



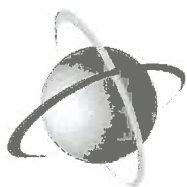
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Tasmanian Electronic Commerce Centre Pty Ltd

Response to Delivering Safe and Sustainable Clinical Services

White Paper – Exposure Draft March 2015

By Tasmanian Electronic Commerce Centre



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Introduction

The Tasmanian Electronic Commerce Centre (TECC) Pty Ltd and partners welcome and acknowledge the aims and reforms, outlined in the White Paper (Exposure Draft), redesigning the Tasmanian health system to a single state wide health system; to better deliver safe quality services and improved patient outcomes.

The 'Exposure Draft' stresses the need for systemic change and affirms that the effective implementation of better systems and infrastructure will produce substantial long term improvement to achieve the goal of Tasmania having the nation's healthiest population.

Response

To achieve the aim of a single state wide health system several current issues will need to be addressed to accommodate the current diversity of technology, data, locations and systems. With targeted homogenisation the multiple systems can be managed as a whole and monitored to deliver optimum outcomes for end-users and stakeholders.

It is our view that the process to achieve a single whole of state health system needs to have two key pillars in place:

1. A single source patient data information management system;
2. A single source asset management system (infrastructure and equipment).

With these two pillars established the four hospitals and multiple regional medical centres' diverse data clusters and assets can be accessed and utilised as a single system.

The implementation of the required information management platforms is a low risk solution that has been successfully established in similar jurisdictions, addressing the same problems and achieving quality outcomes. Please see the Appendix for relevant case studies.

Pillar 1: A single source patient data information management system

Patient First Tracking (PFT)

TECC recommends the use of a PFT data management system that enables the ongoing maintenance of confidential, secure, reliable and accessible patient records across multiple locations and is accessible anywhere a wireless connection can be made.

PFT is the data glue that fills the gaps between the existing systems and makes the invisible, visible. PFT tracks patients through every step of their journey, capturing information and then using this to inform clinical staff so that they can manage this journey more effectively. The PFT system allows healthcare practitioners to focus on performing their jobs, reducing administrative burdens by



streamlining patient interactions, records and needs across shared platforms. Patients most at need receive attention as a priority and productive time is focused on quality care improving patient outcomes

The following are key 'White paper' issues addressed by the adaption of a competent PFT technology:

- Waiting lists managed/reduced
- Drives better service identification to integrated services and address gaps
- Manages movement of patients and medical staff
- Allows central leadership and stewardship
- Drives best from current resources
- Provides basis for ongoing reform
- Support patient journey and services
- Co-ordinate across regions
- Clinician's profiled
- Address issues of patient safety and risk
- Manages waiting time and day surgery effectively
- Surgical theatre time managed effectively
- Workplace performance managed
- Patient being the centre of system outputs

Pillar 2: Asingle source asset management system

Cataloguing of Infrastructure and Equipment (CIE)

TECC recommends the use of CIE which is an asset management system that facilitates a high integrity the cataloguing of infrastructure and equipment across multiple locations and is accessible anywhere a wireless connection may be established.

The management of medical infrastructure, assets and equipment is a complicated high risk and ongoing job for all medical facilities. Each asset requires ongoing checks, maintenance and may be subject to replacement, relocation, or recall.

The efficient and effective use of assets is a critical component of the "One Health" system reforms because they aim to achieve 'more with less' by better utilising current available resources while also improving the safety and quality of public health services by eliminating inefficiencies within the current system.

Whilst it is important to structure the people and expertise to achieve these desired outcomes, it is equally, if not more critical to understand how your 'physical fixed assets' play a role in the delivery



of this improved system. The physical specialised tools, equipment and many other asset categories that will be critical in ensuring they are:

- **Identified** (knowing what you have and how to utilise them better);
- **Maintained** efficiently (to ensure they are reliable and safe when they are to be used – mitigating risk and ensuring compliance);
- **Visibility** throughout the entire “One System” to ensure better utilization.

Additional “White Paper” issues to be addressed by the adoption of a CIE system are:

- Define current capacity, capabilities and utilisation
- Co-ordination of care
- Responsive redirection of resources
- Targeted procurement
- Developing specialised infrastructure
- Service capability understood
- Acute care improved by equipment management
- Reduce waste and duplication
- Underpin single governance
- Overcome poor use of expensive infrastructure
- Underpin effective utilisation of tele health
- Effective corporate and risk management
- Robust clinical governance and quality management systems
- Effective performance and investment analysis

About Us: TECC Pty Ltd

TECC Pty Ltd was established in 1998 as an applied research and development organisation with a focus on electronic commerce and advanced telecommuting practices. Initially with shareholders the state government and the University of Tasmania, the TECC has overseen and been directly involved with over \$100M worth of projects. The organisation has conducted business improvement and efficiency implementation in both private and public sector organisations and across a range of industries. The TECC was privatised in 2013 and continues to offer leading consultancy, project and partnership services.



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TECC is available to provide expert advice, consultancy and project management services to assist the Department of Health and Human Services to implement a single state wide health system for Tasmania.

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Case Study Summaries

While the TECC has developed understanding and product knowledge in the two key areas of patient tracking and equipment and infrastructure cataloguing for the purposes of this response we have prepared two streams of case studies related to actual sites in Australia that have successfully dealt with similar issues to those confronting the “One State, One Health System” strategy.

These are presented in a non-proprietary format for the purposes of this response although the TECC has access to further details from the industry.

PFT Case study – Appendix A

1. **Northern Hospital (Vic)** - utilised a light touch method transforms existing disparate IT systems and provides a much more granular set of standardised data that is focused on the “data gaps” in a patient journey to identify areas of inefficiency in a patient’s journey through a hospital.

This data is used to inform performance issues, not just in terms of services delivered, but also an individual practitioner’s performance in comparison to others with the same or similar job function. Being cloud based, the high-cost barrier traditionally required for a system integration project of this scale and complexity is effectively removed. The data available about patients can inform future care models that could allow the balance of care



to be redistributed to primary and community care providers effectively across a Whole State Health system. The case study is a strong endorsement of putting patients at the centre of health system data flows.

CIE Case Study – Appendix B

2. **Monash Health** - required the creation of a valid, qualified and independent “Asset Register” – to identify ‘what is the current reality of assets? What do I have and where are they? The CIE data collection process facilitated the reconciliation of the existing asset registers for each hospital to determine what is missing (for tax write off), what has been identified to add to the register (for tax claim/depreciation) and more often than not, and as reported by Gartner, a discrepancy is usually found of approximately 30-35% variance (new assets) which can dramatically increase the bottom line value. The last such audit conducted added an approximate \$11.5 Million to the total value of assets for the company.

CIE Case Study – Appendix C

3. **Royal Melbourne Hospital** – has implemented CIE for the management of their clinical engineering assets to provide many benefits including; creating efficiencies in work processes to allow staff to provide better services; unique identification and visibility over all assets allowing the better use across departments (issuing and returning back to a defined area); less time spent trying to locate assets when required; mitigating risk of equipment failure through better governance practices involving regular scheduled maintenance activities - which also has the added benefit of increasing the life cycle of assets. Most importantly, in the event of an incident, having the appropriate historical records to provide details of maintenance conducted on each asset and proved the appropriate standard of care was continually maintained through the corporate governance and asset management.

This case study shows the technology being implemented for the management of their clinical engineering assets to provide many benefits including; creating efficiencies in work processes to allow staff to provide better services; unique identification and visibility over all assets allowing the better utilization across departments (issuing and returning back to a defined area); less time spent trying to locate assets when required; mitigating risk of equipment failure through better governance practices involving regular scheduled maintenance activities- this is also increasing the life cycle of assets. Most importantly, in the event of an incident, having the appropriate historical records to provide details of maintenance conducted on each asset to show duty of care, good governance and good corporate citizen.



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CIE Case Study – Appendix D

4. **HealthShare NSW** –utilised CIE to manage all assets, including information assets and systems as well as classic clinical engineering. This example also shows a centralised system for 4 data centres can be managed through a single Enterprise system which creates efficiencies across all sites and allow cross-sharing and utilisation of assets delivering whole of system efficiencies.



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Appendix B

Case Study



**Monash
Health**

Monash Health

1 Company

Monash Health (formerly, Southern Health), a large Australian hospital network, utilised Hardcat Business Services to undertake a fixed asset audit and capture asset data for loading into their Hardcat fixed asset database.

2 Issue

The scale of the project was quite considerable, requiring Hardcat personnel to visit five major hospital sites as well as assorted community health centres.

The full range of assets, including medical equipment and instruments, physiological monitoring equipment, anaesthetic equipment, diagnostic equipment, as well as motor vehicles, furniture and computer equipment, had to be audited and entered into Hardcat quickly, without any interruption to the normal running of the hospitals.

3 Solution

Dianna Hill, Hardcat Project Manager said: "During the six weeks of the project, my staff barcoded 14,000 assets, with all relevant information such as location, serial number, etc, and entered them into Hardcat. After this, we reconciled the old system to the new data in Hardcat, and we balanced it to the cent. Some of the unusual areas my team were required to audit were the animal house and even the morgue!"

4 Benefits

Hardcat accomplished the audit in a professional manner, with no disruption to services for Monash Health patients, which was a priority to the Network.

Phil Whitmee of Monash HealthCare praised the work of Hardcat Business Services: "Dianna and her staff were able to accomplish the audit in a professional manner, with no disruption to services for our patients which was obviously of a priority to the Network. I would be only too happy to recommend both the Hardcat software as well as Hardcat Business Services to any organisation looking to control their assets."



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Appendix C

Case Study



Royal Melbourne Hospital Clinical Engineering Department

1 Company

Established in 1848, the Royal Melbourne Hospital (RMH) is one of Victoria's oldest and leading teaching hospitals operating across two city campuses. First rate equipment helps the RMH enhance the quality of health care provided to patients. Benefits include faster diagnosis, less invasive surgical procedures, and reduced hospital stays.

The Clinical Engineering Department's role is to ensure that all clinical equipment is maintained, tested, and in a reliable working condition at all times. This extends from electric power points to which the equipment is plugged in, through to the machinery and consumable parts such as batteries. A lot of the equipment is portable, allowing doctors to assess critical care patients in Emergency Departments, enabling the right treatment faster.

Over 13,000 individual assets are maintained by the department. The responsibility often lies within the department to ensure all equipment is thoroughly checked, repaired and recommended for disposal once past its working life.

The nature of equipment movement, limited number of expensive equipment units, and broad range of critical through to non-critical equipment, has meant that the Clinical Engineering Department are often under a lot of pressure to prioritise work in a time sensitive manner.

2 Issue

According to Ms Nicola Donaldson, Quality and OH&S Manager, Clinical Engineering Department, one of the biggest challenges was that they could not trust the integrity of the information on their old database. Although the equipment was barcoded prior to the introduction of Hardcat, there was no way of confirming where the equipment was, the status of its repair, or the ability to prioritise work.

Testing of equipment is often done in teams of two, following a two week cycle. Work order information was written up on sheets of paper, and manually re-entered when someone had time. When staff were away or repair work was not fully completed the first time around, it was difficult to know the procedural status for another person to pick up.



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"Access to some wards such as the Intensive Care Unit is difficult at the best of times. So the priority was to get people out there to do the repair, and then think about the paperwork after. This posed a risk to both the patients and the hospital." – Nicola Donaldson, Quality and OH&S Manager

With the limited number of resources – both staff and medical equipment, this issue had the potential to escalate out of control.

"Non-critical equipment risked being left on shelves for months, because we couldn't easily prioritise work. We also had problems finding the equipment on our old database due to keying in errors such as spelling and not being able to search on multiple fields."

Medical device recalls by the manufacturers or regulatory bodies are a common occurrence within the hospital, so being able to identify affected equipment and its current location posed a huge problem. The Clinical Engineering Department services 9 floors within the Royal Park campus, satellite clinics, and a number of Aged Care facilities.

3 Solution

Clinical Engineering Director, Mr Jack Davie, put a business case together for the Board of the Royal Melbourne Hospital on the critical need to upgrade their Asset Management database capabilities. The existing system was written in-house, and would no longer be supported.

The Collier Foundation kindly donated the funds required for a 2013 implementation, which included **Hardcat's Core Asset Register, Preventative Maintenance and Help Desk modules**, as well as **Barcoding/Catscan licenses** allowing for in-field Work Order Management via PDAs.

RMH assessed several different asset management solutions, before singling out their preferred supplier - Hardcat.

The solution had to be able to support 2 barcodes per asset – one for the Clinical Engineering Department, and the second for the Finance Asset label. It also had to solve all the Issues highlighted, as well as assist the department meet its KPIs which was to repair equipment within a designated timeframe.

Being ISO9001 accredited, there was a minimum requirement for the following reports to be generated both proactively, and upon demand:

1. Incident management reports – identifying the ticket number, job status, email trigger when jobs are completed, and the ability for feedback.
2. Canned reports for management use – with domain control, restricting the equipment shown
3. Clinical Engineering 'In Store' equipment reports – identifying which equipment is currently being held by the Clinical Engineering Department but owned by another department (ie Emergency/ Theatre / ICU). The reports had to be specific and relevant to the department, and produced at different times according to the reporting requirements of the owning department.

Hardcat met all of the criteria, with ongoing development scheduled for a multi-stage roll out.





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4 Benefits

"Before, we were working for the database, whereas now, the database works for us! Having Hardcat has got rid of truckloads of paperwork."

The Clinical Engineering Department's reputation was a risk due to their inability to know where assets were, its repair status, and not knowing how to prioritise work with limited resources and access to wards.

Hardcat's solution has provided:

- Support mechanism for OH & S checklists, which now appear as presets. Easy to manage, and assurance procedures are being followed.
- Ease of finding out an asset's location and repair status, at anytime, by anyone in the department.
- Ability to accurately track equipment and raise alerts when maintenance is due. Proactive asset management rather than reactive – which can pose unnecessary risk to patient care.
- Time efficiencies and an always up-to-date database, via the effective use of PDA's. Repair procedures can be checked off in real time and synchronised out in the hospital wards or in a matter of seconds upon attaching the PDA to a synch dock.
- Ability to prioritise Work Orders based on Critical versus Non-Critical equipment status. Things are not left on shelves for months, or lost. Technicians can't just pick and choose.
- Ability to set repair procedures within the Work Order, and to know which step has been completed, or yet to complete should a repair job have to be suspended due to equipment access (ie. In ICU or Emergency departments).
- Efficiency gains achieved through visibility of replacement cycles and accurate forecasting of costs. *"Batteries are expensive – often \$400 each and 2 batteries required per device. That's \$'000's of dollars per year just on batteries."*
- Supports ISO9000 process. Inbound complaints are now handled more effectively. Transparent, responsibility spread throughout the department, and ensures proper follow up. Anyone can look up a case and know its repair status. Who repaired it, When, and the procedure followed.
- Hardcat's ability to "Copy a job" has resulted in hours of time saved in re-keying in repetitive processes. Time efficiencies – what used to take hours, now takes seconds or minutes



Another unplanned benefit for the Clinical Engineering Department has been the ability to now on-charge other departments for repairs and maintenance. This was never possible on the previous system. Equipment ownership is tracked by cost centre number, which is part of each asset record.



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"We take the Hardcat data and give it to the Finance Department. It has been so reliable that RMH plan to use the information we can pull out of Hardcat's Asset Management Register for next year's forecast budget."

– Jack Davie, Director – Clinical Engineering, Royal Melbourne Hospital

5 Reasons for choosing Hardcat

- Supports ISO9000 procedures – easily and with minimal fuss
- Fast and easy deployment as a solution
- Speed – speed of searching, reporting, logging jobs and repair status
- Team efficiencies – no one needs to be an expert to use the Hardcat system. Once it is configured for our procedures, the system is intuitive.
- Mobility solution. Catscan and PDAs save hours of unnecessary back office work.
- Ability to pull cost information (cost codes) from other systems into Hardcat, so we can allocate charges more reliably

6 The Savings

- Man hours for mandatory audits reduced by approx. 70%. This has meant surpassing the Department's KPIs of "85% repair on time" by 8-9% each period.



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Appendix D



HARDCAT
ASSET MANAGEMENT WORLDWIDE

Case Study



Health Share - Health Department hardware tracking

1: Company

HealthShare NSW is a state-wide organisation established to provide high-quality shared services to support the delivery of patient care within the NSW Health system. Our successful and sustainable business solutions ensure ongoing improvement, increasing levels of efficiency and greater savings for NSW Health. One of HealthShare's responsibilities is operating and maintaining the Departments 4 Datacentres distributed around the State.

2 Issue

The vast quantity of Hardware and IT Components that are housed within the Data Centres are supplied through two Vendors. In servicing all the Health Departments Business Units throughout the year there is a constant stream of activity, adding new hardware, additional capacity and upgrading units.

Tracking orders for new Hardware against available capacity/hardware was difficult and capturing details of Hardware being replaced was difficult to record. Tracking all of the hardware movements has been very difficult and reconciling what's currently utilised against Vendor records has proven costly and time consuming.

HealthShare identified system requirements including hierarchic asset structure, unique identification for every asset and the ability to easily record movement had to be able to process a range of reports for the various Departmental Stake Holders.

Following an extensive search and review process, HealthShare selected Hardcat as the best solution to meet their requirements.



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3 Solution

HealthShare engaged Hardcat to complete an upload of the existing Asset Register followed by Project Manage a comprehensive audit across all four locations. The comprehensive audit allowed them to find a range of assets which weren't previously in the registry and identified assets in the asset register that were no longer in use.

A centralised asset register provided visibility of the full range of assets and introduced a range of immediate benefits including lifecycle management and better resource planning.

4 Benefits

HealthShare has achieved enormous efficiencies in its operating procedures by using the Hardcat Asset Management Solution. Significantly reducing the time taken to audit the assets per location has provided the accurate and timely information needed to manage their asset planning and resource management. Hardcat's Solution has freed up operational time considerably and at the same time produced significant saving in annual hardware costs. The implementation of Hardcat's solution has produced immediate Return of Investment for HealthShare.

HealthShare has been able to get buy-in from stakeholders across the organisation because they can now see that effective management is saving money, create efficiencies and making their jobs easier. With the successes achieved in its data centres, HealthShare is now exploring options to extend Hardcat across other operational areas.

5 Reasons for choosing Hardcat

- Ability to easily configure Hardcat to suit their requirements
- Fast and easy deployment as a solution
- Ability to complement existing large systems
- Fraction of the cost of large corporate enterprise systems

6 The Savings

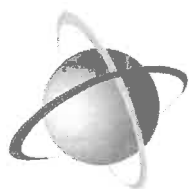
- Man hours for mandatory audits reduced by approx. 70%. An annual savings of approx. \$85,000
- Facilitated greater bargaining power for both new and replacement planning contracts with Hardware Vendors. Savings in excess of \$100,000 in the first year.

Appendix A

FINAL REPORT

Genesys Patient First

Northern Hospital



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Introduction and overview

Genesys Patient First (GPF) is a technological solution which improves the operations of hospital emergency departments. This technology has wide application in a health care setting from patient admission to discharge in emergency and elective circumstances.

GPF improves the productivity of existing resources and allows the better targeting of efforts to improve performance. It improves productivity by allowing healthcare professionals to focus on patient care and not administration by automating processes and pushing notifications. It allows better targeting of resources by providing improved depth, clarity and granularity of data, without that process interrupting operations.

The quality and scope of data collection allows resources to be productively used and targeted, both in the hospital and across the health system.

From substantial trials, pilot and use of GPF, it is clear that its use:

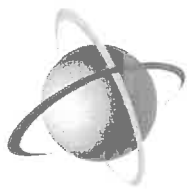
- Makes data actionable, relevant, “real-time” and highlight gaps in collection;
- Improves the quality of the patient record and data collection;
- Increases the responsiveness of treatment;
- Lifts the productivity of staff;
- Allows for better allocation of resources to improve outcomes; and
- Average waiting decreases when following GPF Process.

In this report on the use of GPF at Northern Hospital you will find:

- Background to the trial;
- A brief capability outline for GPF;
- Project overview;
- Key benefits identified from the trial;
- Healthcare worker observations.

Appendices which provide a further suite of materials to further detail the trial and the product are attached.

The trial was funded by the Federal Department of Health and Ageing and this report is provided to them with thanks. Genesys is proud to have been involved in the conception and delivery of GPF and is hopeful of being able to work with Australian governments to see its further utilisation in a range of health settings. In doing so, we aim to improve the health outcomes for individuals and to maximise the benefits from health expenditure in a constrained budgetary environment.



1. Background

The vast catchment of Northern Hospital, in one of the fastest growing regions of Victoria, makes their emergency department among the busiest in the country. It treats more than 70,000 patients annually, more than double the demand it was designed to meet¹.

It is a service under pressure, meaning that the efficient use and allocation of resources is vital if the patient journey is not to be marked by delay and discomfort. The need to treat patients at most acute need – in an emergency setting – could not be a greater challenge than it is at Northern. It is only by virtue of the outstanding efforts of healthcare workers in the hospital that the patient experience is an acceptable one, yet even these efforts sometimes cannot meet demand.

In a week when Genesys Patient was operational at Northern Hospital, the hospital received unwanted media focus, with more than 100 patients reportedly leaving because they could not receive attention. The hospital was said to be experiencing “bed shortages and blown out waiting times”².

The operation of hospital emergency departments is continuing to receive a concerted public policy focus, the aim to ensure the maximum number of patients receive quality treatment in a timely fashion with the avoidance of negative feedback on the state of the health system. It is a matter of concern and interest to the community, stakeholders and policy makers.

The government of Victoria is implementing a strict program of key performance indicators referred to as the National Emergency Access Targets (NEAT).

All emergency departments (EDs) must meet targets which require that 90 per cent of all patients that present to a public hospital ED will either:

- Leave the ED for admission to hospital;
- Be referred to another hospital for treatment; or
- Be discharged within four hours.

These targets are to be achieved by 2015, with staged targets adopted on a year-by-year basis³.

The current performance of Northern Hospital’s ED underlines the need for improvement, not only to meet NEAT by the mandated target of 2015, but also to meet community expectations:

- On an average day, some 220 patients enter the ED;
- Overall NEAT times 56% needs to move to 81%, in accordance with adopted targets for this year;
- Approximately 10 patients an hour are waiting for a bed;

¹ Northern Health (2014), *Emergency Department*, <http://www.nh.org.au/services/emergency-department> last accessed June 9, 2014.

² 3AW (2014), *Things cannot continue as they are*, <http://www.3aw.com.au/blogs/neil-mitchell-blog/things-cannot-continue-as-they-are/20141003-3h6yl.html>

³

My Hospitals (2014), *Hospital Performance: Time patients spent in emergency departments in 2011–12*, <http://www.myhospitals.gov.au/publications/time-in-emergency-department/december-2012/report/introduction>, last accessed June 10, 2014.



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- Approximately 70 per cent of patients need medical attention and the current system is only seeing six people per hour attended to;
- Clerking creates a wait for the patient for at least 5 minutes⁴.

An ED which performs to expectations is vital in keeping faith with community expectations of access to health care at times of acute need. The above statistics underline that, in the case of Northern Hospital, much work is to be performed in order to achieve NEAT and to effectively discharge the responsibilities of the health service to the wider community in line with their expectations of access and service delivery.

While the government is committed to investing in Northern Health and addressing burgeoning need, the appropriate targeting of expenditure is made difficult by the inadequate nature of the data which has been available to date. While the physical infrastructure can be improved, it can be best improved by an improved and developed knowledge of the lived experience of the ED and where any leakage of productive effort may be occurring. The improved data collection which GPF provides is a key tool in driving and refining where meagre taxpayer funds should be invested.

⁴ Data provided by Northern Health.



2. About Genesys Patient First

Genesys Patient First (GPF) enables automated task distribution through, and communications with, the existing emergency department patient management information systems through the use of hand-held tablet technology by healthcare workers.

It represents the best in user-friendly, modern technology brought to optimise healthcare delivery in Australia. It is designed to immediately improve the efficiency and productivity of ED staff and to also provide health decision makers the tools they need to improve ED performance. It has immediate and long-term, system wide and local benefits.

It is important to understand, that GPF does not replace key medical systems such as ED Information Systems, Patient Administration Systems, Radiology and Imaging Management Systems. It is complementary where an existing system exists and can “fill the data gaps” where there is no system. GPF provides a granular, contextual view of the patient journey from start to finish by tracking and monitoring all activities along it.

Seamless task allocation and data collection

Tasks are allocated utilising the Genesys intelligent workload distribution system (iWD). The system manages patient interactions with healthcare workers and assigns tasks as necessary. An application used by healthcare workers at patient interface, utilising tablet technology, collects patient data for the Emergency Department Information System (EDIS), alerts healthcare workers of patient needs through push notifications and allows the flow-back of data from patient interactions. GPF is a system which allows for tasks to be automatically pushed and data to be seamlessly uploaded and used to enable patient care and resource allocation. Patient care represents a flow of information, with the healthcare workers the care provider, not the administrator.

GPF can collect a depth of data which has hitherto been unavailable. Without this data, hospital administrators were unable to make best informed decisions about resource allocation. It collects this data while lessening the administrative burden on ED staff, and is easily expanded to incorporate new data capture points and to integrate new systems.

Fast-track to EMR delivery

GPF is the fast path to delivering Electronic Medical Records (EMRs) as it does not require intensive systems integration efforts. It works with ‘data dips’ and the matching of key value pairs to enable prompt collection of patient data. As identified in section 5, GPF has resulted in high levels of record submission when compared to other projects.

Secure, cloud-based

GPF brings all the convenience of cloud-based technology, with no related security concerns. The capital outlay and infrastructure requirements for establishing GPF are minimal. Charges for the system are based on the number of patients in the system over a given time. Security is assured by no data being transmitted to the cloud, meaning patient information is stored on-site and secure at all times. The administrative



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burden on in-house hospital information technology staff is reduced as the system is remotely managed through the cloud.

A use of the best in modern technology to get optimal results from the healthcare workforce, GPF allows healthcare practitioners to focus on performing their jobs, reducing administrative burdens by streamlining patient interactions, records and needs across a shared platform. Patients most at need receive attention as a priority and productive time is focussed on quality care.

GPF enables automated task distribution through, and communications with, the existing emergency department patient management information systems through the use of hand-held tablet technology by healthcare workers.



3. Project overview

Following is a summary of the scope of the trial, the system itself, as well as information about the parameters of the trial.

The trial and pilot

Northern Health has embarked on a redesign effort for the ED and Genesys Business consulting has participated in the redesign process. Previous attempts to change ED process, the most recent in December 2013, resulted in a short-term increase of patients treated, however the new process did not progress beyond the initial trial.

The GPF application was delivered as part of the testing of newly defined processes in the Northern Hospital Emergency Department. Initial tests were conducted on the 14th and 29th May in the afternoon shift for limited periods of several hours. This approach was taken to enable staff on shift to become familiar with the new processes and technology and to ensure that the new processes were manageable.

A trial was restricted to the green area (Early Assessment Area, at **Appendix B**) as the higher throughput area to other streams and or discharge. This allowed the process to be refined and staff to become comfortable in the execution and change in technologies to assist Northern Health ED to reach and report on NEAT. The key challenge in the ED is to process the patient out of the green area as quickly as possible thus freeing up ED resources to treat and triage new arrivals.

Under redesigned processes, a funnel of patients is created through early assessment in defined categories. The process front end loads the patient treatment decision process by ensuring the most experienced staff make initial assessments. This will result in dramatic improvement in the length of stay and stay variability.

Duration

GPF roll-out was scheduled to coincide with deployment of the new ED processes on 14 May 2014 and consisted of five stages as follows:

STAGES OVERVIEW

1. Enable Hospital – system readiness

In this stage, Genesys worked closely with Northern IT staff to ready IT systems and configure the Genesys solution.

2. System Testing

In this stage, the technical testing of the solution and the integrations was conducted. The devices supplied as part of the pilot were tested and configured.

3. Medical Staff Training and method of training

Training was delivered to Northern Health Staff

4. Pilot Operation



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- a) Initial trial
- b) Trial outcome brief
- c) Pilot live with iterative change

5. Data collection and Reports

During this phase, the data collected during the pilot will be analysed and interviews conducted with users to document impacts of the system on both patients and the processes themselves. The presentation detailing the outcomes of the trial will be made to Northern Health and Dept. of Health stakeholders along with the delivery of this final report.

The process

Staff have used the GPF application on Android tablets to receive notifications and to enter initial assessments and treatment plans at patient bedside. The following details and gives examples of how GPF has been used in Northern Hospital's ED.

a. PATIENT ARRIVE

The first step in the Patient Journey us to arrive at the Northern Emergency Department via:

- Walk in
- Ambulance Vehicle Entry (Some patients have pre-notification if they have been determined as a category 1 or 2 by the Ambulance)
- delivery from general, intensive care, surgery and mental health

b. TRIAGE - PATIENT FLOW (STREAMING)

The triage step is to start a baseline of observation and document the presenting condition and a requirement under Victorian Health regulations

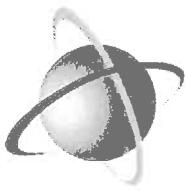
Patients are categorised based on a numerical 1 through 5 (with Cat 1 being the most urgent case) during the initial medical Triage assessment of the presenting condition. The presenting condition of defines the critical nature of the category, with direct questioning and observation will determine the severity of the nature of the presenting condition.

Once Triage is complete Genesys Patient First retrieves critical patient information to prompt decisions later in the process.

This information retrieved contains (but not limited to)

- Name, DOB, Age, Address
- Presenting condition and nursing Assessment
- Supporting Documentation (is Highlighted)
- Method of arrival
- Current Location

c. REGISTRATION



Registration is a mechanism for the Emergency Department to know who and what are presenting. It also creates the patient's identity within the ED so that treatments can be executed. This process is the responsibility of Northern Health Staff

d. LOCATION - WAITING AND CONTINUING VISIBILITY

Genesys now provides complete visibility of Patient's information (including UI), and there current location

On the majority of cases a patient will enter a Waiting room after triage is complete. Genesys Patient First Tracks and monitors all locations and time in locations from here.

An example of a single patient's location journey until Discharge, Admission or transfer

Time In Location	Time Out of Location	Location Code	Location Description	Time in Location (minutes)
23/09/2014 11:44	23/09/2014 12:46	YWR	YELLOW ZONE WAITING ROOM	62
23/09/2014 12:46	23/09/2014 14:20	Y02	Y02 YELLOW CUBICLE 2	84

e. THE TIME NOTIFICATIONS

The Patient will have timers placed against it prompting

- every 60 minutes for an observation to senior nursing staff, and
- 2 hour notification for treatment to commence to senior medical staff
- 2 and half hour notification prompting for a decision or a recommendation to treating doctor

f. TREATMENT

A Medical professional will take defined steps to confirm the presenting condition

➡ BACKGROUND AND HISTORY OF PRESENTING COMPLAINT

Through a series of observations, questions the background and history will be taken to include

- **Presenting Complaint** - Confirmation of why the patient is within the ED, and what they are complaining about
- **History of Presenting illness** - How this presenting complaint occurred
- **Social History** - Does the patient have any social history that may have an influence the presenting condition e.g. Smoking or Drinking Habits
- **Environmental history** – Does the patient have any work / life history that may influence the presenting illness e.g. Housing, work performed

➡ ASSESSMENT

- **Assessment and Impression** - In taking the Background and History a medical professional will make a differential diagnosis (or question what there impression of the condition) to confirm a potential condition



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➔ RECOMMENDATIONS AND PROGRESS REVIEWS

- **Recommendation** – An initial Recommendation on where the patient is likely to move after Treatment is complete
- **Progress Review** – Any further notes that need to be entered will be added as a progress review (including Nursing assessments)

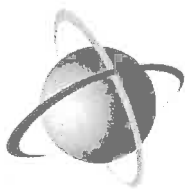
g. CLINICAL TESTING RESULT NOTIFICATION

Any clinical testing performed a HL7 message is sent from the source system. This message is received by Genesys patient first and turned into a Notification to the Treating Doctor and escalated to senior Medical staff if not actioned. The idea is to remove the need for manual checking of results by the Medical Staff so that they can put into action any results.

Examples of Clinical testing notifications received

- **Pathology Results Ready (both interim and Final)**

CLINICAL NOTES:					
GENERAL CHEMISTRY			SPECIMEN: SERUM		
Date:	10/08/14	04/12/13	21/03/12		
Coll. Time:	17:30	19:48	NS		
Lab Number:	2307509	4702576	0359022		
<hr/>					
Sodium	139	142	142	(135 - 145)	mmol/L
Potassium	3.7	3.6	4.5	(3.5 - 5.2)	mmol/L
Chloride	108	109	106	(95 - 110)	mmol/L
Bicarbonate	23	23	21	(22 - 32)	mmol/L
Anion Gap	12	14		(5 - 20)	mmol/L
Urea	2.9	1.9	2.5	(2.5 - 8.0)	mmol/L
Creatinine	49	45	58	(45 - 90)	umol/L
eGFR	> 90	> 90	> 90	eL/min/1.73m2	
T.Protein	76	69		(60 - 82)	g/L
Albumin	42	38		(35 - 50)	g/L
Globulin	34	31		(20 - 39)	g/L
ALP	105	89		(30 - 120)	U/L
Bilirubin	7	5		(< 25)	umol/L
GGT	108	25		(< 51)	U/L
AST	41	17		(< 41)	U/L
ALT	95	21		(< 41)	U/L
<hr/>					
pending					
General Biochemistry Reference Ranges are being reviewed and harmonised in line with draft recommendations from Expert Australian bodies (RCPA/AACB).					
REF: W QUA-V LSE-C CRP-C BSI-W HAE-W					
This request has other tests in progress at the time of reporting					
Test Type	Value	Units	Ref.Range	Normality	Status
Sodium	139	mmol/L	135 - 145	NI	P
Potassium	3.7	mmol/L	3.5 - 5.2	NI	P
Chloride	108	mmol/L	95 - 110	NI	P
Bicarbonate	23	mmol/L	22 - 32	NI	P
Anion Gap	12	mmol/L	5 - 20	NI	P
Urea	2.9	mmol/L	2.5 - 8.0	NI	P
Creatinine	49	umol/L	45 - 90	NI	P
eGFR	> 90	ml/min/1.73m2		NI	P
Total Protein	76	g/L	60 - 82	NI	P
Albumin	42	g/L	35 - 50	NI	P
Globulin	34	g/L	20 - 39	NI	P
Alkaline Phosphatase	105	U/L	30 - 120	NI	P
Bilirubin (Total)	7	umol/L	< 25	NI	P
Gamma-GT	108	U/L	< 51	NI	P
AST	41	U/L	< 41	NI	P
ALT	95	U/L	< 41	NI	P
General Biochemistry Reference Ranges are being reviewed and harmonised in line with draft recommendations from Expert Australian bodies (RCPA/AACB).					



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■ Radiology Results Ready

Result Details

Service: Abdomen

Collected: N/A

Test #: 9740449E1

Received: 201408311056

Ordered By: Dr SAM HUME (237320AA)

Test Status: Final results

PLAIN ABDOMINAL X-RAY

Clinical Notes

?Faecal loading.

Report

Faecal material was noted in the ascending and descending colon and the rectum.

Bowel gas pattern was otherwise non diagnostic. No free intraperitoneal gas seen.

No significant skeletal or soft tissue changes are identified.

h. PATIENT DISCHARGE / TRANSFERRED / ADMITTED

The patients presenting to a public hospital ED will physically leave the ED for admission to hospital, be referred to another hospital for treatment, or be discharged.



4. Key benefits identified from the project

The use of GPF at Northern Hospital has demonstrated that it has the capacity to improve patient experience in hospital, the productivity of staff and their job satisfaction as well as providing vital additional volume and clarity of data to allow the better allocation of resources at the hospital and across the health system more broadly.

GPF improves the productivity of existing resources and by gathering better and deeper data, allows the better targeting of efforts to improve performance.

Extensive use over a now protracted period of time has allowed for the collection of extensive empirical data and anecdotal feedback on GPF, as well as far-reaching data from GPF use on ED operations. This data has allowed precise identification of areas of operations which require further attention and will allow for improved operations of the ED in the future.

From substantial trials, pilot and use of GPF, it is clear that its use:

- Makes data actionable, relevant, “realtime” and highlight gaps in collection;
- Improves the quality of the patient record and data collection;
- Increases the responsiveness of treatment;
- Lifts the productivity of staff;
- Allows for better allocation of resources to improve outcomes; and
- Average waiting decreases by five per cent when following GPF Process.

GPF shapes as an important tool for healthcare providers and policy makers alike.

Improved data for better resource allocation

The Department of Health and Ageing and the Victorian Government has set down a series of key metrics under the Neat Process standards. The project conclusively demonstrates the impact of real-time insight into task-time capture and workflow notification against these KPIs, allowing for improved analysis and weighting of resources as well as improved sharing of data in an efficient manner, specially:

- The opportunity to identify the true cost of activities and to shape and inform future Activity Based Costing models and negotiations;
- Access to dynamically created data for use in improve National Emergency Access Target (NEAT) performance by end of an episode;
- The potential for a standardised tool to assist comparative benchmarking; and
- Provision of an immediate and tangible patient and treatment benefit from the *personally controlled electronic health record (PCEHR)*.

The trial demonstrated great benefits for the integrity and production of Electronic Medical Records (EMRs). After two weeks using GPF, the ED reported 87% record submission, a vast improvement when compared to other EMR projects which were of much greater duration.



As well as improving productivity and compliance, the granularity and transparency of the data that the GPF solution has made available to the hospital is far beyond what is accessible at present. Examples of the data and metrics that are now easily available to the hospital and health system more broadly are outlined at **Appendix E**.

This improved collection and reporting on data has the capacity to improve and focus resource allocation in the hospital to allow the greatest number of patients to be treated with the optimal number of staff, at the appropriate times, performing duties which are most required at those times. It has further capacity to be a key tool in future deliberations about Activity Based Funding for hospitals and the models that support them, with the depth of data available potentially allowing for more detailed, prescriptive and accurate funding.

The new levels of data are now also able to be used for analysis of patient journeys through emergency and the hospital. In the future, this can be then used to assess doctor performance and areas of inefficiency within the patient journey. Preliminary analysis conducted to date around these new data points have also been included in **Appendix E**.

Further treatment for patients will be enhanced, as will diagnostic tools and historical data available for clinicians, through the increased scope of data available in a patient's PCEHR through the Medicare local/discharge summary linkage.

Data was collected using both GPF and the existing system. Differing data points available under each system are demonstrated at **Appendix F**.

We have available to us a depth of data collection points, highlighted by two areas of marked improvement:

1. The EMR

- a. The key times and steps taken to get an interim or final impression
- b. The communication of these steps
- c. Care bundle commencement to the next stage
- d. Comparison of condition at triage, to interim impression to final discharge disposition

2. The notification

- a. The sample taken
- b. The sample interim results ready
- c. The results being read and understood
- d. Patient management

This represents a marked improvement on the simple measures which we would previously been forced to rely on, such as:

1. Ambulance offload
2. Time to triage
3. Time to treatment
4. Time to discharge



These represent uniform markers with insufficient depth to allow analysis for resource allocation or to improve performance.

This improved collection of data has allowed the identification of some notable disparities. It has identified that the process of discharge to hospital requires further focus to improve the performance of the ED.

This is elaborated on below:

- Time to discharge to ward has a near treble duration than the time to discharge to home and has a 1.5 times higher standard deviation;
- Time to discharge had a ten per cent less standard deviation when following GPF process;
- Time to final recommendation of admission to ward is 2.5 times less than time to discharge;
- This is consistent across the top 26 discharge diagnoses.

Data collection: tests conducted – pathology

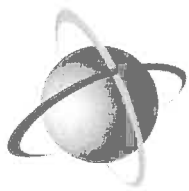
Average number of pathology tests performed	
Discharge Home	Discharge to Hospital Ward
2.5 Tests	10.5 Tests
Average time to first test group from arrival is	
Discharge Home	Discharge to Hospital Ward
103	80
Average time to partial results of first pathology test is	
Discharge Home	Discharge to Hospital Ward
124	92

The average number of **radiology tests** performed when a patient is admitted to ward is **1.3**, as against the average number of radiology tests when a patient is discharged home: **0.6**.

Interesting to note here is that the use of GPF has picked up a discrepancy in the pathology reporting as an average test time of 12 minutes would appear insufficient to physically complete the testing of pathology samples.

Average number of locations a patient will be in

Discharge home average number of locations	Discharge to hospital average number of locations
--	---



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2.5 Places

3.3 Places



Specific Northern Health Benefits

Genesys Patient First has provided the Northern Hospital these benefits

a. REMOVAL OF PAPER AND SUBSEQUENT SCANNING OF THE PAPER

The "CAS card" out of EDIS is no longer required, removing

- At least 2 sheets of printing per patient
- The collation of these sheets by Clerical staff on discharge
- The transport of the Medical record for Scanning
- The Physical Scanning of the Record
- Automatic submission into CPF

b. COMMUNICATION, CONSISTENCY IN LEVEL OF MEDICAL RECORD CONTENT AND TRAINING

The Medical record provides

- Legible content, stamped with time and name of medical staff entering information
- A standard format for entry of information (providing Junior Medical staff a methodology for differential diagnosis)
- Teaching opportunities on the content required in a medical record, improving time for information entering (i.e. No war and peace)
- Automatic Submission of records available to the ward in CPF (no longer waiting for scanning)

c. USER INPUT FOR IMPROVEMENT AND STAFF OWNERSHIP

Feedback has been taken from medical staff and has been adopted in the look and feel over the four iterations of Genesys Patient first. This has enabled them a voice to highlight concerns and provide feedback

d. RECORD SUBMISSION AND INCOMPLETE NOTES

Moving from Paper notes to a complete medical record required all information to be added to the central document electronic storage system "Infomatics" or locally known as "CPF". Clinical risk and document availability has been high on the trial risk register during the current deployment of Genesys Patient first.

It was discovered that due to work load the treating clinical personal where not often informed when the patient was discharged /transferred / or admitted to another area from the hospital. Northern health where Best in class running around at 13% of failure to submit records, but this still not all records where submitted into the electronic storage system. The process when followed required some format changes. This halted the trial so that a process could be developed

During this time a map of current paper Medical record process highlighted and can now measure the clinical risk of the process.

- of the 13%, only 4% actually had no notes written, 3% where partially complete, and the remaining 6% could be submitted
- Paper records of patients that had no notes were placed in pigeon holes and never checked



- If a record was missing information that was required for investigation, only notes that where entered into EDIS where copied across
- Patients that Failed to Wait for treatment made up another 14% during the trial

To lower the risk to acceptable levels and to provide the ability to coach medical staff the Modifications have been made that all records will be submitted after 24 hours.

e. INTEGRATION INTO CLINICAL TESTING SYSTEMS AND NOTIFICATIONS ON PARTIAL AND FINAL RESULTS

System-wide opportunities

While GPF's implementation has great immediate benefit for the hospital where the trial took place, it has the capacity to provide for enormous systemic benefits for EDs if implemented widely.

By being able to identify best-practice and the driving factors behind it, public policy levers can be used to ensure that measures are implemented across the system. Likewise, where EDs are under-performing, administrators will be able to identify the causes. The improvement in the quantity and quality of data available on ED operations through GPF stands to allow improved knowledge, focus and clarity of decision making and accountability for EDs.

It is important to note, that whilst these data point represent current improved levels of data available, this is not an exhaustive list. As connections to more systems are added, further additional data points will be available. Already identified for Northern, is connection to and provision of electronic ordering of pathology and medical imaging. Once these connections are made, then those data points will be collected and tracked by the Genesys Patient First system. This will then provide additional benefits in terms of automated tracking and escalation of urgent patient results and the potential to prioritise requests based on patient categorization or any other metric that the system collects.

System-wide implementation could allow for the development of more advanced and targeted funding mechanisms which recognize and reward best practice and enable the effective targeting of funding to ensure that the best possible results are gained from investment.



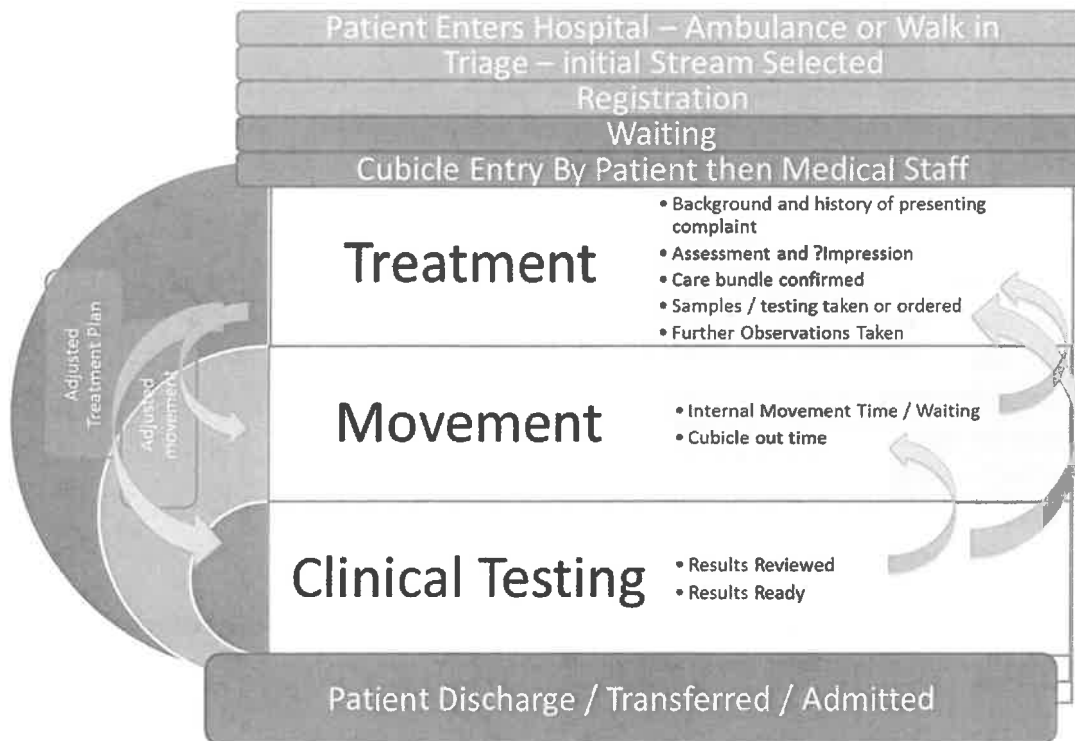
5. Improved Efficiency through Patient Flow & EMR

The term flow describes the progressive movement of products, information and people through a sequence of processes. In simple terms, flow is about uninterrupted movement, like driving steadily along the motorway without interruptions, or being stuck in a traffic jam.

In healthcare, flow is the movement of patients, information or equipment between departments, staff groups or organisations as part of a patient's care pathway. It is

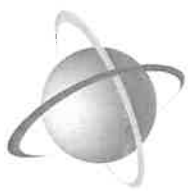
Patient Flow

All patients will go through consistent steps to complete required care each with a metric and target associated against it.



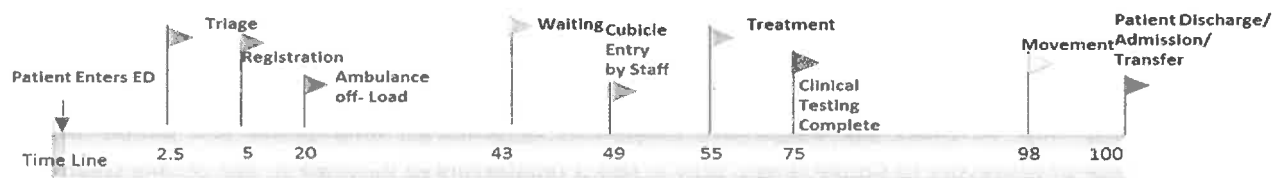
A Patient can also go through multiple iterations of Treatment, Movement, Testing, Results and Review. These iterations occur as part of a treatment bundle (differential test), but the number of iterations are also affected by the length of Stay a patient is experiencing (i.e. tests may have to be conducted again if the patient is in the department too long waiting for a bed in a hospital ward or awaiting surgery).

Metrics and the Impact of these changes on patient flow



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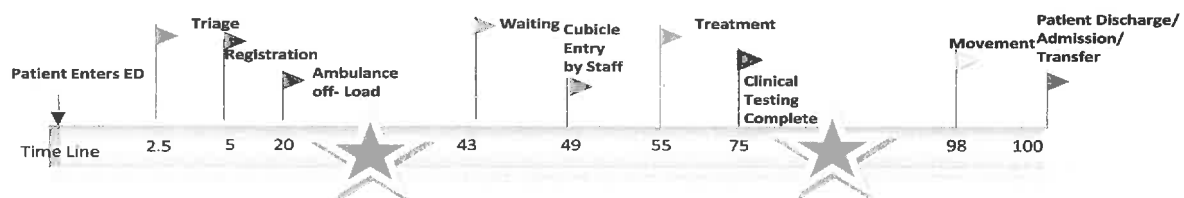
As a patient moves through the Emergency department events are time stamped in a sequence of when events occur critical to discharge/transfer/admission. These critical events have an indication of factors, processes and sub process on how the Department is performing

These can be reflected in metrics such as

- Time to Triage (A Victorian Government requirement)
- Time to initiate treatment
- Ambulance off-load
- Registering Clerking responsibilities and labels printed
- Emergency Bed or chair availability (occupancy and capacity measure)
- Bed Block - Occupancy is greater than capacity
- Treatment type
- Treatment Plan execution
 - Radiology
 - Pathology
 - Pharmacy
- Discharge Process
- Referral Process
- Ward Bed Availability
- Staff availability
- Equipment availability

Often in the data the Northern hospital could see the metrics required but the in between and the contents of decision was often lost in the paper it was written on.

The Case for a medical Record – Contextual information



Interestingly, whilst not part of the original targets for improvement within the trial, it became necessary to quickly develop a process for electronic medical record to facilitate the process improvements. GPF is the



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fast path to delivering Electronic Medical Records (EMRs) as it does not require intensive systems integration efforts. It works with 'data dips' and the matching of key value information to enable prompt collection of patient data.

As stated previously, GPF does not replace key medical systems such as ED Information Systems, Patient Administration Systems, Radiology and Imaging Management Systems. GPF simply provides a patient and doctor centric view of this information, which delivers context to decision making. In addition, it adds tracking and task-related management of key data points to provide a holistic view of the patient journey. This enables medical staff to ensure that all patient information is considered during the clinical process and key tasks are completed in a timely manner. This contextual data then assists them with managing patient outcomes, communication and efficacy within the hospital.

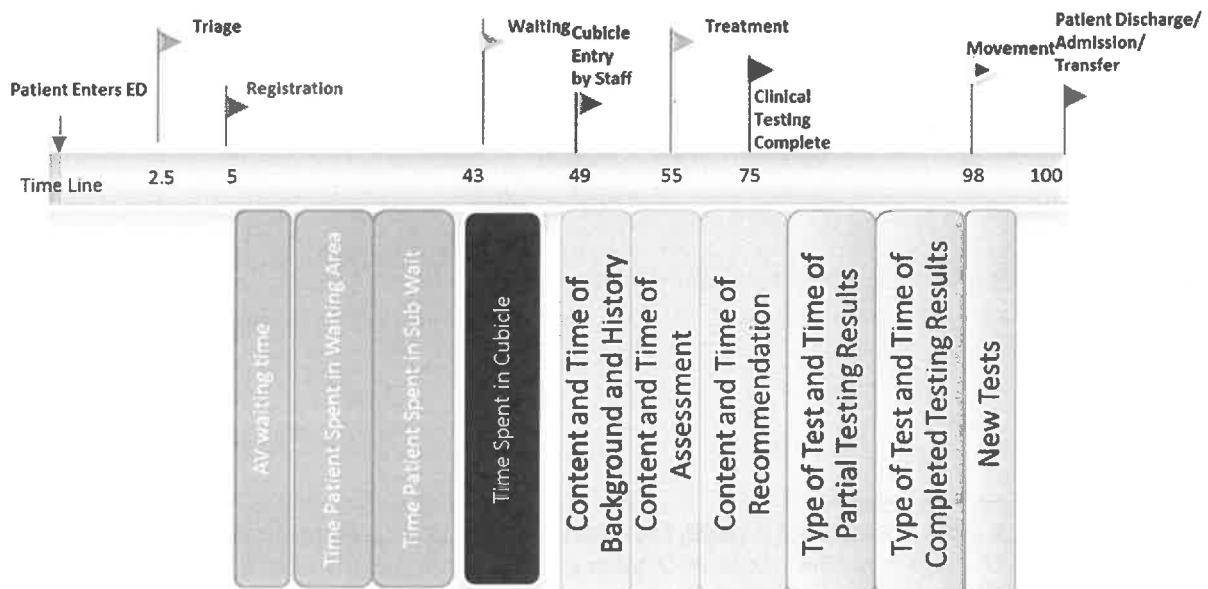
To provide this GPF captures;

- when and where a patient moved
- When critical contextual information was entered and its content
- Immediately identify when the results of testing are ready and notify treating medical staff
- Provide context to variation from presenting condition to discharge

The electronic medical record ensures that all records contained

- Base information
- highlight variance and provide consistency
- As an educational tool,
 - medical record format enables Junior medical staff a well-developed style and format.
 - Enable the senior medical doctor to train junior staff to provide consistent concise medical record entry. (Overcome war and peace)
 - Prompt the journey, prompt the individual at key times

Adding Genesys Patient First we start to add more context, both real time and historically, to the progress of a patient and the status of resource availability





Electronic Medical Record

The improved collection of EMRs and depth and integrity of data available in the PCEHR is an important benefit for providers in delivering the best available targeted health care. This benefit is most felt by the patient at time of need with portable records of health care improving communication and health care outcomes.

The promise of the Electronic Medical Record is not new, but to date it has proved extremely difficult and costly to get even partway down the path to implementation. There have been numerous examples of EMR project failures both within Australia and globally, with studies showing that 30% of all EMR projects fail⁵. Even when successful, the length of time to implement is usually measured in years and costs measured in millions of dollars.

Interestingly, whilst not part of the original targets for improvement within the trial, it became necessary to quickly develop a process for electronic medical record to facilitate the process improvements. Due to the "light-touch" nature of the GPF application, this was able to be achieved in a short period of time (2 months) with a high level of compliance (87%). An example of the EMR output from Genesys Patient First is included at **Appendix F**.

Whilst currently the EMR produced is for the Emergency presentation only, once GPF is connected to additional systems within the hospital, this EMR can be expanded to include other information, to give hospitals and primary care providers the visibility of the patient journey throughout the hospital and beyond to outpatient and any allied services provided as a result of the acute episode.

GPF has the capability to be an important foundation to a system-wide improvement in the operations of EDs and hospitals in Australia, restoring public confidence whilst giving greater integrated control and knowledge of the implications of public policy decisions and the funding of them.

Given the expense of recent similar EMR implementations, this presents a potential significant opportunity for improvement; especially given the cloud delivery model negates the need for an substantial upfront investment of capital.

⁵ Smelcer J., Miller-Jacobs H., Kantrovich L. (2009, Feb) Usability of Electronic medical Records, *Journal of Usability Studies* Vol 4. Issue 2 pp 70-84 retrieved October 2014 http://uxpajournal.org/wp-content/uploads/pdf/JUS_smelcer_Feb2009.pdf



6. Healthcare worker observations

The response from trial participants has been overwhelmingly positive. Health care professionals overwhelmingly have endorsed the technology as a means to allow more effective use of their time, to ensure patient needs are addressed in a timely fashion and to treat the greatest possible number of patients in need at any given time.

The automated notifications proved to be of particular benefit to the physicians, enabling a much faster response to test results, which then resulted in patients receiving follow-on treatments and treatment plans much sooner than they would ordinarily. A secondary benefit to the automated notifications for the physicians was the assistance provided in managing their workload and competing priorities of patients. Emergency physicians reported the mobility delivered by the GPF app and the transparency of the information provided through the solution and notifications.

The reliance on outperforming healthcare staff has its limitations as a response to burgeoning demand, but allowing healthcare professionals to perform their role as integral parts of patient care, rather than be mired in administration and task management, is a key to maximising the use of productive resources and improving healthcare outcomes.

The trial identified that GPF has the capacity to improve information flows, streamline administration and provide metrics on a range of measures which will provide vital information to allow the effective allocation of resources within the hospital and within the health system more broadly.

Staff survey

A survey of staff was commissioned, with the questions and structure of it at **Appendix G**. Respondents believe that GPF allows healthcare professionals to focus on their job rather than administration, improving productivity and reducing patient waiting times. It is thought that it will allow improved data to be provided to government, improve communications and handover and operational efficiency.

Importantly, we have asked participants if there are suggested improvements to the system which could result in further refinements. Respondents indicate that the system holds great potential, but with minor improvements could make a major difference to the professional lives of clinicians and in turn, patients.

Key responses are detailed below. There were twelve responses, a substantial proportion of possible respondents. Seven respondents were doctor/consultants.

**Thinking about Northern Hospital, do you think Genesys Patient First...****1 = Strongly disagree, 5 = Strongly Agree**

Allows healthcare professionals to focus on their job rather than administration	3.33
Improves workforce productivity	3.33
Reduces waiting times for patients to be seen	3.17
Provides information to allow resources to be allocated optimally	3.17
Gives no real benefit to the hospital	2.50

Thinking about the health system more broadly, do you think Genesys Patient First...**1 = Strongly disagree, 5 = Strongly Agree**

Could allow for better allocation of resources across the system	3.83
Would result in better data going to government about what is really happening in hospitals	4.00
Allows for better use of healthcare professionals' time	3.67
Has no real benefit to the health system	2.33

In which of the following areas do you think the system will provide benefits to the hospital? NB.**Multiple responses allowed and top three responses listed .**

Operational efficiency	62.50%
Speed and accuracy of communications/hand-over	62.50%
Data collection and resource allocation	75.00%

While the data collected has provided an insight into ED operations which allows for focussed efforts to improve performance and better target investment, feedback from staff demonstrates that GPF can deliver improved productivity from existing human resources, maximising investment.