Medication reconciliation using electronic tools – The Tasmanian experience
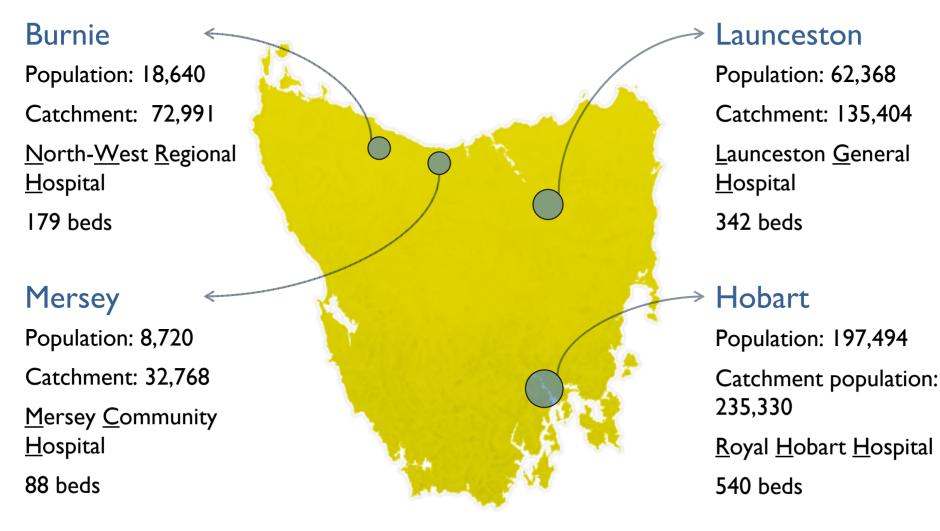
Ben Chalmers

Specialist Pharmacist Information Management
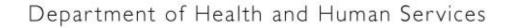
Department of Health and Human Services

Tasmania
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Map of Tasmania

Burnie

Population: 18,640

Catchment: 72,991

North-West Regional Hospital

179 beds

Mersey

Population: 8,720

Catchment: 32,768

Mersey Community Hospital

88 beds

Launceston

Population: 62,368

Catchment: 135,404

Launceston General Hospital

342 beds

Hobart

Population: 197,494

Catchment population: 235,330

Royal Hobart Hospital

540 beds

Electronic tools for medication reconciliation

- Aim: to replace paper based recording systems for clinical pharmacy activities with a computer system

- Drivers:
  - Efficiency sought from being able to store and report on all activity
  - Safety in rapid and complete recall of patient's previous medication history
  - Quality use of medicines with bedside DSS

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The tools

- ## The HCS Clinical Suite by HealthCare Software
    - ### PharmCare for clinical pharmacy
    - ### ECCo for discharge summaries
        (Electronic Discharge Summaries – EDS)

Tasmania
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Page ▾   Safety ▾   Tools ▾

Patient   THCI: 200524178

Eds Pharmcare Test 70 year old geriatric male (167cm , 98kg)

Conditions [List]:   Osteoarthritis | Hypercholesterolaemia | Pain | Pain and inflammation | Pain, severe | Stroke prevention
Allergies [List]:   Unknown Drug Allergies | Peanut

Overview   Pt. Details   Conditions   Medications   Issues   Investigations   Notes   **Episodes Of Care**

Episode Of Care North West Regional Hospital Burnie

Status: Admitted

Admission: 21/06/2010 (Ward: Medical East)

EoC Details   **Adm. Interview**   Inpt Review   Ep Notes   POMs   Problems   Procedures   Clin. Mgt   Med. Review   Follow Up   DC Scripts   DC Summary

Admission Interview

Status: Pending Sign-Off

Author and Community Contacts

Author

Author: Chalmers, Ben (Developer)   **Date Reviewed:**   8/10/2010

Patient's Community Pharmacy

Top Of The Town Pharmacy

Patient's Usual GP

DR John Ballantyne

Drug Allergies

No 'active' allergies recorded.
Are there known allergies?   Yes   No

Status	Allergen	Condition	Notes	Severity	Onset Date
✓ Withdrawn	HMG-CoA reductase inhibitors	Myopathy		Severe	1/06/2005

Non Drug Allergies

Status	Allergen	Condition	Notes	Severity	Onset Date
❗ Current	Peanut	Anaphylaxis		Mild	8/10/2010

Patient Own Medications

Medications Returned: ✗   **Recorded Date:**   8/10/2010

Returned Date:

POMs: POMs in pharmacy

Tasks

Attach...

Home
Patients
Organiser
Knowledge Base
System Admin
Reporter
Logs
Drug File Manager

Quick Links
Inbox
Task
Organiser

New Message
New Task

v 2.3.1.103 (Test)

Patient Compliance Assessment

	Assessment	Last Assessment	Notes
Meds Managed By:	Patient	Not Prev Assess.	
Compliance:	Inadequate	Not Prev Assess.	Aspirin taken twice weekly
Sight Issues:	Yes	None Reported [08/10/2010]	Wears reading glasses
Hearing Issues:	Yes	Not Prev Assess.	Wears hearing aids
Cognition Issues:	None Obvious	Not Prev Assess.	
Swallowing Issues:	Yes	None Reported [08/10/2010]	Can't swallow large tablets
Understands English?:	Yes	Not Prev Assess.	
Other Issues:	None Reported	Not Prev Assess.	

Medication Aids

None Recorded

Medications

Status	This EoC	R/V List	Last Action	Details	Section	Med Actions
	☐	☑				
⊖ Active	✓	✓	8 Oct 2010 Continued	**Aspirin Capsules 100mg** eg Astrix 100 : Stroke prevention **Take 1 capsule in the morning with or after food**	Not On Interview	[Continue] [Cease] [Withhold] [Change]
⊖ Active	✓	✓	8 Oct 2010 Started	**Glucosamine sulfate Tablets 500mg** eg Blackmores Glucosamine **Take 1 tablet daily**	Not On Interview	[Continue] [Cease] [Withhold] [Change]
⊖ Active	✓	✓	8 Oct 2010 Started	**Meloxicam Tablet 15mg** eg Mobic : Pain and inflammation **Take 1 tablet daily with or after food**	Not On Interview	[Continue] [Cease] [Withhold] [Change]

⚠ This is a TEST version of PharmCare

Patient   THCI: 200524178

Eds Pharmcare Test 70 year old geriatric male (167cm , 98kg)

Conditions [List]:   Osteoarthritis | Hypercholesterolaemia | Pain | Pain and inflammation | Stroke prevention
Allergies [List]:   Unknown Drug Allergies | Peanut

Overview | Pt. Details | Conditions | **Medications** | Issues | Investigations | Notes | Episodes Of Care

Prescription History | **Medications** | Med. Action | Vaccinations | Counselling Sheets | Medication Aids

New Medication Oxycodone hydrochloride 5mg Tablets eg Endone

✓ No known drug interaction or allergy alerts for this medication for this patient.

Save

Cancel

Primary Condition

Choose a Condition: | Pain, severe ▾ |

Medication Use And Advice

Pick from a known use and advice...

1 suggestion found.

Use: To relieve or prevent severe pain.

Advice: If you experience drowsiness, do not drive or operate
machinery. Constipation is a common side effect. Pain
relief is best achieved by taking strictly as directed –
if regular, do not miss doses.

Start Medication

Date of Action *   📅 8/10/2010   20:08   by Ben Chalmers   ☐ (Long Term)

Date Entered   8/10/2010 20:08 by Ben Chalmers

	Action	Dose	Units	Route
Directions	Take	1	tablet(s) ▾	Oral ▾

	Interval	Qualifier	Is Prn
Frequency	Four times a day ▾		☑

	Breakfast	Lunch	Dinner	Bedtime	Dose Aid
Daily Dosage					☐

Done   Local intranet | Protected Mode: Off   🔍 100%

Medications

Status	This EoC	R/V List	Last Action	Details	Section	Med Actions
	☐	☑	▼			
⊖ Active	✓	✓	8 Oct 2010 Continued	**Aspirin Capsules 100mg** eg Astrix 100 : Stroke prevention **Take 1 capsule in the morning with or after food**	Not On Interview	[Continue] [Cease] [Withhold] [Change]
⊖ Active	✓	✓	8 Oct 2010 Started	**Glucosamine sulfate Tablets 500mg** eg Blackmores Glucosamine **Take 1 tablet daily**	Not On Interview	[Continue] [Cease] [Withhold] [Change]
⊖ Active	✓	✓	8 Oct 2010 Started	**Meloxicam Tablet 15mg** eg Mobic : Pain and inflammation **Take 1 tablet daily with or after food**	Not On Interview	[Continue] [Cease] [Withhold] [Change]
⊖ Active	✓	✓	8 Oct 2010 Started	**Oxycodone hydrochloride Tablets 5mg** eg Endone : Pain, severe **Take 1 tablet four times a day when necessary**	Not On Interview	[Continue] [Cease] [Withhold] [Change]
⊖ Active	✓	✓	8 Oct 2010 Started	**Paracetamol Modified release tablets 665mg** eg Duatrol SR : Pain **Take 2 tablets three times a day swallowed whole**	Not On Interview	[Continue] [Cease] [Withhold] [Change]
⊖ Active	✓	✓	8 Oct 2010 Started	**Simvastatin Tablets 20mg** eg Zimstat : Hypercholesterolaemia **Take 1 tablet at night**	Not On Interview	[Continue] [Cease] [Withhold] [Change]

Current Conditions

Status	Condition	Severity	Effective date
! Current	Osteoarthritis	Severe	08/10/2010 - [No end date]
! Current	Hypercholesterolaemia	Not Assessed	08/10/2010 - [No end date]
! Current	Stroke prevention	Not Assessed	08/10/2010 - [No end date]
! Current	Pain	Not Assessed	08/10/2010 - [No end date]
! Current	Pain and inflammation	Not Assessed	08/10/2010 - [No end date]
! Current	Pain, severe	Not Assessed	08/10/2010 - [No end date]

Observations

User:	Ben Chalmers	Date:	8/10/2010 8:01 PM

HCS Clinical Suite - Windows Internet Explorer

http://pharmcare.test.health.local/Pharmcare/app.aspx?ff_menu=patients&currepid=482974&pt_k_pi=276128&pt_tab=epofcare&epcare_k_epID=48297

Bing

Favorites

HCS Clinical Suite

Page ▼ Safety ▼ Tools ▼

Observations

User:	Ben Chalmers	Date:	8/10/2010 8:01 PM

Body

Weight [kg]:	98	BMI:	35.14 (Obese)
Height [cm]:	167	Ideal Body Weight:	63.5kg (Medium Frame)
Waist Measurement [cm]:	N/A		Note: -10% light frame, + 10% heavy frame
		Waist Risk Indicator:	
		Body Surface Area:	$2.13m^2$

Cardiovascular Health

Heart Rate [bpm]:	88	Cardiovascular Risk:	
Systolic Blood Pressure [mm Hg]:	162	Cholesterol Category:	Moderate
Diastolic Blood Pressure [mm Hg]:	75		
Total Cholesterol [mmol/L]:	5.7		
Cigarettes [per day]:	N/A		
Diabetic:	NO		

Renal Function

Serum Creatinine [µmol/L]:	102	Creatinine Clearance:	53 mL/min
Estimated GFR:	$63 mL/min/1.73m^2$		Note: IBW used if actual weight higher
	Mild (CKD 2)	Uncorrected GFR:	78 mL/min
		If Serum Creatinine is under 60µmol/L, clearance is calculated using a value of 60µmol/L.	

Blood Sugar

Glucose [mmol/L]:	8.2	Glucose Category:	High Glucose

Notes
None Recorded

Current Adverse Drug Reaction Assessments

None Recorded

Current Interventions

Status	Type	Primary Drug	Date
ⓘ Unresolved	Patient education / counselling	Aspirin	8/10/2010

Lifestyle Assessment

Status	Name	Description	Measure

HCS Clinical Suite - Windows Internet Explorer

http://pharmcare.test.health.local/Pharmcare/app.aspx?ff_menu=patients&currepid=482974&pt_k_pi=276128&pt_tab=epofcare&epcare_k_epID=48297

Bing

Favorites

HCS Clinical Suite

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Current Adverse Drug Reaction Assessments

None Recorded

Current Interventions

Status	Type	Primary Drug	Date
Unresolved	Patient education / counselling	Aspirin	8/10/2010

Lifestyle Assessment

Status	Name	Description	Measure
Not Recorded	Alcohol	Alcohol consumption	
Not Recorded	Caffeine	Caffeine consumption	
Not Recorded	Exercise	Exercise Regime	
Not Recorded	Nutrition	Nutrition	
Not Recorded	Recreational Drugs	Recreational / illicit drug use	
Not Recorded	Smoking	Cigarette and other tobacco consumption	

Source of Information

Patient:	✗	Carer:	✗
General Practitioner:	✗	Specialist:	✗
Other Hospital:	✗	Community Pharmacist:	✗
Residential Care Facility:	✗	Patients own medications:	✗
Hospital records:	✗	Community Nurse:	✗
Other:	✗		

Recommendations / Considerations

None

Checklist

Anticoagulants	Patches
Antiplatelets	Creams/ointments
NSAIDs/COX 2 Inhibitors	Antacids
Other analgesics	Aperients/antidiarrhoeals
Sleeping tablets	Pessary/suppository/enema
Eye/ear/nose drops/spray	Regular injections
Inhalers/puffers	Vitamins
Sublingual tablets/sprays	Herbal/natural meds
Osteoporosis meds	Other people's meds
Hormonal meds (OCP/HRT)	Short courses of meds

Preview

Favorites

P HCS Clinical Suite

🏠 ▼ 🔊 ▼ 🖂 🖶 ▼ Page ▼ Safety ▼ Tools ▼ ❔ ▼

| Reporter |
| Logs |
| Drug File Manager |

Quick Links
Inbox
Task
Organiser

New Message
New Task

EoC Details | **Adm. Interview** | Inpt Review | Ep Notes | POMs | Problems | Procedures | Clin. Mgt | Med. Review | Follow Up | DC Scripts | DC Summary

Admission Interview

Status: Pending Sign-Off

Preview

Cancel

ADMISSION INTERVIEW

Tasmania
Department of Health
and Human Services

PATIENT DETAILS:

THCI: 200524178
Test, Eds

Sex: Male DOB: 01/01/1940 Age: 70 years

Consultant: George Waxter
Ward: Medical East
Consent: Not Obtained

Date Created: 08/10/2010 07:52:45PM
Review Date: 08/10/2010
Version: Original
Author: Ben Chalmers (Developer)

PATIENT'S COMMUNITY PHARMACY:

Top Of The Town Pharmacy
236 Mount Street
UPPER BURNIE 7320 TAS
Phone: 03 6431 4545 **Fax:** 03 6431 4122

CURRENT ALLERGIES AND ADVERSE DRUG REACTIONS

Unknown Drug Allergies

Allergen	Condition	Severity	Effective Date
Peanut	Anaphylaxis	Mild	08/10/2010

PATIENT'S OWN MEDICATION

POMS: POMs in pharmacy

Notes: Endone in safe

PATIENT COMPLIANCE ASSESSMENT

Name	Assessment	Date	Notes
Meds Managed By	Patient	08/10/2010	
Compliance	Inadequate	08/10/2010	Aspirin taken twice weekly
Sight Issues	Yes	08/10/2010	Wears reading glasses
Hearing Issues	Yes	08/10/2010	Wears hearing aids
Cognition Issues	None Obvious	08/10/2010	
Swallowing Issues	Yes	08/10/2010	Can't swallow large tablets
Understands English?	Yes	08/10/2010	
Other Issues	None Reported	08/10/2010	

MEDICATION AIDS

Done

Local intranet | Protected Mode: Off   100%

The tools

- ## The HCS Clinical Suite by HealthCare Software
  - ### PharmCare for clinical pharmacy
  - ### ECCo for discharge summaries
    (Electronic Discharge Summaries – EDS)

- ## Tablet PCs with wireless capability

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Props

- Here is the show and tell
- These are the tablet PCs
  - Motion LE1700
    - Laptop without a keyboard

  - Panasonic ToughBook CF H1
    - Slower processor, 1Gig RAM
    - Smaller screen
    - But rugged

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Timeline

- 2006 - Business case for clinical pharmacy system to be included in new tender for pharmacy application

- 2007 - Tender process with iSoft and HCS as successful vendors

- 2008 - Go-Live of PharmCare at LGH after ECCo pilot success

- 2010 - Clinical Suite is rapidly evolving

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The experience

- LGH - combination of the PharmCare and ECCo applications a great success

  77% Reconciliations

  512 in the last 2 months

- Success has spread to the NWRH

  70% Reconciliations

  191 in the same period

The experience

- RHH - limited uptake of PharmCare
  - Barriers in IT infrastructure, tablets and high workload
  - ECCo project has been stalled, synergy lost
  - Resource overhead of electronic tools beyond the capacity of the Pharmacy Department

  Still 104 reconciliations in August before reverting to paper MHR tool

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Governance
(what happened to 2009?)

- Multiple stakeholders in a single system

- Project resourcing
  - Scope creep
  - Short timelines

- PAS project
  - Prioritisation a major risk to smaller projects

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Human Issues

- Business process change
  - Adopt and adapt
  - Documentation of business processes
  - Specification of application requirements is vital

- User interface – Human Computer Interaction

- Technophobia

Hardware and IT environment

Then 2007/8

- Tablet PCs
- G-Series Wireless
  (or no wireless)
- Windows XP
- Internet Explorer 6

Now 2010/11

- iPad (not yet!)
- N-Series Wireless

- Windows7
- Internet Explorer 8

Standards and concepts

- NeHTA
  - Standards for data elements included
- AMT
  - Generics
  - Medication histories
- SNoMed-CT
- National Health Identifiers and her
- HL7 messaging
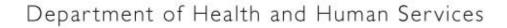
Synergy

- Great value in eHealth
    - Sharing of information by new channels
    - Bringing multi-disciplinary input to the front
- Balance of costs
    - Maintenance of systems
    - Hardware and training
- Best outcomes in integrated approach

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Thank you

ben.chalmers@dhhs.tas.gov.au

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