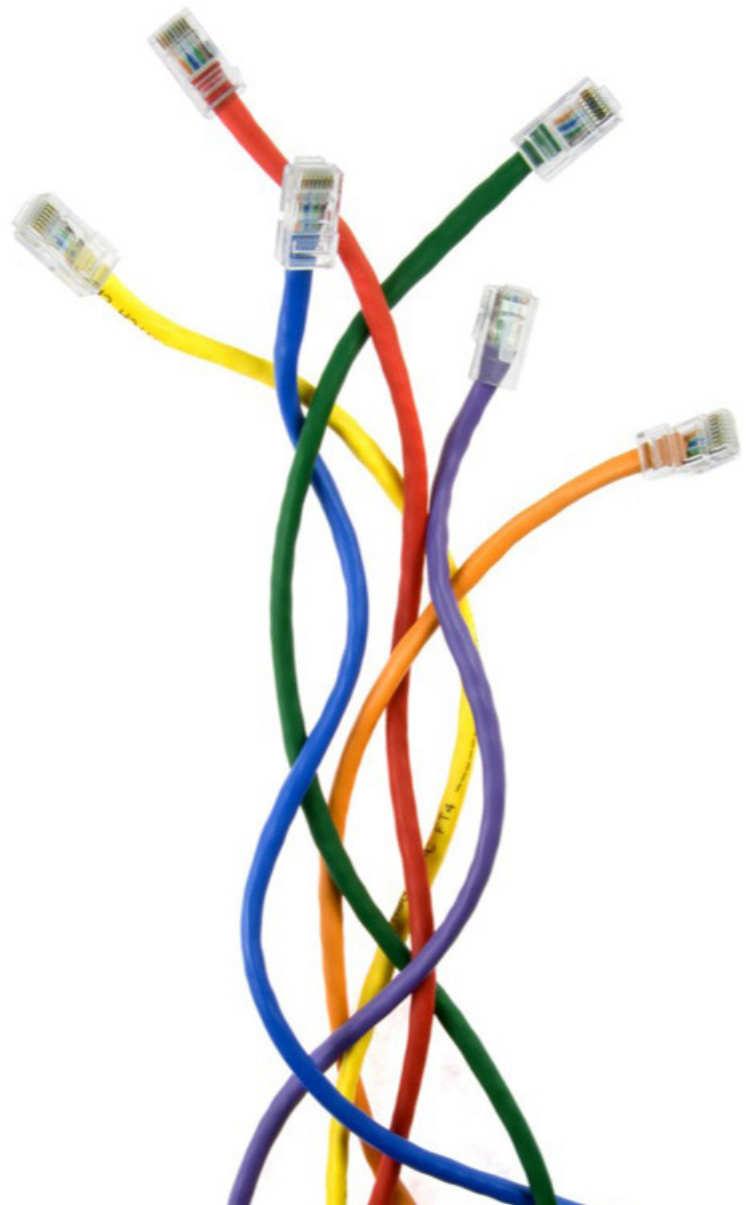




Untangling the truth
*Debunking the myths
surrounding the technology
journey for digital hospitals*



Introduction

Do you believe that a digital hospital and a paperless hospital are the same thing? That a single data governance approach is all your hospital needs? That clinical requirements should dictate the hospital's technology capabilities? Or that mobility is a 'nice to have'? If you do, you are not alone. So whether you are building a new digital hospital from the ground up, or digitising an existing hospital, views like these can make your journey more complex, riskier and expensive than it really needs to be.

The digitisation of Australian hospitals represents an important step in the digital transformation of the Australian health care system. Digital hospitals provide an opportunity to improve the quality and safety of patient care, reduce inefficiencies and wastage, support world class clinical research, and enable better management and administration of the hospital environment itself.

The development of a greenfield digital hospital, or the digitisation of existing hospitals, also represents a significant investment for their owners, be that health departments or private organisations. Owners are focused on achieving the maximum possible return from digitisation programs, given the increasing scarcity of funding in the current economic climate.

Achieving these outcomes can only be achieved if you do not hold onto some of the myths regarding the technology journey for digital hospitals. We have identified 12 myths that if left unchallenged can limit the value that can be realised from digital hospital initiatives.

By understanding these myths – and the truth behind them – those responsible for planning and delivering digital hospitals can seek to avoid the pitfalls and deliver world-class facilities that offer the very best experience for patients and clinicians alike.



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Myth 1

Digital hospital equals paperless hospital

Reality: Digital hospitals will remain a hybrid of electronic and paper information for the foreseeable future

A digital hospital is often viewed as one where paper-based records are no longer used, having been replaced by electronic channels, systems and tools. While the paperless hospital might be an aspirational long-term vision for the health industry, in our experience, it is a complex, risky and costly objective for those embarking on the digital hospital journey.

Very few hospitals have achieved what would be classed as a paperless hospital. Furthermore, many clinicians and administrators have highlighted that paper-based records and tools continue to be the most efficient means of capturing information within certain care contexts and that investment in technology should focus on allowing these paper-based mechanisms to be digitised so it can be shared. While the advent of new technologies may over time change this view, the reality is that digital hospitals will remain a hybrid of electronic and paper-based information for the foreseeable future.

An alternative yet pragmatic vision is the 'paper-lite' hospital, where the focus is on making sure the right information and services are accessible electronically to the right person at the right place and the right time to optimise the quality and efficiency of treatment, research, education and other key functions. This vision does not imply that all information and services be delivered electronically, rather that digitisation be selectively driven in accordance with the strategic priorities that deliver the greatest benefit for patients, clinicians and the organisation.

An effective technology strategy and plan for a digital hospital should be founded on these priorities, outlining a pragmatic approach for selective digitisation, taking account of technical and non-technical considerations such as availability of funding, organisational change readiness, a hospital's risk profile and starting point (i.e. existing hospital versus greenfield development).

That said, the 'paper-lite' or hybrid model will have its own challenges, including:

- Access – providing clinicians ready access to all the information they require in a convenient manner
- Security – managing the privacy and protection of paper-based patient records
- Timeliness – preventing clinician's from wasting valuable time chasing paper information when critical decisions need to be made
- Completeness – consolidating all relevant information to form a complete record.

A holistic technology strategy will need to consider how to minimise the impacts of these challenges.

Actions

- Define a pragmatic and achievable vision for the digitisation of your hospital
- Ensure the Board, Executive and other key stakeholders understand the 'digital hospital' vision to ensure expectations are managed effectively
- Selectively drive the digitisation of the hospital to address strategic priorities and unlock key benefits
- Develop an approach and plan for taking key challenges and risks associated with the hybrid environment of a paper-lite hospital.

Myth 2

The digital hospital should be designed for a digital world

Reality: Digital hospitals need to enable the exchange of information with digital and non-digital providers to support their clinicians and deliver the best possible care and outcomes for patients

All hospitals – including digital ones – do not function in isolation. Delivering high quality care requires the ability to exchange patient information with the local healthcare ecosystem in which that hospital participates. This ecosystem encompasses primary care, allied health and medical specialists, as well as other public and private hospitals. Hospitals also need to make their information available to this ecosystem to support the care of patients once they have left the hospital environment.

In today's digital world businesses increasingly exchange information and access services electronically, and many have now completely digitised the way they interact with their customers, suppliers and partners. Similarly it would seem sensible to expect that a digital hospital should be designed to operate in an environment where patient information is exchanged seamlessly with the local healthcare ecosystem.

Unfortunately the digital transformation of the health sector has been far slower than comparable knowledge-based sectors, with many parts of the health sector still relatively unprepared for the digital world. The design of a digital hospital needs to be cognisant of this reality, in particular the degree to which systems needs to interact with digitised versus non-digitised segments of the local healthcare ecosystem.

Engagement with the Local Hospital Network, Medicare Locals and the health department can assist in understanding the digital maturity of the local healthcare ecosystem and how this may change in the future. Particular focus should be given to understanding the digital maturity of key participants within the local healthcare ecosystem, as this will inform the process and technology capabilities required to ensure the hospital can interact with them effectively.

Jurisdictional and national eHealth programs such as the national Personally Controlled Electronic Health Record (PCEHR) system must also be considered and leveraged where possible.

Many of these programs have the specific goal of improving the connectivity and flow of patient information between acute and non-acute healthcare providers and hence may provide opportunities for realising the hospital's digitisation goals.

The end result will likely be technology infrastructure that supports the electronic flow of information between hospitals and the digitised segments of the broader ecosystem, including capabilities that enable the interaction with, and transformation of, the paper-based information contained within less digitised parts of the sector.

Actions

- Build relationships with your Local Hospital Network, Medicare Local(s) and health department to gain insights into the local healthcare ecosystem
- Assess the digital maturity of the healthcare ecosystem in which your hospital participates, in particular strategically important health provider segments
- Identify and leverage opportunities that national and jurisdictional eHealth programs present
- Plan and design a technology environment that includes the capabilities required to exchange information effectively with digital and non-digital parts of the local health ecosystem.

Myth 3

Clinical requirements dictate the hospital's technology capabilities

Reality: Clinical care and technology are intrinsically related, meaning that clinical requirements and the technology strategy must be developed in tandem

The role and value of technology has evolved as technology has become more intrinsic to hospitals. Technology such as smartphones, tablets, wireless-networked 'smart' clinical monitors and other equipment such as smart cabinets are fundamentally altering the way that care is delivered. The relationship between clinical requirements and technology capability has become more mutually dependent rather than one-way, and as a result so has business and technology strategy.

The result of this interdependency is that a hospital's technology strategy should no longer simply follow the clinical requirements and models of care. Instead, the two should be developed together so that the influences that each has on the other can be exploited. The key to this approach is to recognise that technology opens up new possibilities in how models of care are designed and delivered, and that increasingly sophisticated models of care place new demands on what information is required and where and how it is accessed.

Co-development of care models and technology strategy requires close collaboration between the clinical design and technology teams. Working together, clinicians and technologists must work to understand how models of care should interact with the technology capabilities of the digital hospital, as well as identify opportunities for technology to enable new ways of delivering care. Clinical processes and technology requirements can be iteratively refined as a shared understanding of how, when and where information can support care delivery and hospital management is gained.

The development of these types of integrated care and technology models provides a framework within which more detailed design in both the clinical and technology domains can be undertaken. Key aspects that this approach can inform include design and development of:

- Patient flow and resource management models
- Clinical hand-offs between hospital departments aligned to and supported by appropriate information flows
- Mobility and information access requirements within and outside the hospital, particularly to support the patient journey
- Security requirements for physical and virtual access.

The capability to continuously develop and improve integrated care and technology models is a critical competency. Once established, it can become the engine room of innovation needed to realise the full potential of the digital hospital.

Actions

- Establish collaborative design teams that draw together experts in care model design, research, hospital management and health ICT
- Build models that describe the functions and touch points required to deliver models of care, research, administration and management
- Engage broadly with stakeholders to ensure the models are informed by the requirements of each major stakeholder group including clinical care delivery, clinical administration and hospital resource management
- Use these models to inform the more detailed design of processes and requirements in each domain
- Watch for relevant case studies of technology-enabled care and service delivery, and consider how these may apply to your hospital
- Build and maintain an awareness of technology offerings, vendors and services in the market place to inform technology selection.

Myth 4

Industry frameworks and proven ‘best practice’ models exemplify every hospital’s digitisation roadmap

Reality: Digitisation should be driven by strategies that deliver digital capabilities to support services and functions based on local priorities and concerns, models of care and available services

Several models that describe successive stages of maturity in the adoption of Electronic Medical Records (EMRs) have become influential in recent years. Each of these models provide a view of rollout priorities and a recommended sequence for the introduction of digital-enabled capabilities. While these models are undoubtedly useful and provide valuable direction to those planning the delivery of technology-enabled capability, they should not be taken as a universal or prescriptive recipe. Maturity models primarily represent technology dependencies, not site-specific priorities and clinical needs and as such, are not necessarily suited to all Australian hospitals.

According to the HIMSS¹ EMR Adoption Model, realisation of a fully digitised EMR represents the highest level of maturity. In reality, most hospitals achieve a functioning EMR piece by piece as electronic records become available from across a range of clinical, laboratory and other systems. Full digitisation is also not necessarily justified in all cases, and creation of a hybrid EMR (where selected record types are represented as scanned images or are stored in other formats) may be acceptable to achieving your hospital’s vision and strategy.

Each hospital starts the EMR journey from a different place, with a unique profile of demands, current and planned technology investments, relationships with service providers, capabilities and capacity for change i.e. executive readiness, employees’ ability to accept change, and the IT departments’ (and its service provider’s) combined ability to deliver and support change. Fiscal reality will also place constraints on what can realistically be undertaken over a particular timeframe. Collectively these various factors mean that each hospital will have a unique progression through the journey to a digital hospital.

The transition to a digital future needs to be driven by an integrated business and clinical strategy for each hospital, the services, capabilities and information that it requires. Maturity models and industry frameworks provide direction but not the ‘why’ or ‘how’ – this must come from senior, experienced people prepared to make the change happen across the organisation.

Actions

- Understand where you are starting from and the various factors that will influence and constrain what your journey will look like
- Make sure a clear business and clinical strategy exists as the basis for planning each technology investment
- Don’t assume that full digitisation is what your hospital really needs
- Use best practice and industry frameworks as input to your planning.

Myth 5

Clinicians need access to all available clinical information about a patient

Reality: Clinicians require access to only the information needed to support clinical decisions in the context of the task being performed

Information overload is a challenge. Clinicians in pressured environments are often frustrated trying to navigate through copious amounts of information, spread across multiple systems. This not only causes frustration and stress but takes precious time away from delivering the best possible care to patients.

Clinicians rarely need or want to view all the detailed clinical information that has been collected about a patient during their current and previous episodes. Instead they want easy access to a subset of information that is structured and presented in a manner that enables them to make safe and effective decisions in a timely manner. This subset of relevant information will vary according to each care setting, the models of care and clinical pathways within each hospital or department.

This is not to say that hospitals should not maintain detailed patient records. On the contrary, legislative requirements governing medical records require hospitals to maintain detailed patient information. This information is typically captured through the hospital's core, specialty and other systems, and together form a detailed electronic medical record for the patient. Where some hospitals have come unstuck is confusing the concept of a 'medical record' with the subset of information a clinician requires to make decisions within a particular care context. The two concepts are distinct and must be treated as such.

A clinician's ability to work quickly and effectively, and monitor the progress and efficacy of the patient's therapeutic regimen is not only dependent on having access to the right subset of information but also on information being presented in the right way. For example, presenting information in a manner that highlights trends and correlations of data is key to illustrating the impact of a therapy, as well as broader longitudinal trends and patterns that influence clinical assessment and decision making.

Another important consideration for data presentation and workflow configuration is the specific roles of different caregivers. Role based information capture and presentation enables efficient workflows for managing patients and recording their care needs. Applying a User Centred Design (UCD) approach to system design results in systems that present the right information in the right way, and encompass the right rules and alert mechanisms. This improves service efficiency and the quality of care.

Actions

- Understand the ways clinicians utilise the paper chart, and design supporting information systems that provide the relevant information at the right time to support decision making
- Design a strategic approach to working with the clinical specialities and the individual roles within the teams to best manage the scope of configuration required to drive an effective and efficient functional design
- Apply User Centric Design (UCD) to digital hospital projects to ensure systems deliver high value experiences to clinicians
- Display information in the most comprehensible form for clinicians and practice the 'less is more' mentality
- Ensure patient data is recorded in a way that is easily trended or graphed, such as grading scales and codified information.

Myth 6

Implementing a single clinical system 'package' represents the least complex and lowest-risk path

Reality: Selecting the right clinical application strategy requires careful analysis including consideration of a range of non-technical factors

Accurate, timely and accessible clinical information, the primary expectation for a digital hospital, requires the correct clinical systems strategy. In developing this strategy hospitals typically face a key decision, namely choosing between the options of a single vendor 'enterprise package', procuring and integrating 'best of breed' products selected from multiple vendors on the basis of suitability, or adopting a combination of these approaches.

While the single vendor package option has much appeal and is in many ways the easiest decision to make, our experience shows that there is no universal application strategy guaranteed to minimise complexity and risk. Each approach contains benefits and risks that must be considered in light of a number of factors.

Single vendor packages can provide many benefits. They typically offer broad functional coverage to support clinical and patient administration information flows and processes, and out-of-the-box integration so that patient and clinical data remains consistent across all modules. The leading vendors serve a global customer base, so product innovation flows through periodic managed upgrades.

However, those who have chosen this path report common challenges:

- Functional gaps, which necessitates expensive custom development, procuring a point solution, or living with incomplete functionality
- Discovery (sometimes late in the implementation process) of differences between how the package supports clinical tasks or workflows and how these are (or will be) performed
- Unexpected requirements and problems integrating packages with existing hospital systems
- Sub-optimal internal integration within the package, particularly where the product has evolved via acquisitions
- Vendor lock-in, particularly around the vendor's ability to add or change functionality to support specific customer needs.

In contrast, a 'best of breed' strategy can free clinicians and users across the hospital to select the product that best suits their needs, but this freedom comes with the cost of integrating, testing and supporting separate vendor's patient and clinical data sources.

Developing the right strategy also requires consideration of other factors such as the hospital's existing investments in clinical applications, funding availability, risk appetite and the capabilities of both staff and the marketplace. Increasingly the approach adopted must also consider broader strategies such as cloud computing, mobility and managed services.

Actions

- Understand your starting point, particularly existing systems and assets – not everything must be replaced
- Define the information and functional architecture required to deliver your hospital's vision, and use this to drive decision making about the technology environment
- Consider the impact of broader directions for the technology environment such as the role of the 'cloud'
- Understand non-technical factors, such as funding availability, risk appetite, internal resources, and change readiness.
- Build a broad knowledge of the market place as well as different approaches to delivering digital hospital technology environments.

Myth 7

The Cloud isn't secure, nor is it relevant

Reality: Cloud computing offerings are maturing and digital hospitals are poised to take advantage of the benefits

Security and privacy concerns should not deter hospitals from using cloud services. Clouds come in all shapes and sizes: from private clouds, through hybrid clouds to public clouds. Each type has different security and privacy characteristics to be considered when assessing their suitability for a digital hospital.

It is also important to recognise that cloud providers take security and privacy very seriously as their business is dependent on maintaining customers' trust. Through economies of scale, they can afford to invest in security infrastructure that would typically not be cost effective for a single hospital. In addition, they will often make available to customers independent assurance of the security of their environment.

While security and privacy are important considerations, they are not the only ones. The size of the hospital, its demand for services and scalability, and available budget, are all factors that influence the type of cloud that is best suited for a hospital. These considerations may increasingly drive collaboration amongst hospitals to develop clouds that offer the required level of scalability while also ensuring these services are not cost prohibitive for a single hospital.

Legislation and regulation is also often cited as a reason for not adopting cloud computing within hospitals and the broader health sector. Current legislation requires patient data to remain within Australia however this should not prevent digital hospitals from taking advantage of onshore cloud computing offerings that are already available in the market.

Utilising onshore cloud computing services to 'outsource' commodity IT services such as email, human resources software, application and web hosting and IT infrastructure management can free up headcount (and hence costs) that can be applied to internal clinical, speciality and other systems and services that are key to the digital hospital.

This approach shifts costs from capital to operating, and also provides the organisation experience in using cloud computing without risking patient data or clinical services. This helps foster trust for cloud computing, creating a culture that is accepting of these services, whilst establishing working relationships between the hospital and various cloud vendors.

As the Australian cloud computing landscape matures and health industry specific offerings emerge, hospitals with early experience will find themselves better positioned to move up from commodity IT services to cloud based services containing clinical data, such as patient record scanning and clinical note transcription, and eventually into clinical services, such as scheduling, patient administration, clinical care delivery and management and also, electronic medical records.

Actions

- Assess the relevance of the cloud to your hospital and where its impact can establish the most value. This requires building a strong business case with clear milestones and tracking of benefits
- Monitor the cloud computing environment in Australia for the emergence of health industry specific offerings
- Monitor legislation and regulations to understand the implications for hospital use of cloud offerings
- Conduct a thorough strategic planning exercise on the impacts and opportunities of the cloud to drive execution quickly where there is clear advantage
- Adopt a modular and extensible application architecture, investing in integration technologies, and consistently structuring clinical and non-clinical data around standard codesets
- Execute an integrated communication plan when moving to the cloud.

Myth 8

A digital hospital's data must be managed by a single data governance function

Reality: Effective data governance in a digital hospital needs to operate under a common framework that aligns with multiple key data domains

In Australian hospitals, data governance is often established in direct response to mandatory compliance obligations (such as government reporting) and therefore is focused primarily on clinical data. Other information domains such as hospital administration and clinical research are often not governed to the same degree. For a digital hospital this approach to data governance is not sufficient.

A hospital has a diverse set of data assets used for different purposes including clinical care, hospital administration and clinical research. The governance and management requirements for these different data domains are influenced by the nature of the data domains and how the data is used. Digital hospitals require enterprise-wide data governance with domain-specific governance procedures operated under a common data governance framework.

'Fit for purpose' data governance for each data domain together with the overarching data governance framework needs to embody the following elements:

- *Principles* – Articulating the hospital's high level objectives (mission statement) for data governance and management
- *Organisation* – Establishing an organisational structure that encompasses roles, responsibilities and accountability for meeting objectives, strong executive leadership and commitment from clinical, business and IT stakeholders
- *Standards and processes* – Standards promote common terminology and data definitions, including quantitative metrics for data quality, with processes for governing the data domains within the hospital
- *Technology* – Tools to support the definition, application and compliance measurement of data governance policies, standards and processes across the hospital.

Governance within each domain must also involve data custodians – those who understand how data is created, stored, managed and used – so that the data meets the requirements of the relevant clinical, business and research contexts.

Improved data governance will enable better services. Implementing a data governance framework will improve the quality of clinical services and will safeguard high standards of care. By creating an environment in which the quality of information is known and can be managed consistently, digital hospitals will find that their data assets become a key part of their strategy to delivering excellence in clinical care and research outcomes.

Actions

- Define an overarching data governance framework that encompasses principles, organisation, standards and processes, and technology
- Understand the key data domains that underpin essential service delivery
- Support the application of the governance framework to key data domains to ensure sustained usage and benefits.

Myth 9

Analytics and reporting can be added later

Reality: A key benefit of digitised data is in the fundamental analytics and reporting capabilities it provides which must be considered early as a key requirement

Over the past 20 years, attention has been focused on deploying electronic systems to connect, collect and store data on patients. Now, with a significant amount of electronic information available, there is a shift in focus to the analysis of the available data, and leveraging the intelligence it provides to improve clinical decision making, clinical research and hospital administration.

A digital hospital's technology strategy must view these requirements as 'core' and in response lay out a plan for how the right Business Intelligence (BI) and analytic tools, and data of the right quality, will be delivered during the digitisation journey. This may require the implementation of data warehouses, data marts, data integration systems and tools for improving data quality.

The substantial amount of historical data that is now available creates the opportunity to improve policy, clinical and financial decision making. That said, organisations face two key challenges when establishing a robust business intelligence and analytics program – data quality and accessibility.

Ensuring data quality, particularly when integrating data from many different sources, can be difficult. This is because healthcare organisations have traditionally established fragmented IT environments with inadequate enforcement of data standards. The resultant inconsistencies in data ontology and quality create a challenge for data integration. Adopting a strategic approach to IT system implementation and the adoption of data governance are key mechanisms through which this challenge can be addressed.

The limited extent of the use of analytics and effective reporting within healthcare organisations is another challenge that digital hospitals must overcome. Traditionally, responsibility for analytics and reporting has been delegated to biostatisticians or to the IT department. Maximising the utilisation and value of information depends on the ability of users to create their own reports and perform queries of data with minimal IT involvement. Allowing clinicians to independently access ad hoc and structured reports on individual patient or cohort information promotes the leveraging of available data and in so doing, the quality of patient care.

Actions

- Focus efforts on ensuring data consistency and quality throughout the program
- Start with key information that can be accessed and used by clinicians without IT involvement for quick wins
- Consider online query tools and dashboards that are easily understood by the clinicians and provide a means by which to export information for use
- Take into consideration security issues and sensitivity around access to information
- Involve the clinicians in the design and formulation of BI and analytical tools to increase buy in to maintaining data quality and consistency.

Myth 10

Clinicians will only access patient information through a digital hospital's systems and devices

Reality: Clinicians want to be able to bring their own devices to work and access patient information through their own systems

Clinicians expect to have access to information when and where they need it and in a manner that is easy to access and view. Clinicians increasingly expect to be able to access information on their own personal mobile devices (i.e. 'Bring your own Device', or BYOD) or within their own personal clinical information systems in addition to those provided by the hospital. This is particularly true for those clinicians working across multiple healthcare facilities and in time critical care environments. Care delivery organisations must be able to deliver information securely both within and beyond the physical boundaries of their facilities, including those clinicians that may be at another facility, at their home or office or even be in a different state or country.

But it's not just about the convenience and familiarity of using your own laptop or tablet. Many clinical staff, particularly private providers working in public and private hospitals want to be able to incorporate information from the hospital into their own clinical information systems. Hospitals will increasingly need to embrace this new paradigm by putting in place mechanisms to ensure end-to-end adherence to security policies and standards, which in turn enable the integration and presentation of information through a clinician's personal mobile device or personal clinical information system.

Hospitals still face three major challenges that limit the extent to which a comprehensive view of the patient can be made available through a clinician's own mobile device or clinical information system:

- Not all patient data is in electronic form, with most existing hospitals (and some new hospitals currently being built) operating with a mixture of electronic and paper based tools
- Not all electronic information is in one place. Patient and clinical data is typically spread across multiple patient, clinical and specialty systems that are not well integrated
- Not all electronic information shares the same structure and meaning, with hospitals often having systems with different standards, formats, and patient identifiers that result in silos of information that cannot be easily integrated and correlated.

Hospitals wanting to enable clinicians to access patient information through their own systems or on their own devices must focus on establishing common core systems containing data in structured and standardised formats. These systems then need to be able to share this information with mobile devices and other external clinical information systems in a secure and interoperable manner.

Actions

Enabling the sharing of clinical information with mobile devices and external clinical information systems requires:

- A digitisation strategy for the hospital that focuses on progressive digitisation and integration of key clinical information groups
- Adoption of appropriate eHealth standards wherever possible to ensure interoperability with external clinical information systems and mobile devices
- Building mobile device support into the information system from the ground up rather than added as an after thought
- Placing appropriate focus on the security of the information system so that information is stored, maintained and shared in a secure manner.

Myth 11

Mobility is a ‘nice to have’

Reality: Clinicians are inherently mobile, so mobility must be a foundation of the technology strategy – not an afterthought

Clinicians have always depended on timely access to the right information at the point of care. While in the digital hospital, personal computing devices and integrated clinical information systems provide new levels of access and information sophistication; mobility has now become strategically important and can no longer be approached as an afterthought to the delivery of the core hospital technology infrastructure.

Succeeding with mobility requires a technology strategy that addresses a range of considerations, in particular:

- Ensuring ready access to appropriate devices at the point of care
- Enabling access to core hospital systems and information sources
- Delivery of user-centric mobile applications.

To access patient information at the point of care clinicians increasingly require a mix of mobile and fixed devices. An end user device strategy therefore needs to be incorporated into the hospital’s overall technology strategy, articulating what mobile and fixed device capabilities are required to support future models of care. Issues such as support, access, security and privacy will need to be covered.

The end user device strategy will also impact:

- The hospital’s physical technology infrastructure requirements, in particular the wired and wireless network infrastructure required to support the various mobile and fixed devices
- The design of the hospital’s physical environment such as the layout of different care settings.

Mobility isn’t just about smart phones and tablets. Mobility is an integral component of a hospital’s broader application and technology architecture, influencing the selection of new application and technology platforms. Bridging solutions will also be required for the many hospitals that have legacy systems and platforms that cannot be easily replaced and which do not natively support mobility.

Mobility promises to enhance clinical care delivery through ready access to high quality information. Realising this potential will require thoughtful inclusion of the end-user during the clinical and IT system design process. This ‘user centred’ design approach will need clinicians, nurses and other participants in the care setting to engage in the process of creating new information services and optimising existing ones. Collaborative design techniques such as ‘design thinking’ provide an approach that will lead to more targeted information services, improved support for everyday clinical tasks and workflows, and ultimately, improved efficiency.

Actions

- Develop an end user device strategy as part of your technology strategy, and use this to inform ICT infrastructure and other physical environment requirements
- Ensure mobility is an important selection criteria when selecting new applications and technology platforms
- Ensure your technology strategy identifies additional capabilities required to provide rich, user-centric mobile access to legacy systems
- Apply a user centric design approach to mobile interface design.

Myth 12

Focusing on improving systems and processes will deliver high value end user solutions and services

Reality: Successful digital transformation relies on adopting a patient centric 'outside-in' approach to solution and service planning, design and delivery

Hospitals and other health care organisations focus on systems, innovations and processes that deliver better patient care, increase operational efficiency and improve the patient's experience. In many cases, the goals of quality of care, efficiency and patient experience are not all equally served by a decision, investment or change. Established approaches to innovation that focus on internal systems and efficiency often result in compromising the patient experience. The change may be minimal – removing an option, forcing a change to behaviour, placing impediments in the user's path. But such changes can accumulate, resulting in dissatisfied users and low take-up of new services once implemented. This in turn can have a detrimental effect on staff, leaving them disengaged and disconnected from their employer's services and offerings.

Improving internal systems and processes is referred to as 'inside-out' innovation. 'Inside-out' approaches can deliver huge efficiency gains in many industries. But hospitals are unlike most organisations – they have a clear primary mandate to deliver care to patients. Clinicians and health organisations are connected by a common language that focuses on patient outcomes, not financial outcomes. Digitisation of the hospital presents a one-time opportunity to adopt a patient-centric view in conjunction with improving the quality of care, without having to compromise the efficiency goal. Taking an external, user-centred perspective on the hospital's services is referred to as working 'outside-in'.

Hospitals should adopt an 'outside-in' approach to service planning and delivery that focuses on identifying the pain points, needs and desired experiences of users upfront, before investing in solutions. Once the desired patient and users experiences are understood, the hospital can then direct its attention to the systems and processes that will meet user needs in the most efficient manner. The approach does not mandate restructuring, however, decision-makers must take the user experience of the hospital's services seriously.

Articulating a patient centric vision and program will help to foster an 'outside-in' culture and encourage staff to bring their sincerity, commitment and creativity to the fore when interacting with and solving a patient's problems.

Another essential step is the adoption of a User Centred Design (UCD) approach in solution design and delivery, linking to the overarching patient centric program. A UCD approach will equip project staff with the knowledge, tools and ethnographic techniques to engage in meaningful interactions with end users, such as staff, clinicians, nurses, public and patients, at specific touch-points. It will also help in the formation of realistic expectations and goals, keeping the project on track, and giving participants confidence in progressing their concepts to solutions. The result will be high value innovative solutions that result in end user buy-in, engaged staff, and a collaborative culture that values the best possible user experience, doing so with high efficiency. An 'outside-in' approach, as evidenced by a portfolio of small and large projects targeted at improving the patient experience, will become a hallmark of the digital hospital.

Actions

- Develop and nurture a patient centric organisation and culture
- Adopt an 'outside-in' approach to service planning and delivery that focuses on identifying the pain points, needs and desired experiences of users upfront, before investing in solutions
- Empower health organisations to be patient centric by embedding a consistent user centred approach into solution design and delivery.

Conclusion

The emergence of the 'digital hospital' represents a key part of the transformation of the Australian healthcare system. The opportunity for today is to take control of the inevitable creep of digital-powered technologies and capabilities, harnessing them to deliver a digital transformation that is planned, coherent, and driven by the benefits for clinicians, partners and patients.

The digital transformation of a hospital is a challenge for which there is no sure-fire recipe or guaranteed blueprint. The temptation to acquire successively more capable technologies and digital-aware machines risks creating islands of automation and further fragmentation of patient and clinical data.

Maximising the success of digital transformation requires senior clinicians and health/ICT leaders to work together to define an achievable vision that meshes with the hospital's broader strategy for meeting healthcare needs through clinical care, research and education. An impartial assessment of contextual constraints, such as existing technology investments, funding availability, risk appetite and capabilities of both staff and the marketplace, is critical to this process.

Once articulated, the vision provides the cornerstone from which a focused strategy can be developed that declares strategic and tactical initiatives and projects to progress the journey. The key to getting to this point is tying investment and business change to benefits, while incrementally remediating existing systems and laying down a digital infrastructure for the next decade.

The digital hospital's vision will signpost potential answers to the many questions that a digitisation agenda is sure to give rise to, including how fundamental shifts such as mobility, 'Big Data', 'The Cloud' and 'The Crowd' can deliver new services, workflows, analytical insights whilst providing secure, reliable and scalable infrastructure. It will also shape how digitisation is used to integrate services and information across traditionally separate hospital/allied care or public/private boundaries, so that patients experience end-to-end care that transcends departments, visits, episodes, providers and even life stages.

By viewing patient needs holistically, digitisation becomes a means to an end, and priorities become self-evident. A patient centric or 'outside-in' approach to service planning, design and delivery is sure to achieve greater patient satisfaction, staff buy-in, and technology-enabled efficiency.

The capabilities of tomorrow's hospitals depend to a significant degree on what we invest in today. Navigating these opportunities and challenges has never been more important. A plan, supported by the tools of business change and technology transformation, will help you get there safely.

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Mark is a recognised authority in the Australian eHealth sector, with 20 years of experience in IT strategic planning, enterprise architecture and implementation planning. Mark leads our Enterprise Architecture and IT Strategy group and specialises in the development of complex IT strategies and enterprise architectures for large, complex organisations, particularly with public sector health and human services organisations.

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