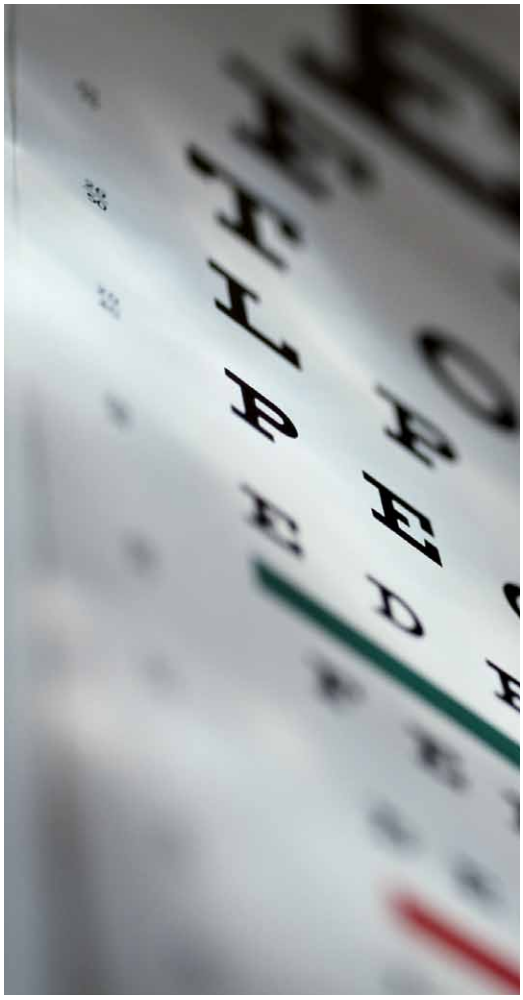

IT a meaningful factor in evolving health care sector

Stan Aldenhoven and Jan de Boer

The health care sector faces some serious challenges: rising demand for care, increasing personnel shortages, more privatization and merit pay. At the same time, the quality of health care has been put under a microscope and everyone agrees that care can and must improve, not only in quality but also in affordability. How can health care institutions work with these challenges in times of budget cuts? One thing is certain. IT is the dominant factor in all solutions.

C.G.R.M. Aldenhoven
is a director at
KPMG IT Advisory.
aldenhoven.stan@kpmg.nl

J.C. de Boer
is a partner at
KPMG IT Advisory.
deboer.janjc@kpmg.nl

This article on www.compact.nl is an adaptation of Chapter 2 of the Dutch book *ICT in de zorg. Probaat middel, maar lees voor gebruik de bijsluiter!* (Health IT. Good medicine, but read the instructions before use!). This book explores visions of IT developments in health care. It covers nine strategic themes, including the Electronic Health care Records (EHR), information security, Health 2.0, project realization and IT investment. The international version of this book will be published in the spring of 2012.

IT was first used in health care as a means to improve the management of the organization. The objective there was to gain insight into production agreements, operating results, occupancy rates, sickness absence, cost trends, waiting list data, and so on. In the past, IT used to play a less central role in the health care process. International research carried out by KPMG shows that the most successful and sustainable changes in health arose from examining the health care process from the perspective of the patient. This perspective should also take center stage in the strategy of the health provider. The organization uses this as a basis for formulating a vision for information services. Health care institutions are information processing organizations where it is essential that information services run smoothly. It is the task of the administrators to completely integrate the vision for information services into the entire strategy of the institution. IT is a determining factor in all domains, from health care innovation and collaboration with other health care providers to e-health and new construction. Thus, providers would do well to devote time to IT in board meetings and put it in the weekly agenda. If there is no strategy in place, investing in IT means "doing things better" rather than "doing better things". In that case, IT is not much more than the selection of vendor products, when it could be a resource that is strategically deployed to achieve objectives in terms of suitability and quality.

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Towards Health 2.0

Patients expect quality and transparency from health care institutions. They are increasingly better informed and want control over their own health. This is called patient empowerment or self-management. Patients gain insight into the quality of institutions and health care providers via rankings by and communities of their fellow sufferers. Patients are increasingly willing to travel for quality. This means they may choose a highly regarded specialist abroad for a specific treatment rather than a local specialist. A doctor becomes the advisor of the patient who is well-informed via the Internet and his family caregivers. They all work together in determining a diagnosis and the subsequent treatment plan. The patient is part of the treatment team, Health 2.0. Furthermore, a patient controls their own medical records. A doctor receives access to what the patient believes is relevant. Over time, almost everyone will have their own personal health record (PHR) which will be used to exchange information with the family doctor EHR and the hospital EHR. The PHR also contains regularly uploaded information about weight, blood pressure, heart rate, and so on. From cradle to grave. In the future, the emphasis will not just be on illness. There will be a focus on "wellness": health and remaining healthy. Understanding health improves lifestyle. Prevention is the area where the most good can be won. The word patient is really no longer appropriate. They are consumers who (sometimes) utilize health care. There are already some vendors who offer a PHR. However, a trusted party is needed for the protection of privacy, and there are always commercial interests in the market waiting to pounce on profitable opportunities such as the use of profiling for targeting sales.

The emergence of E-health

E-health is an emerging development in health care. It is the health sector equivalent of e-business, e-commerce and e-government. Innovation today utilizes IT and especially the Internet. E-health reflects the increasing desire of the patient to be in charge of their own health. Research conducted in the United States shows that about two out of three patients want to use the Internet to communicate with their doctor or hospital. This relates to personal medical information, making appointments, viewing examination results, e-mailing the doctor, and the ability to carry out measurements at home and transmit these electronically to the medical file. The potential for IT and especially the Internet being used in health care is limitless. E-health

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will lead to dramatic changes in health care. A number of serious roadblocks must be overcome before it is possible to reap the benefits of implementing e-health on a large scale. Current legislation is unclear about physicians' liability when they are involved in e-health activities. In addition, the current costs for health care constitute a barrier preventing the stimulation of the development and utilization of e-health. The use of e-health applications is inadequately stimulated at this time. Only cautious initiatives are being taken around the globe. At the local level, patients may have the option of using the Internet to consult with a health professional or make an appointment. At the national level, health care providers and patient organizations collaborate to stimulate the growth of communities for fellow sufferers. These are all good examples. Overall, however, these developments are still taking too long. Recent research by KPMG in the Netherlands shows that online "health convenience services" have a direct positive outcome on patient self-management. These services include online registration for a health care institution, entering case history, making appointments, ordering (repeat) prescriptions, and consulting with a health care provider. Government and relevant parties in the health care domain are wise to initially focus on these seemingly simple e-health applications.

EHR as imperative

The Electronic Health care Records (EHR) can make all the difference for the information services of a health care institution. It establishes the degree of accessibility and interchangeability of medical information and the transparency for a hospital. The EHR is a crucial IT system in the development of the information strategy. Health care institutions will do well to differentiate between the EHR system and the Health care Information System (HIS) in the IT systems landscape. Currently, IT vendors consider these systems to be so interwoven that they are sold as a single package. It is presented as if the client will get the best of both worlds. Unfortunately, nothing could be further from the truth. There is indeed some overlap, but the EHR and HIS are substantially different systems. The HIS must be considered congruously with the Enterprise Resource Planning (ERP) system, both of which are logistical support systems. The HIS is focused especially on the health care domain, while the ERP system focuses on general business activities. The HIS is the IT system that predominantly supports the health care logistics and administrative process. It is focused on the efficient planning and logistics of (health care) resources and the registration of patient information, the processing of Diagnosis-related groups (DRG's), and the planning of admissions/surgeries and appointments. The ERP can be described as the IT system that supports the logistical and administrative back-office functions (finance and control, human resource management, purchasing and warehousing). These workflow-supporting systems focus primarily upon operational excellence. It is aimed especially at gains in efficiency and less on gains in quality in health care. The EHR supports the creation of the digital medical file for the patient (including clinical documentation and medication data). It is a portal for the exchange of information between parties in the health care chain: patient, referring physician, pharmacy, and so on. An EHR allows an institution to focus predominantly on customer intimacy and less on efficiency. The EHR does not or minimally reduces caregiver workload. More information must be recorded to provide for transparency and quality of care. Practice shows that the need for information in a digital world always increases because data recorded digitally is much easier to exchange than data on paper.

Uniformity of language

Much more than is currently the case, HIS, EHR, ERP and departmental IT systems must become a smoothly running whole and offer the option to be browsed through. This increases transparency and patient safety. In the future, if an event such as a medical complication occurs, all relevant information will have to be available. From the patient's screening through to the maintenance history of the infusion pump used. This information can serve not only to record activities but also for accountability purposes. For example, it can be used to trace the origin of a medical complication. Thus, the cause of a complication might be that the physical examination was not thorough enough or that the infuse pump used was not connected by qualified staff or not properly maintained, and so on. All of this type of information already exists in most institutions except that it is not in a standardized format or linked together in any way. Indeed, there is still no adequate technological solution for this matter. Service Oriented Architecture (SOA), a sort of multiple socket software framework where you can plug in different systems, is still under development. When integration of systems and devices is no longer an issue, institutions

will need protocols, standardization and uniformity much more than occurs now. However, standardization will be required beyond that of the internal operations in institutions. An unambiguous framework of concepts and definitions is inevitable for communication among all partners in the health care chain just as there is for research and training. Uniformity of language is a prerequisite for effective use of IT in health care and the subsequent conversion from paper to digital.

International players

There are few IT systems currently on the shelf that are adequately equipped to meet the innovation needs of health care. A comforting thought is that the needs of most health professionals still do not vary much from the functionality already offered. And, vendors are indeed increasingly capitalizing on the changing needs. Institutions that are taking steps forward in IT must be careful to keep the door open for future developments. The health care market still operates from a "replace" perspective and hardly at all from a "change" perspective. This means that there is more "following" than "renovating". When selecting vendors, health care institutions are well advised to evaluate whether the vendors also demonstrate commitment to innovation and attendant best practices. The market for EHR systems is becoming more international. Why should we in the Netherlands know better and do things differently than in the U.S.? The HIS market is dominated by national and international players who know how to incorporate localization as part of their systems and focus on timely compliance with changes in national legislation. The national or local health care market is too small. Selecting IT solutions that only work locally rather than internationally can lead to isolation and the inability to capitalize on international developments and innovations. The future belongs to systems based on an international perspective on health care, which have an international market and which unfailingly deal with national and international changes in a timely manner. This development makes extensive standardization inevitable.

Privacy discussion

Research by KPMG shows that many people are worried about privacy and security on the Internet and attendant risks linked to its use. The concern that confidentiality of data on the Internet is not guaranteed is increasing. Conversely, the willingness to exchange confidential data on the Internet is increasing if there some added value involved. And this is the case with the health care sector. The security of electronic patient data will always be an issue and cannot be guaranteed 100%. This is also true of course for paper files. There is a greater chance of accessibility in the digital domain compared to paper. It is important that technology be used in the most optimal manner to protect the information. And the patient must be able to authorize who can access their information. But that is easier said than done.

Funding problem

Health care institutions will make considerable investments in IT in the coming years. Most health care providers are facing shrinking budgets, which means that institutions must seek innovative funding options. It is "hot" to invest in the health care sector, so there are opportunities. Solutions are conceivable where IT is no longer purchased but leased. There are already hospitals where a single vendor brings in all medical equipment and ensures that all of it is functional and up-to-date. It is always possible for such a hospital to keep pace with innovation at reasonable management costs. A future trend is that ownership of IT, just as with medical equipment, is not an imperative for a health care institution. It is the actual utilization of the equipment that sets the health provider apart. Considered from this perspective, it is clear that institutions will arise where the only assets are the employees themselves. It is possible that property, workplaces, medical equipment, and IT will all be leased for a fixed amount per month based on yield. In any case, a large part will be outsourced to other parties. A consequence will be that other parties will be more involved in the day-to-day operations.

Education and research

For health providers with an academic emphasis, the impact of IT choices will go beyond the domain of information services for patient care. It also largely determines the quality of and the options for information transfer to other core competencies, namely, medical research and academic education. These institutions need to work towards a cohesive IT environment where all specialists, nurses, doctors and nurses in training, medical students and researchers can have authorized access. Thus, there will be a requirement for real-time browsing through the EHR and department specific systems. Training could not be more realistic. And the research data could not be more trustworthy. Obviously, approval from the patient will be needed, the data must be anonymized and privacy guaranteed. Standardization is also a prerequisite for this vision of the future. This is particularly applicable to research because international cooperation between research institutes is a prerequisite if a particular country wants to remain meaningful on the international scene.

Dealing with technology

A health provider that improves the care process from the perspective of the patient will also educate their caregivers differently. Patients will enter their own case history at home. A doctor in training should not then just simply repeat this registration again, but focus on the essence of the examination instead. To gain the requisite experience without placing an additional burden on the patient means that simulation programs will continue to have greater prominence. The training of doctors and nurse practitioners requires that they have to learn to work with medical technology and IT resources much more than occurs now. And, they must learn to record information in a manner so that real knowledge transfer occurs without it being interpreted in any other way than intended by the writer. It is equally important that future health workers learn to deal with very well-informed patients who may know more about their illness than the health workers themselves. In other words, they must be trained as a health worker 2.0.

About the authors

C.G.R.M. Aldenhoven is a director at KPMG and is jointly responsible for Health IT within the KPMG practice. He manages the international IT consultancy practice of KPMG in health care and also advises clients on strategic and complex issues that impact both IT and the primary health care processes.

J.C. de Boer is a partner at KPMG IT Advisory and is responsible for Health IT. In the Netherlands, he advises a large number of hospitals, health insurers and governments in the areas of strategic IT issues.