# Systems to support Medicines Reconciliation at TDHB

Taranaki District Health Board
HIQ Limited

HINZ October 2009

# Agenda

- Goals of the Project
- TDHB Electronic Medication Reconciliation in context – the TDHB ePharmacy Strategy
- TDHB New Facility Build and IT/IS Implications
- Review of Expected Benefits
- Clinical Ownership – Governance Structure and Consulted Clinicians.
- Highlights thus far during the Implementation Planning Stage.
- Benefits of TDHB Project to SMM programme

# Introductions

- Elizabeth Plant
  - Chief Pharmacist, TDHB
- Kanaka Ramyasiri
  - Clinical IT Advisor & Project Manager, HIQ Limited

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# TDHB Medication Reconciliation - Goals

- Recording and verification of all inpatient medications within 24 hours of admission
- Robust process for verifying and communicating all inpatient medication changes during the admission.
- Clear identification and communication of medication changes to primary care clinicians on discharge.
- Clear communication of the medication care plan via “Yellow cards” to patients and whanau on discharge and medication specific consumer patient information leaflets.

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# The medication reconciliation system

- Electronic record of all inpatient medications on admission and changes of medication during the inpatient stay
- Automated production of "Yellow Cards" for patients on discharge
- Electronic discharge summary medication change lists
- Aspects of medication decision support including drug interaction checking, allergy checking and dose range checking
- Integrated with Pyxis automated medication dispensing and administration without the need for manual transcription of medication profiles

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# TDHB ePharmacy Strategy 2008

- Identified as a piece of work in the TDHB ISSP 2007
- Completed June 2008
- A vision for medication management within TDHB.
- A sequence of initiatives that build towards this vision.

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# ePharmacy Strategy - Vision

TDHB ePharmacy Vision

"…Clinicians and other stakeholders will be able to prescribe, dispense, and review medications reliably via online electronic tools accessed through the TDHB Clinical Portal or their local system of choice (such as their GP practice management system)."

"Patients will have appropriate online access to their medication history."

"Bedside verification will be used within the hospital setting."

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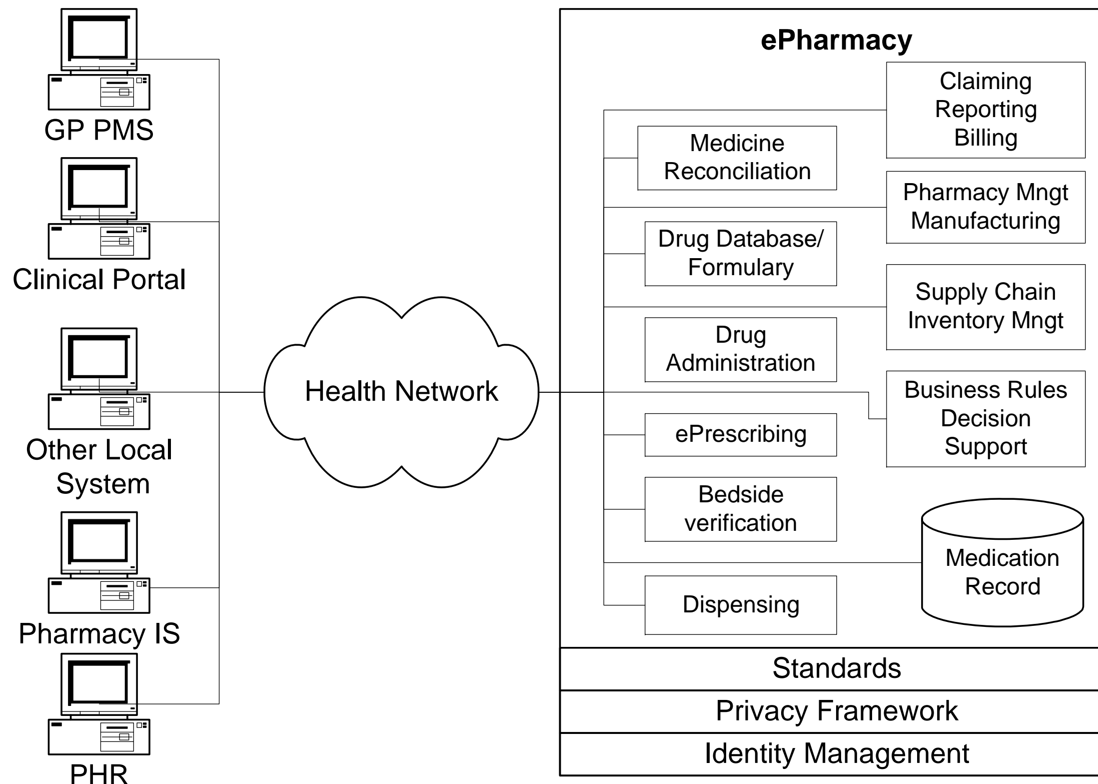
# ePharmacy Strategy - Roadmap

- Phase 1a - Implementation of a medication reconciliation tool within the inpatient setting.
- Phase 1b - Revision of the hospital Ascribe pharmacy information system
- Phase 2 – Enhancing Medication Administration
- Phase 3 - A medication dispensation record which gives a view of all community dispensations, accessible via the TDHB Clinical Portal.
- Phase 4 – Paperless electronic prescribing from Primary / GP providers
- Phase 5 – Paperless inpatient electronic prescribing and medication administration.

# TDHB ePharmacy Conceptual Architecture 2008

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# TDHB New Hospital Build

- TDHB is embarking on a hospital redesign and build programme over the next 5 years.
  - Stage 1: (2010-11) New theatre, Day stay and Ambulatory unit. 4 new inpatient wards, Allied Health and Services for Elderly.
  - Stage 2: (2012-13) New ED, AAU, Paeds inpatients, Obstetric and Neonatal Units.
  - Stage 3: (2013-14) Refurbishment of existing outpatient service areas.

- New models of care to reduce length of inpatient stay are envisaged to coincide with the new facilities. Principles of Ambulatory care will be adopted.

- ePharmacy Strategic deliverables and Medication Reconciliation itself is aligned with the IT build principles for the new facility.

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# Key Principles for IS/IT in New Hospital Build

- Relevant clinical information contained in IT Services must be available to specialists at each patient location.
- Capability should be available for clinicians to enable real time collaboration across primary, secondary, tertiary and home based offices.
- Ability to have a integrated view of patients and their status in the appropriate workflow process.
- Adopt Full patient Electronic Health Record (EHR)

# Where it can go wrong

| Medication Errors – Percentage, Type and Intervention | | | | |
|---|---|---|---|---|
| Process | Prescribing | Transcribing | Dispensing | Administering |
| Percentage of Error | 49% | 11% | 14% | 26% |
| Type of error | - Incomplete list<br>- Wrong medication<br>- Wrong dose<br>- Wrong route<br>- Wrong time<br><br>- Illegible writing<br>- Wrong patient<br>- Contraindications<br>- Wrong medication<br>- Wrong dose | - Wrong medication<br>- Wrong dose | - Look alike<br>- Sound alike<br>- Wrong medication<br>- Wrong dose | - Wrong patient<br>- Wrong medication<br>- Wrong dose<br>- Wrong route<br>- Wrong time<br>- Missed doses |
| Intervention | - Medicine Reconciliation<br><br>- ePrescribing<br>- Decision Support | - System interoperability | - Robotics automation<br>- Bar coding<br>- Automated dispensing | - eAdministration<br>- Bar code at point of care (BPOC) |

Bates D, Cullen D, Laird N, Peterson L, Small S, Servi D, et al. Incidence of Adverse Drug Events and Potential Adverse Drug Events. JAMA 1995; 274(1):29-34.

# Benefits Analysis

- No. Admissions annually, elective and acute = 22086
- Cost per bed day = $1,031 (source: Anderson, 2007)
- % of admissions experiencing ADEs in hospital = 1.6% (source: Davis, 2003)

# ADE Reduction – Length of Stay

- **Reduced ADEs leading to reduced Length of Stay**
- Reducing the incidence of ADEs has a direct impact on the length of time a patient remains in hospital. It is estimated that MRIS can reduce the number of preventable ADEs occurring at hospital transition points by 50%.
- % of admissions experiencing preventable in hospital ADEs = 0.9% (source: Davis, 2003)
- Average increased Length of Stay due to ADE = 7.5 days (source: Anderson, 2007)
- Errors occurring at transition points = 50% (sources: Berwick, 2006)
- *Cost saving in Reduced LOS = Annual admissions x % preventable ADEs x increased length of stay due to ADE x (% errors at transition points?) x % MRIS effectiveness x Cost per bed day*
- The total annual cost saving in reduced length of stay is **$382,758**.

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# Community ADE Admission Reduction

- **Reduced ADEs in the community leading to reduced Admissions**
- Providing improved information to patients and clinicians through yellow cards, patient leaflets and improved discharge summaries will prevent ADEs in the community and reduce hospital admissions. While it is difficult to quantify the impact, a conservative estimate of a 5% reduction in the number of admissions has been used.
- Average Length of Stay = 6.9 days (source: Davis, 2003)
- % of admissions due to ADEs in the community = 1.5% (source: Love, 2007
- *Cost saving in Lower Admissions = Annual admissions x % admissions due to community ADEs x % MRIS effectiveness x Average Length of Stay x Cost per bed day.*
- *= 22086 x 1.5% x 5% x 6.9 x $1031*
- The total annual cost saving in reduced admissions is **$117,838**.

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# Workflow during Clerking / Admission

- Medical staff will continue to prescribe on paper chart
- Clinical Pharmacists will use the new system to reconcile and update the electronic medication profile for each patient
- Pyxis will continue to be updated with the electronic medication profile – so no impact on medication administration.

# Workflow during inpatient stay

- Medical staff will continue to update the paper chart
- Clinical pharmacists will use the new system to reconcile and update the changes using the new system. Any such changes then automatically flow onto Pyxis.

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# Workflow during Discharge

- Medical staff will use the solution to make final adjustments to the discharge medication list for the discharge summary and print the take home prescription.
- Clinical Pharmacists will use the new system to generate a patient yellow card automatically.

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## EDS Integration

- The “Medication Changes Summary” which is generated in MedChart to be incorporated into the EDS
- When the RMO is generating the EDS the Med Changes Summary is pulled into it.

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# Med Rec System - Impact to Primary Care

- Medication changes with reasons clearly highlighted on discharge summary via a specially formatted "Summary of changes" report.
- Admission medication list clearly highlighted.
- All patients will have a current yellow card on discharge.

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# Med Rec System – Impact to Patients

- Medication changes clearly highlighted on discharge summary.
- All patients will have a current yellow card on discharge.

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**Current scenario:**

Only a limited subset of patients get a Yellow Card created, which is a manual process. Thus many patients may not have a clear list of what medications they are taking and why upon discharge. This contributes to poor compliance and errors in medication usage e.g. using pills from old bottles which have actually been discontinued, thus e.g. overdosing on a BP medication, with disastrous potential outcomes.

**Future scenario:**

Yellow Cards will be generated easily from the discharge medication list without manual transcription so more patients will receive a Yellow Card on discharge. Patients and whanau will have plain English instructions which will reduce errors related to changes in medication regime.

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# Benefits Example – Transcription Error Reduction

**Current scenario:**

The discharge medication list has to be manually transcribed from the paper notes by the RMO. A medication may be inadvertently omitted on discharge, thus adversely affecting the patients outcome, and confusing primary care.

**Future scenario:**

The discharge medication list will be electronically reconciled with the current medication list. A tickbox system transfers medications from the current drug list to the discharge medication list where it is highlighted for clinical pharmacy review. Thus manual transcription is avoided and all changes are reviewed by pharmacy. Discrepancies can be followed up and transcription errors avoided.

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**Current scenario:**

Primary Care may receive a discharge summary that only states the "medications on discharge" without clear indication of changes of regular medications. Primary care have to manually reconcile what changes have been made, and then may wonder if such changes were intentional or accidental.

**Future scenario:**

The system will produce a "Medication Changes Summary" that will clearly highlight what, if any, changes to regular medications. Reasons will be given for all changes. Confusion related to changes in regular medications on discharge will be reduced. Any follow-up actions required will be highlighted.

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# Project Governance - Steering Group

- **Project Executive / Sponsor**
  - Joy Farley, General Manager, Hospital and Specialist Services
- **Senior Users**
  - Elizabeth Plant, Chief Pharmacist
  - Dr John Doran, Chief Medical Advisor
- **Senior Suppliers**
  - Darrin Hackett, HIQ Transition Manager
  - James Rice, iSOFT Country Manager
- **Project Manager**
  - Dr Kanaka Ramyasiri, HIQ Clinical IT Advisor

# Consulted Clinicians

- Ian Ternouth, Physician
- Greg Stevens, HOD Emergency
- Kerry Ann Adlam, Director of Nursing
- John Doran, Chief Medical Advisor
- Lorna Fox, Pain Care Specialist
- Keith Carey-Smith, GP Liaison
- Campbell White, HOD Medicine
- Damien Mosquera, HOD Surgical
- Perrin Aish, Clinical Nurse Manager ED
- Judith Donaldson, Manager Theatres
- Janet Gibson, Nurse Manager
- Jenny Mackrell, Nurse Manager

# Project Highlights to Date

- iSOFT onsite component of IPS (Implementation and Planning Study) completed
- Draft electronic workflows for Admission, Discharge, Transfer and Intra Admission medication reconciliation completed
- Integration discussions with third party vendors underway and integration approaches almost finalised.
- Further discussions with SMM Medication Reconciliation team underway - clarifying aspects of application functionality, format of medication changes summary, and baselining current medicines reconciliation performance.

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# Med Rec Pilot Major Benefits to SMM programme

- Draft standards related to Medication Changes Summary, and SQUM standards for Yellow Cards will be tested.
- Learnings regarding use of electronic tools for medication reconciliation will be produced.
- Project documentation, workflows, analysis, can be reused.
- Consistent Med Rec Performance Baselining data will be collected as per IHI methodology.

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## Relationship to Otago project

- Complimentary activities to Otago project.
- TDHB project will focus on electronic Med Rec aspects of software functionality. ODHB project will focus on ePrescribing and eMedAdministration aspects of functionality.

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# Thank you

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