to coordinate units and professions. Horizontal organizational coordination is, among other areas, addressed in attempts to improve the logistics of Swedish health care (for example national projects to improve accessibility and shorten waiting times), while vertical coordination is a common problem concerning for instance control and feedback systems of work environment, quality and economy. One problem in integrating vertical and horizontal levels can be found in relation to the optimal use of management systems (see for example [25]).

Laws and regulation

Non-existent or inconsistent regulation results in improper routines and policies for cooperation, in poor awareness among those involved and in inadequate compensation systems. This in turn causes inadequate collaboration.

Suggested solution: Revise and re-phrase laws and regulations so they facilitate and insist on real collaboration.

Management and coordination

If managers at different levels do not understand what is required or cannot explain the aim and reasons for collaboration - and clarify which specific collaborative actions that are required - the operational staff will probably be discouraged from performing such actions. Managers of the collaborating units must find ways to explain how the care process as a whole is intended to function and what requirements it imposes on collaboration in order to be both effective and efficient and produce good quality for the patient. If this care model is vague to managers it usually leads to a poor understanding of the way collaboration needs to work on the staff level.

Suggested solution: Managers need to clarify for themselves and others what the holistic organizational mission involves when it comes to collaborative home care; explain what is

required and why; give accurate directions; provide convincing explanations as to why certain coordination and collaboration activities are necessary and provide standards for how they should be conducted. The situation of the patient is the foundation for collaboration between health and social care. A shared plan for the patient process must be produced with the focus on safe and high quality care. The plan should enable a follow-up of the results of the care. In each individual case, the goals of the patient process need to be explicitly formulated and based on the needs of the patient, while the staff has to be trained to always consider the goals of the process.

One of the reasons for poor collaboration is that care staff is not aware of other care staffs' actions and plans. Then activities cannot be coordinated and resources cannot be optimally used. In some cases this may also increase the risks for the patient's safety.

Suggested solution: Information services have to be developed to inform all actors directly of what is relevant for them to know about the patient and the planned and performed activities. This solution needs the clarification of goals and roles. Based on a well functioning care plan, actions can be coordinated so that work distribution will become more optimal.

To bring about collaboration in care is demanding. Health and social care that does not consider requirements for collaboration leads to poor quality and bad utilization of resources.

Suggested solution: Requirements for collaboration and co-ordination must be taken into account during procurement of care services. This includes clear descriptions of services needed to support collaboration for all involved. To achieve this, health care procurement units have to be trained in line with the new care model and in collaborative work. New strategies for follow-up of care are needed, also concerning the process and effects of collaboration.

Concepts and terminology.

The ability to provide the right information when needed, presented in a way that is understandable to all actors, requires well-defined concepts. Unclear or ambiguous concepts lead to a lack of understanding of what information is needed amongst all actors throughout the whole care process. Ambiguously expressed concepts in medical records present risks for the patient. Information requirements cannot be expressed clearly, increasing the risk that information systems will not provide the information needed for coordination and collaboration. Different units and professions offer varying competencies, perform different tasks and see different aspects of the patient. Ambiguous concepts make communication less effective, which in turn obscures coordination and collaboration.

Suggested solution: The concepts have to be identified on the basis of the patient care process. Collaboration has to take place with the patient and his needs in focus and be described on the basis of models involving care and collaboration strategies. The care model needs to define how collaboration should be carried out. The distribution of responsibility must be clearly described. Concepts that are involved in the process should be defined in an information model, and all of this set in a relevant context. It is particularly vital to define concepts that are important for patient safety and for communication between various kinds of care units.

Lack of collaboration may be caused by a poor understanding of what it is that characterizes the collaborative care itself on behalf of the health and social care staff as well as the patient and next of kin. This aspect concerns the situation when it is not clear what the involved units actually should do and how they should take each other into account, e.g. a lack of understanding of the role and responsibility of a unit for "advanced home health care" in relation to hospitals and primary care. Also, the patient and his relatives may sometimes feel that he has been sent home and left abandoned.

Suggested solution: The strategy for collaborative care should be described and clarified on the basis of a common health care and home services process. The need for shared information should be identified and then defined in a common information model for future IT systems. This will clarify responsibility, facilitate planning and collaboration, improve patient safety, and make it possible to monitor the care across organizational borders. The clarification of the collaborative care concept must involve management levels and staff and involve ways to deal with old routines and habits that might be hard to change.

Motivation and inter-organizational team-work

Low motivation due to lack of clear goals and feedback, role ambiguity, fragmentation of tasks etc. on behalf of the operational staff may lead to less commitment to collaboration. Furthermore, care staff may have little knowledge of, or in some cases be less interested in what other units do with the patient. Such awareness is, however, important in order to develop effective and quality-oriented collaboration.

Suggested solution: A new and better reward system for cooperation is needed, allowing for economic compensation and allocating resources for collaboration. Responsibility has to be clearly distributed among actors so that everyone has a basic knowledge of who is doing what. IT services are needed that support the patient process, staff interaction and feed back processes. The staff can be motivated through participation in planning the individual patient process. Doing so they can understand how their own work contributes to better collaboration and fulfillment of patient needs. Organizational responsibility has to be clarified, also concerning managerial decisions. Political and strategic leaders need to realize this and provide means for collaboration. Representatives of care staff from each involved care unit should participate in constructing a joint care plan for individual patients. This will make them understand how other actors' activities contribute, in a coherent set of tasks, to the realization of patient goals. Information support for care staff will provide a better understanding of which actions that lead to particular goals. There is also a need for better coordination of the individual patient process per se. New e-services for care-planning can support this function, optimally a common responsibility of a virtual team. The e-services must include support for quick changes in the patient's care plan.

If goals for the patient process are not clearly formulated it is difficult to coherently provide activities from several care units. There will be no basic ground for adapting and understanding

information concerning what other units do in order to reach the goals of the patient process.

Suggested solution: Formulate a set of goals for each single patient process when new essential needs of the patient occur together with the patient and/or his relatives. State clearly each care provider's responsibility. A well developed IT-based care plan, including coordination support, is an instrument that all cooperating units can access. The organizational members' own responsibility to seek out this information should be clarified and supported from the organization.

Collaboration across organizational borders is a prerequisite for good teamwork among various professions and with the patient and his relatives or friends. Lack of collaboration easily leads to bad care quality, feelings of insecurity and actors being uninformed about the patient's condition. At worst, the patient's health may be at risk. Lack of collaboration and agreement on the management level about the requirements of collaboration may lead to procurement of care that does not take collaborative aspects into account. It may lead to bad utilization of resources, e.g. the same activity is repeated several times or in a less than optimal order.

Suggested solution: Train team members in reading documentation originating from other units (provided that security allows it) so different actors can see patterns and signs at an early stage. Provide an information support for this. This will achieve more timely actions in meeting new needs of the patient and a better anticipation of problems. Collaboration supported by good IT solutions will increase safety for the patient and make him less prone to take unnecessary contacts with the care team. It will also facilitate a good utilization of resources. Routines for measuring and following up provided care should be implemented on the basis of evidence based competency, i.e. ability to judge how care ought to have been conducted according to goals, or if one had realized early what was happening when something went wrong.

Summary

To summarize, improvements are needed among all involved parties, from the top and middle managers to operational staff. The suggested solutions are a mix of development of care and collaboration concepts as well as organizational measures and IT support, and most importantly, the establishment of a new strategy and a new care model for collaborative health and social care. This involves:

- the need for managers in the involved organizations to define and agree on goals, rules and routines for collaboration on all levels,
- the need to include requirements for collaboration already in the care procurement process,
- the recognition of the importance for coordination among care givers and care activities,
- the need for awareness of and clear goals for each individual patient process.
- the need to clarify how care results shall be described, what results to follow up, and how this should be done.

Thus, the presented solutions address and try to improve vertical and horizontal coordination within and between organizations.

How IT may contribute

Unclear or ambiguous concepts are a problem in the entire health care sector. Even the most central terms can be understood differently among different stakeholders. We believe that to a certain extent this is something to accept and learn to live with. In the context discussed in this paper it is, however, desirable at least to agree on terms and concepts that concern collaboration. The models, primarily information models, developed in the projects mentioned initially [5-9] are important contributions to this issue. These models are based on a process that describes important information exchanges around the patient, regardless of which organization that is responsible. The projects also resulted in explicit knowledge on how improved and patient-centered collaboration among care providers can be accomplished, mainly through an enhanced way of working and a utilization of IT support that facilitate collaboration. The new ways of working should be described in process and conceptual models, which also form the basis for building IT support.

The SAMS and MobiSams projects also had the intention of clarifying the patient process, i.e. how it functions today, how the patient experiences it, and how it would appear with the suggested new ways of working and the correct IT tools. The IT support developed in these projects comprises a set of well defined e-services built to support coordination and teamwork. The services presently available concern tools for:

1. Planning and coordinating all work tasks during the entire individual care process, including formulation of mutual goals and objectives for all involved organizations and professions with the best interest of the patient in focus.
2. Definining the planned activities for each unit, in accordance with the agreed goals.
3. Allocation of tasks and resources for the planned activities, assignment of personal responsibility for the goal achievement of each task and definition of a procedure that measure and relate results to goals.
4. Planning and registration of the result of the care activities.
5. Registration of undertaken care activities in such a way that goal fulfillment can be assessed.
6. Conducting follow up and evaluation of the care process from the individual's point of view.

The tools were built in close collaboration with health and social care staff and implemented in a common test-bed where they were tried out together with new ICT techniques, i.e. stationary as well as mobile and handheld devices. The test-bed was set up to facilitate learning while developing collaborative care as a virtual enterprise, including the ways of utilizing IT.

Conclusion

In this paper we have discussed the increasing number of patients treated in their homes by many care givers and the

complex demands this new situation places on communication and collaboration among health care and home service staff. We have further pointed to the need for communication and collaboration on different organizational levels. In particular we have highlighted the need for managers in separate organizations to agree on ways to communicate and collaborate on operational levels, and how the need for collaboration and coordination must be considered during procurement of home care services. Most importantly we have, by reasoning from a set of issues, suggested solutions for how to deal with these demands. The suggested solutions are a mix of organizational and administrative measures, and development of e-services for communication and coordination.

Finally, we would once again like to stress the need for a new collaborative care model for health and social care with the patient's interest in focus and IT-tools as an aid. This model requires managerial awareness and the development of clear goals, against which results focusing on patient needs can be assessed and followed up across organizations. Even so, the challenge of implementing these ideas and changing the involved organizations, processes, routines and key actors will have to be furthered addressed.

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References

[1] Winge M, Lindh Waterworth E, Augustsson N-P, Fors U, Wangler B, "Exploring the concept of patient-centred collaboration in health care – a study of home care in two Swedish cities", ISHIMR 2005 poster session, Thessaloniki 2005.

[2] Winge M., Johansson L-Å., Lindh-Waterworth E., Wangler B., Åhlfeldt R-M., "Interorganizational collaboration in home care: A first discussion of requirements", in Proceedings of 12th Int Symposium on Health Information Management Research, Sheffield, UK, July 2007.

[3] Winge M, Johansson L-Å, Lindh-Waterworth E., Nystrom M., Wangler B, "A new care concept: Making collaborative home care work", Proceedings of 6th Int Conf on Perspective in Business Informatics Research., Tampere, Finland, Oct 2007.

[4] Winge M., Johansson L-Å., Lindh-Waterworth E., Nystrom M., Wangler B. "CO-CARE - Collaborative Health and Social Care", in Proceedings of 13th Int Symposium on Health Information Management Research, Auckland, NZ, Nov 2008.

[5] Winge M., "Slutrapport delprojekt Intercare: GVD - Gemensam vårddokumentation", (in Swedish).

[6] Gustafsson M., Winge M., "SAMS Konceptuell Informationsmodell", Available at http://www.sll-sams.nu/Sams%20Konceptuell%20informationsmodell.PDF, Last visited 2007-03-31, (in Swedish).

[7] Eng A., Johansson L-Å., "Slutrapport SAMS-projektet", (in Swedish).

[8] Winge M., Fors U., Gustafsson M., Johansson L-Å, Lindh-Waterworth E., Sarv Strömberg L., Wegner M., "Slutrapport MobiSams-projektet: Mobilt IT-stöd för samverkan i hemsjukvård", Available at http://www.lime.ki.se/uploads/images /1176/Slutrapport_Mobisams_finalnylogo_2.pdf. Last visited 2007-10-31 (in Swedish).

[9] ViTA Nova Consortium, "ViTA Nova Hemma", Slutrapport Oktober 2006 (in Swedish).

[10] Winge. M, VVP-projektet, en delstudie om samverkan inom vård och omsorg i Angered. (in Swedish)

[11] Baum F. and van Eyk H., "Learning about interagency collaboration – trialing collaborative projects between hospitals and community health services", Health Soc Care in the Community, 2002, 10(4) 262-269,

[12] Hudson, B., "Joint commissioning across the primary health care - social care boundary: can it work?", Health Soc Care in the Community, 7(5) Page 358,- Sept 1999 doi:10.1046/j.1365-2524.1999.00198.

[13] El-Ansari W, Phillips CJ, Zwi AB., "Public health nurses' perspectives on collaborative partnerships in South Africa", Public Health Nurs. 2004 May-Jun;21(3):277-86.

[14] El Ansari, W., Phillips, C.J. & Hammith, M., 'Collaboration and partnerships: developing the evidence base', in Health Soc Care Community. 2001, 9(4):215-27.

[15] Lichtenstein R, Alexander JA, McCarthy JF, Wells R. (2004) "Status differences in cross-functional teams: effects on individual member participation, job satisfaction, and intent to quit", J Health Soc Behav. 2004 Sep;45(3):322-35.

[16] Mash BJ, Mayers P, Conradie H, Orayn A, Kuiper M, Marais J, How to manage organisational change and create practice teams: experiences of a South African primary care health centre. Educ. Health (Abingdon). 2008 Jul;21(2):132. Epub 2008 Aug 26.

[17] Ammenwerth E, Buchauer A, Bludau HB, Haux R., "Mobile information and communication tools in hospital", Int J of Med Inform, 2000, 57, 21- 40.

[18] Pascoe J., "Adding generic contextual capabilities to wearable computers", Proceedings of the 2nd Int Symposium on Wearable Computers October (1998) 92 - 99.

[19] Najjar L, Thompson C, and Ockerman J, "A wearable computer for quality assurance inspectors in a food processing plant", In IEEE Intl. Symp. on Wearable Computers. IEEE Computer Society, 1997.

[20] Guerlain S, Lee J, Kopischke T, Romanko T, Reutiman P, & Nelson S., "Supporting collaborative field operations with personal information processing systems," Mobile Networks and Applications 4, 1999.

[21] Heath C, & Luff P, "Collaboration and control: Crisis management and multimedia technology in London Underground line control rooms", Computer Supported Cooperative Work, 1, 1992, 69-94.

[22] Åhlfeldt R-M, "Information security in distributed healthcare domain: Exploring the problems and needs of different healthcare providers", Licentiate thesis No. 06-003, Dept of computer and systems sciences, Stockholm University, 2006.

[23] Åhlfeldt R-M. and Söderström E., "The Need for a Coordinator for Cross-Border Healthcare Planning", The 11th Int Symposium on Health Information Management Research, Halifax, Canada, July 14 -17, 2006, pp. 305-312.

[24] Lawrence PR, & Lorsch JW. Organization and environment: Managing differentiation and integration.1967 Boston: Harvard Graduate School of Business Administration.

[25] Karapetrovic S. Musings on integrated management systems, Measuring Business Excellence 2003, 7(1): 4-13.