Welcome to Hervey Bay & St Stephen’s Hospital!

We would like to respectfully acknowledge the Butchulla Traditional Owners of the land on which this event is taking place and Elders both past and present.

We also recognise those whose ongoing effort to protect and promote Aboriginal and Torres Strait Islander cultures will leave a lasting legacy for future Elders and leaders.
About UnitingCare Health
St. Stephen’s Hospital
Nicholas E. Davies Enterprise Award of Excellence
Who We Are

Vision

• UnitingCare Queensland will be a mission-driven provider of quality health care services in Australia.

• We will have excellent facilities and technology but our major strengths will be our people and partnerships.

• We will set the standards for accountability to patients, partners and the community.

• We will be known for excellent standards and for our community contributions.

Mission

Our mission is to improve the health and wellbeing of individuals and their families. We differentiate ourselves by living by our values, optimising our patients’ care and their experiences.
UnitingCare Hospitals

- The Wesley Hospital
  - 536 overnight beds
  - 24 operating theatres
  - 19 ICU beds
- St Andrew’s War Memorial Hospital
  - 250 beds
  - 15 operating theatres
  - 15 ICU beds
- Buderim Private Hospital
  - 190 beds
  - 8 operating theatres
  - 12 ICU/CCU beds
- St Stephen’s Hospital Hervey Bay
  - 96 beds
  - 5 operating theatres

UnitingCare Queensland
- UnitingCare Hospitals
- Child and Families
- South-East Queensland Integrated Services
- Regional and Remote Service Group
About the Grant
• $47M grant from HHF including $21M for eHealth

Services at SSHB
• 96 bed greenfield site community hospital in Hervey Bay
• Medical, surgical, oncology, 5 fully integrated operating theatre suites
• SSHB opened 13 October 2014
Healthcare Service

- Wide Bay Burnett Region
- Fraser Coast approx 110,000
- One of Australia’s fastest growing regions
- Average age 55 years
- Health & Aged Care infrastructure investment
- 10% unemployment rate
- High DVA population
St Stephen’s Hospital Profile

VMPs

- 54 Specialist Medical and Dental VMPs

St Stephen’s Hospital Revenue by Medical Area FY19

- 47% Medical
- 29% Rehab
- 24% Surgical

St Stephen’s Hospital Total Revenue FY19 by Specialty

- Rehabilitation
- General Surgery
- Orthopaedic surgery
- Physician
- Urology
- General Practitioner
- Cardiology
- Gastroenterology
- Ophthalmology
- Endocrinologist
- Gynaecology
- Other

St Stephen's Hospital Revenue by Medical Area FY19

- Medica
- Rehab
- Surgical
St Stephen’s Hospital Profile

SSH Staff

- 52 Full Time
- 113 Part Time
- 85 Casual

*Other Medicine includes Radiology, Respiratory Medicine & Ophthalmology
St Stephen’s Hervey Bay New Digital Hospital

- Federal Government sought submissions via Health and Hospitals Fund for projects to improve access to regional and rural health services

- Government announced $47.1M grant to UCH towards developing Australia’s first fully integrated digital hospital
  - $25.9M towards construction costs
  - $21.2M for eHealth

- Contract signed with Federal Government

- Project Director for eHealth appointed – Connie Harmsen
- Australia’s first CMIO appointed – Dr Monica Trujillo

- St Stephen’s Hospital Hervey Bay takes its first patient
The St Stephen’s Journey & System Implementation Timeline

Oct 2014
Opening fully digital hospital with device integration & closed loop electronic medication management

Dec 2014
Achieved HIMSS6 status

March 2017
Integrated with the Australian Digital Health Agency’s My Health Record

January 2018
Implemented Cerner Bridge Transfusion Administration

October 2018
Implemented Cerner POC Specimen Collection, HIMSS7 Achieved

Quarter 3 2019
Patient Journey Board, Sepsis optimisation, QADDS update

<table>
<thead>
<tr>
<th>UCQueensland</th>
<th>Ann Cross</th>
<th>Craig Barke</th>
</tr>
</thead>
<tbody>
<tr>
<td>UHealth</td>
<td>Richard Royle</td>
<td>Arthur Yannakou</td>
</tr>
<tr>
<td>St Stephen’s</td>
<td>Deb Boyd</td>
<td>Amanda Cruwys</td>
</tr>
</tbody>
</table>
Key Learnings from Early Visits to US Fully Digital Hospitals

- Treat project as a change management piece, not an IT installation
- Develop a close working relationship with your IT vendor - in our case Cerner
- Engage with your Doctors upfront and involve them in the detailed design of the system
- Employ project personnel with a thorough knowledge of full EMR implementation
- Focus strongly on staff education pre go-live and educated IT support on the ground post go live
Middleware Case Study

Larnie Wright, RN
Assistant Director of Nursing
Digital Transformation

Improve access to data and images in near-real-time, to improve the efficiencies of documentation, improve patient safety, and enhance the patient experience.

Local Problem

October 2014

Targeted areas for Improvement

- Improve Care Team Communication
- Improve identification of deterioration
- Decrease infection rates
- Improved management of pressure injuries
- Increase patient engagement in their healthcare journey
- Implement a scalable platform of device connectivity
The solution: Implementing a scalable device integration middleware

- VoIP and Nurse Call Solutions: Vocera, Raulands
- Clinical Decision Support Alerts: QADDS, Sepsis
- Near-real-time access to data: VitalsLink, Remote access
- Near-real-time access to images: Camera Capture, Mortara ECG
- Medical Device Connectivity: Vitals, ECG, Pumps, Monitors
- Patient Entertainment System: TV, Phone, Internet, Diet
- Patient Safety: Ultimate Goal!
Middleware connecting:

- Electronic Room Signage
- Staff Assignments
- Alerts to EMR and VoIP
- Single sign on and Follow Me
- Vital Sign Device Connectivity
- GE Monitor Integration to EMR in High Dependency and PACU
- Anaesthesia Machine Integration to EMR in Operating Rooms
- Meds Management – Automated Dispensing Cabinets with Patient Profiling
- Unit Dose medication packaging done on site – only facility in Australia to do this
- ECG Integration
- PACSGear Endoscopy
- RTLS and Patient Flow
- Digital Dictation
- Smartpump IV Fluid Balance integration
- Bedside Patient Entertainment and Nurse Call system
- VoIP communications
Scalable Middleware Platform

- **EMR System**
  - Non-Millennium Millennium
  - HL7 Adapters

- **Device Connectivity (Producer)**
  - Gateway Server
  - Gateway Server
  - CCM Bus Host
  - CCM Bus Host
  - Connectivity Engine (CCM)

- **Driver Library**
  - TCP/IP
  - HL7/HTTP

- **Fault Tolerant Connections**
  - Scalable
  - Highly Available Architecture
  - Guaranteed Messaging
  - Reliable

- **Highly Available Architecture**
  - High Performance
  - Remote Management
  - Automated Monitoring

- **Reliable**
  - Scalable
  - High Performance
  - Remote Management
  - Automated Monitoring

- **Bi-Directional**

- **Application Services (Consumer)**
  - Med Dispensing Cabinets
  - Infusion pumps
  - Monitors
  - Ventilators
  - Vitals Monitors
Integration Platforms

Digital Transformation

Middleware
- Device connectivity and communications
  - Staffing assignments
  - Communication and alerting

Core EMR
- Electronic medical record
  - Safety risk assessment
  - Patient record
  - Clinical workflow
  - Good catches

Analytics
- Data and reporting
  - Research
  - Performance Monitoring
  - Patient Satisfaction
  - Clinical Adoption
Middleware acts as a hub and provides a scaleable platform of seamless device connectivity at the point of care within the workflow to drive:

- Near-real-time monitor and device data (including images)
- Clinical Decision Support
- Care plans
- Electronic Room Signage
- Enhanced patient engagement
Governance Tools

Vision
Why is this important and how will our future look?

Guiding Principles
What are the “rules”?

Benefits
How will we measure our success?
Guiding Principles for Work Redesign

Teams

- We will do what is **best for the patient**
- **Patient safety** is our primary objective
- Design principles will be based on what is best for **UCH as a whole**, following **80/20 rule**: 80% can be used at any UCH hospital, 20% can be facility specific
- Design will be **clinician-driven** and support standardisation of clinical “**best practices**” and **medical decision-making**
- All design work will incorporate **Australian National Standards, ISO, Hospital licensing, UCH Policies & Procedures, Guidelines and Best Practice**
- Proactively identify, manage and resolve **issues to maintain the project** timeline, effectively utilise resources, and ensure design decisions are aligned with the Guiding Principle
- Design must be **benefit driven** and focused on improving performance of the organisation for the **long-term future**
Implementation requirements

- Creation of a testing domain
- Mock room
- Elbow to elbow education and support
- It took time, data, and feedback to fine tune the system
- Moving from paper to a digital environment
- Adoption of new workflows in a new facility
- Change management
Mock Room
Patient Centric Focus for Optimal Design

- Patient Experience
- Healing
- Outcomes
- Safety

- EMR
- Device Ecosystem
- Facilities
- Enterprise Mobility

- Workflow Optimisation
- Clinicians
- Medical Grade Network

- Patient Outcomes
- Smart Room

- Technology
- RIS/PACS
- Image Distribution

- Mobility
- Data Security
- Engaged Connectivity
- High Reliability

- Security
- Power
- Evidence-based Design
- Efficiency/Throughput
Clinical Information

• Clinical Decision Support Alerts pushed through the middleware to the care team member base on staff assignment tool
  • Sepsis
  • QADDS
  • Skin Risk Assessments
  • Prior resistant infections

• Digital data is able to be accessed at the right time, with the right context, within the workflow
  • Images
  • Skin protection protocols
  • Dashboards
  • Patient Assignments
Real Time Vitals Collection

Enables clinicians to electronically send vitals at the point-of-care into any electronic medical record (EMR).

**Key Benefits**

- Improves clinician workflow by decreasing documentation time
- Improves accuracy by eliminating transcription errors
- Improves access to vital signs in a timely manner
- Improves timeliness for Clinical Decision Support
Real Time Vitals Collection

- Caregiver authentication with LDAP-compliant systems
- WiFi
- Via HL7 interface engine
- Direct to IHE-compliant (PCD-01 systems OR Cerner VitalsLink*)

* Cerner VitalsLink includes caregiver authentication and all interfaces are passed through the iBus server
Current Vital Signs Capture Workflow without CareAware VitalsLink

1. Identify Patients to Capture Vitals
2. Retrieve Vital Signs Monitor
3. Wheel Vital Signs Monitor to Patient
4. Attach BP Cuff, Temp Probe, and Pulse Oximeter to Patient
5. Start Vital Signs Monitor to Identify Patient's Vitals
6. Document Patient Identifiers and Vitals on PPI
7. Additional Patients to Capture Vitals?
   - Yes
     - Electronically Sign Vital Signs Form
     - Manually Correct Transcription of Vitals
     - Enter Vitals into EMR
     - Search for Patient
     - Login to Electronic Medical Record (EMR) System
     - Yes
       - Complete Other Patient Care Tasks
     - No
   - No
     - Complete Other Patient Care Tasks

Clinical Decision Support - Sepsis
Clinical Decision Support – QADDS

Recognising and Responding to Acute Deterioration Standard

QADDS – Adult Deterioration Detection System
Clinical Imaging & Camera Capture

Solutions and Workflows

- Camera Capture
- Patient Photo
- Wound Care
- Dermatology

Improve Clinical Outcomes

Enable access to complete medical record, including all media – the Visual EMR

Improve Workflows

Increase efficiency by removing silos of information and enabling seamless media capture.
Wound Care
Reduce hospital-acquired infections

**Healthcare Outcomes**

- Reduce hospital-acquired infections
- Reduce medical errors
- Reduce patient falls
- Reduce pain
- Improve patient's sleep
- Reduce patient stress
- Reduce depression
- Reduce length of stay
- Improve patient privacy and confidentiality
- Improve communication with patients and families
- Improved social support
- Increase patient satisfaction
- Decrease staff injuries
- Decrease staff stress
- Increase staff effectiveness
- Increase staff satisfaction

**EMR infection surveillance**
- Immediate alerting for positive cultures
- Operational dashboards track infectious patients
- Patient Room sign updates biohazard risk indicator
- Room signage for visitors
- Interactive TV for education
Reduce Adverse Outcomes

- **Positive patient identification**
- **Closed loop medication** including integrated drug cabinets
- **24/7 availability of medical records** – downtime procedure
- **Interactive TV for dietary orders and patient entertainment**

### Healthcare Outcomes

<table>
<thead>
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<th>Positive patient outcomes</th>
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<tr>
<td>Reduce hospital-acquired infections</td>
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<td>Reduce medical errors</td>
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</table>
Reduce Length of Stay

**Healthcare Outcomes**

- Reduce hospital-acquired infections
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**Design efficiencies to promote clinical and patient workflow; standardisation of care**

**Mobility solutions to improve efficiencies/communication, medical devices connectivity**

**Views/audio of nature delivered through the patient engagement for relaxation**

**Patient flow/Bed Management systems**

**Tracking Equipment**
Patient Experience

• Delegate integration
• Improve patient safety
• The PES allows for
  • Access to entertainment
  • Education
  • Patient Meal choice
  • Access to health information
  • Results: Reduction in dietary errors

Researchers classified the errors into one of four categories:
  1. Allergy to a food item on the tray
  2. Receiving the wrong diet (e.g. not being served low-sodium or gluten-free meals)
  3. Meals meant for other patients
  4. Receiving a meal when medical orders say the patient shouldn’t get food by mouth.
A fully-interactive patient system aimed at engaging patients and families throughout the entire care process by providing comprehensive communication education, communication and entertainment offerings.

Key Benefits

- Improves patient satisfaction with the hospital experience
- Capability to comply and create consistency with the educational process
- Optimises communication workflows between patients and caregivers
- Integration with dietary system eliminating dietary adverse events
Patient entertainment system: Practical technology integration
Care Team Communication

• VoIP
• Nurse Call
• Patient Entertainment System
• Staff Link
• Capacity Management
• Integration with EMR
Capacity Management

- Location history allows for optimal equipment utilisation
  - Lower capital device spending 10-15%
- Heads up information enhances staff awareness
  - Dramatically reduced time searching for equipment
  - Quick access to critical patient information
  - Leads to improved staff productivity
- Location based alerting
  - Improved patient safety
- Scalable platform to provide automated real-time patient location updates in Millennium
<table>
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<tr>
<th>Status</th>
<th>Type</th>
<th>Priority</th>
<th>Requested T.</th>
<th>Scheduled T.</th>
<th>Start Time</th>
<th>Comment</th>
<th>Custodian</th>
<th>Isolation</th>
<th>Location</th>
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<td>Disch.</td>
<td>N/A</td>
<td>27/08/2021</td>
<td>27/08/2021</td>
<td>07:00</td>
<td>Standard Discharge Clean</td>
<td>Gorlick, Kristina</td>
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<td>07:00</td>
<td>Standard Discharge Clean</td>
<td>McPhail, Ward</td>
<td></td>
<td></td>
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</tbody>
</table>

**Dashboard:**

- **Time Intervals:**
  - Current Day: 18 jobs
  - Total: 18 jobs
- **Number of Jobs:**
  - Discharge: 18
  - Admit: 0
- **Average Turn-Around Time:** 1724 minutes
- **Average Response Time:** 0 minutes
- **Response Time Interval:** 5 minutes
- **Custodial Hours:** 0 hours 0 minutes

**Bed Board:**

- **Available:** 22
- **Occupied:** 0
- **Dirty:** 4
- **Cleaning:** 0
- **Blocked:** 0
- **Out of Service:** 0
- **Reserved:** 0
- **Virtual:** 0
- **Patient Attribute:** 0
- **Location Attribute:** 0

**Ward 01:**

- **Alton Ward:**
  - Alton 01, Bed 1
  - Alton 02, Bed 2
  - Alton 03, Bed 3
  - Alton 04, Bed 4
  - Alton 05, Bed 5
  - Alton 06, Bed 6
  - Alton 07, Bed 7
  - Alton 08, Bed 8

**Ward 02:**

- **Anesthetics Bays:**
  - Anes Bay 1, A
  - Anes Bay 2, A
  - Anes Bay 3, A
  - Anes Bay 4, A
  - Anes Bay 5, A

**PACU Stage 1:**

- **PACU 1:**
  - PACU 1, 1
  - PACU 1, 2
  - PACU 1, 3
  - PACU 1, 4
  - PACU 1, 5
  - PACU 1, 6
  - PACU 1, 7
  - PACU 1, 8
  - PACU 1, 9
Digital Room Signage

Key Benefits

• Allows access to pertinent information at-a-glance
• Improves communication with clinicians, family members and hospital staff
• Displays information and icons for warnings and notifications in real-time.

Digital signage solution displays key patient information to clinicians, hospital staff and family members outside the entrance of the patient room.
**Healthcare Outcomes**

- Reduce hospital-acquired infections
- Reduce medical errors
- Reduce patient falls
- Reduce pain
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- Increase staff satisfaction

- Family communication via Perioperative tracking board
- Improved communication via in-room patient engagement
- Patient & Family education delivered directly from care plan
- Nurse call and alarm response to patient via caregiver mobile device
- Digital room signage displaying real time patient care information
Digital Transformation
An Extension....
Lessons Learnt

• Required a multidisciplinary team approach with the support and guidance of leadership and key stakeholders
• Create a testing domain to ensure the functionality met requirements
• Mock room for hands on education
• Elbow to elbow education and support
• Patient and family education
• Time commitment, data, and feedback loops to fine tune and tweak the system to gain adoption
• Allowing additional time for adoption to occur and constant sharing of data to show improvements in process and areas of opportunity where necessary for change management to take place
Value Derived

Hospital transmitted MRO rates as low as 0%

Accuracy of vital sign documentation improved

Zero dietary adverse events

Overall decrease in LOS

Sustained positive Patient Satisfaction

Decrease in readmissions

Decrease in falls

Decrease in pressure injuries
Patient Discharge Survey

Net Promoter Score

<table>
<thead>
<tr>
<th>Service</th>
<th>Rating</th>
<th>Difference to ytd</th>
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<tbody>
<tr>
<td>Nursing</td>
<td>4.80/5</td>
<td>0.00</td>
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<tr>
<td>Doctors</td>
<td>4.74/5</td>
<td>4.74</td>
</tr>
<tr>
<td>Allied Health</td>
<td>4.57/5</td>
<td>4.57</td>
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<tr>
<td>Food</td>
<td>3.76/5</td>
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</tr>
<tr>
<td>Noise</td>
<td>4.53/5</td>
<td>4.53</td>
</tr>
<tr>
<td>Cleanliness</td>
<td>4.87/5</td>
<td>3.76</td>
</tr>
</tbody>
</table>

Overall Hospital Rating*

- Rating: 9.25/10
- Difference to ytd: 9.25

Overall Quality Rating^'

- Rating: 9.25/10
- Difference to ytd: 9.25

Top Three Quality Questions (Strongly Agree and Agree)

- I felt cared for: 98.9%
- My individual needs were met: 97.7%
- I received pain relief that met my needs: 96.0%

Quality Ratings above 4% (Strongly Disagree and Disagree)

- I know exactly what each of my medications is for: 5.0%
- The information provided to me was enough to prepare me for discharge: 4.1%

* Overall Hospital Rating is defined as the mean score from the question: “How would you rate the hospital overall?”

^ Overall Quality Rating is defined as the mean score from the question: “How would you rate the overall quality of your care?”

# of Responses: 95

July 2019
Length of Stay
In Summary

• **Local problem:** Improve the access to data and images in near-real-time, improve the efficiencies of documentation, improve patient safety, and enhance the patient experience.

• **Design and Implementation:** The focus of the digital hospital went beyond the electronic health record (EMR) and included a scalable platform to meet the need for device connectivity. Examples of targeted areas for improvement included communication to the care team regarding infection control, near-real-time monitor and device data (including images), and enhanced patient engagement.

• **Healthcare IT:** These integration points represent a hub and spoke model where the middleware acts as the hub and provides seamless connectivity at the point of care within the workflow to drive CDS, care plans, electronic room signage which keeps the care team and family up-to-date on patient risks and restrictions, to connect the right care team member to the right patient for communication needs, and to engage the patient in activities.

• **Value derived:** A decrease in infection rates has been sustained over the last 4+ years. Vital sign documentation improved timing for the QADDS and sepsis alerts. There were improvements in: LOS, infection rates, falls, readmissions, and patient satisfaction.