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White Paper

Beyond the PCEHR: Best Practices to Derive Value in the Era of Connected Care

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Australia's recent launch of the Personally Controlled Electronic Health Record (PCEHR) – a significant step towards establishing a national e-Health infrastructure – has simultaneously provided a boost to shared Electronic Patient Record (EPR) projects and delivered a wake-up call to healthcare providers about their readiness for connected care initiatives. In countries around the world, the era of connected care is here.

The PCEHR has increased both the push and pull factors that will lead to widespread shared EPR adoption. Some organisations – such as state health departments – will be required to connect to the PCEHR to share patient information such as discharge summaries. Others will see the PCEHR as a resource that can add value to their own health information system investments.

The PCEHR is the largest of a number of health information exchange networks in Australia, some of which – such as the South West Alliance of Rural Health (SWARH) in Victoria – are more functionally advanced, although more limited in scope. And there are other emerging national healthcare information services such as the National Health Services Directory.

Regardless of whether healthcare organisations are pushing for or being pulled towards exchanging health information, connected care initiatives are an increasingly important driver for IT investments. While funds for new healthcare information infrastructure remain tight, a number of connected care successes are coming into focus, with proven value that provides strong justification for new investments.

It is clear to pace-setting organisations that simply capturing and sharing data are not enough. It is the ability to analyse, understand and act on data that will deliver the value that connected care promises. Organisations across the entire healthcare and life sciences spectrum – from care providers to pharmaceuticals to medical device and diagnostics manufacturers – are being transformed by the opportunities (and threats) presented by this shift to connected care.

The reality is that the connected care environment is still in its infancy. The clinical and operational benefits will go far beyond what we imagine today, and IT infrastructure will need to evolve to realise these benefits. Yet, whether operating in the public or private sector, no healthcare executive wants to switch infrastructure platforms in order to respond to future requirements.

For this reason, organisations are recognising the need to adopt a flexible healthcare informatics platform that gives them the agility to adapt to unforeseen changes, such as regulatory standards, market direction and organisational needs. Increasingly, connected care is driving strategic infrastructure decisions.

With this in mind, organisations participating in health information exchange face a number of challenges:

- **Building strategic connected care capability for the long term** – Most healthcare organisations are typically burdened with the overhead of managing multiple financial, administrative and clinical systems on a variety of platforms, all of which pose integration issues. All of these systems have requirements for maintenance, upgrades, and patches or fixes on a regular basis. The challenge is to develop and execute a long-term strategy that will meet urgent and important interoperability needs that affect fiscal and clinical outcomes, while placing the organisation in the best possible position to face downstream challenges or harness future opportunities.

- **Simplifying connection to and management of external information** – Healthcare technology executives need to connect an ever-increasing number of providers and other stakeholders, all of which have different needs, work on different data platforms, and have different requirements for accessing and managing data. Rather than simplifying the connected care equation, the PCEHR has added another level to it, at least in the short to medium term, requiring leading organisations to build and manage standards-compliant interfaces between their existing systems and PCEHR infrastructure.

- **Improving the value equation for connected care investments** – While the federal PCEHR initiative has created some funding for shared EPR infrastructure, it has mostly been directed towards standards-setting bodies, proof-of-concept projects, and centralised government infrastructure. This funding has set the ball rolling toward enabling new delivery system models to improve the value equation in healthcare. Most healthcare organisations have not received additional funding to invest in connected care, however, which means new investments in information exchange infrastructure must be tied to delivering improvements in value.

- **Opening up information silos for sharing and analytics** – Evolving funding arrangements demand that healthcare providers collect and analyse demographic, financial and clinical data in ways that were not considerations when most current systems were designed. In particular, the progressive implementation of Activity-Based Funding as the basis for Commonwealth funding of state hospitals will continue to challenge healthcare providers. For many organisations, new systems and processes are needed to report on an activity basis to comply with national requirements. And, of course, the future holds additional changes that cannot be foreseen.

Drawing from the experience of both public and private health information exchange networks around the world and in Australia, we can identify some best practices for building a foundation that provides the flexibility to meet these challenges and support connected care initiatives. These include:

Standardise on a single interoperability platform

Best practices in health information exchange call for efficiently and securely connecting and integrating multiple platforms, databases, and users, both internal and external. To achieve this, the infrastructure must include a fully

integrated interface engine that provides seamless access to data repositories and applications running in virtually any environment. Without this type of engine, information gaps among departments, stakeholders, providers and platforms will create unacceptable risks to patient. Transparent access to a complete EPR can only be fulfilled via the connectivity delivered by a stable, reliable and fully integrated interface engine.

To achieve this goal, organisations need to standardise on a single mechanism for information exchange and to invest and develop the skill sets required to economically interface with internal as well as external resources. As a starting point, organisations should audit their current interfaces and quantify the savings generated by standardising on a single interoperability platform versus an ad hoc approach to integration.

The costs associated with ad hoc approaches, maintenance, and upgrades to multiple systems that are not connected by a fully integrated solution are prohibitive. In fact, they usually far exceed the cost of a unified connected care solution. In many cases, the savings in licensing, maintenance and support costs that come with consolidating multiple integration engines are sufficient to pay for a single replacement system, which is both easier to manage and meets many more functional requirements. Flexible purchase arrangements such as subscription pricing can allow healthcare organisations to align the cost of new systems with both these recurrent savings and improvements in value they expect to receive.

Look beyond interoperability towards unified connected care

In meeting the above challenges, many organisations need to fill the functional and information gaps between systems, which goes beyond simply connecting to the PCEHR or integrating with existing information systems. These include:

- Composite health record functionality, which aggregates and normalises clinical and demographic data, including documents, from multiple sources into a consistent, patient-centric record which can be made available in a variety of formats. Examples include the creation of a PCEHR-compliant discharge summary or the integration and exchange of documents for passing to a coding system for Activity Based Funding.
- Patient index functionality which manages patient identities and incorporates sophisticated matching technologies, either used standalone or in conjunction with other indexing and registry systems.
- A flexible consent engine for defining consent policies, capturing patient consent directives, and enforcing privacy policies whenever data is accessed.
- Provider directory functionality, which manages provider identities, including details on how providers can receive event notifications and clinical summaries.
- Terminology management to enable maintenance and use of applicable terminology standards, such as SNOMED or ICD, or custom code sets as appropriate.

Simply identifying and filling such gaps on an ad hoc basis, however, is not sustainable. Just as a single interoperability platform is the most efficient way

to connect to and manage multiple internal and external information sources, organisations need to standardise on a strategic healthcare informatics platform wherever possible. Rather than embarking on a series of one-off exercises that do nothing to reduce the marginal cost of meeting their functional and information gaps, investing in a flexible healthcare informatics platform will enable the agility required to respond to evolving needs and opportunities. Ultimately, the up-front and long-term operational costs of one unified solution that meets multiple requirements will prove a much better investment.

A first step towards creating a solution is to document current functional and information gaps and then expand that list to include the gaps that will be exposed when the organisation connects with additional external data sources. In particular, organisations should evaluate functional and information gaps in relation to the PCEHR, including the gaps that arise in fully utilising the PCEHR as well as the ones required for a minimal level of compliance. They should think in terms of the opportunities and the demands that the PCEHR will create when it is mature and expands in capability, rather than simply what is required to connect to it in the first place.

Unlock the power of real-time active analytics on ALL of your data

An additional aspect of best practices in information exchange is how to take strategic advantage of the information that is accessible through a fully connected and complete EPR. Traditional approaches to data analysis rely on historical data, rather than current data. In addition, it has been difficult, if not impossible, to meaningfully relate data from different systems and sources – financial versus clinical, for example.

What's needed for the transformed medical practice model is a real-time view of data that is normalised and aggregated across all sources and encompassing all data types. This approach makes it possible to understand the organisation's business in new ways and to take advantage of comprehensive and up-to-the-minute information. Even more important, real-time active analytics offers the potential of cutting costs as well as length of hospital stay, for example, leading to improved outcomes and reduced risk.

Organisations should make real-time active analytics a mandatory requirement of any new connected care solution. As with solutions for interoperability and meeting functional and information gaps, organisations should make strategic investments rather than a series of ad hoc investments with limited potential to generate returns. The data normalisation, aggregation and analytic capabilities of a unified connected care solution can be employed in multiple projects for relatively little marginal cost to unlock additional value. By adding data analytics, for example, in conjunction with connections to additional data sources, it will often be possible to generate otherwise unexpected efficiencies and improved outcomes. Activity Based Funding, for example, may not be a compliance burden, but an opportunity to identify duplicate activities and reduce risk.

When evaluating analytics solutions, organisations should also bear in mind that the vast majority of information that physicians require for daily decision-

making still lies in unstructured data. This data may be in the form of free text – such as progress notes, diagnostic reports and discharge summaries – as well as images and streaming data such as from an EKG. Information technology professionals have come to realise that classical relational databases cannot effectively handle unstructured data. Taking all of this into consideration, successful health information exchange now and in the future requires technology that can effectively manage unstructured as well as structured information. This is why organisations worldwide are increasingly making that capability a critical requirement for shared EPR platforms.

Drive user adoption through common Internet standards

It is essential to accept that clinicians and administrators, who are the end users of health information exchange, become interested in broader access to patient information if it is delivered when they want it, where they want it and in the right dose. They are more often interested in highly relevant nuggets of information rather than the entire patient history. Physicians are often rapid adopters of technology where there is a clear value proposition to them. For instance, the rate at which they have embraced the iPad and the apps it offers has been remarkable. It is a direct reflection of the ease of access that they are both accustomed to and demand.

To achieve this, organisations need to enable broader access to information. A first step is to enable access to clinical information through whatever device is available to or preferred by users – whether their own or the organisation's – by deploying Web-based user interfaces based on common Internet standards and employing a unified approach to security. Beyond that, organisations need the capability to rapidly and cost-effectively deliver additional specific functionality through new or enhanced applications independently of their legacy applications environment. Ideally, this should be part of a unified connected care solution capable of developing a range of new or extended applications generating multiple returns to the healthcare organisation.

In summary, today's leaders must consider healthcare informatics from a strategic dimension in order to make optimal technology platform selections. Only in this way will they be capable of reaching well-informed business decisions and enabling the best possible care delivery now and in the future.

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