

THE 'B in IT' PROGRAMME

Community Based Care of Chronic Hepatitis B Patients Using a Novel Online Clinical Guide

Debra O'Leary

Project Officer

Gastroenterology Department, St Vincent's Hospital Melbourne

O'Leary DA, Wong DJ, Isaac D, Cropp E, O'Neill P, Richmond J, Vallance R, Cameron J, Dunn E, Bell S, Nguyen T, Desmond PV, Dev A, Thompson AJ



Disclosures

- Supported by grants from:
 - New South Wales Cancer Council
 - North Western Melbourne PHN (formally INWMML)
 - Gilead Sciences Pty Ltd
 - Bristol-Myers-Squibb



Background

- ~218,000 Australians are living with chronic hepatitis B (CHB)
 - Risk of cirrhosis, liver failure, hepatocellular carcinoma (HCC) up to 25%
- Antiviral therapy and HCC screening can reduce the risk of complications but;
 - Only 56% of CHB cases have been diagnosed
 - <5% of people with CHB access treatment (target is 15%)
- Treatment is restricted to specialist care or community s100 prescribers
 - There is limited capacity to increase current case loads
 - There is a need for alternative care models



MacLachlan, J.H., *et al.* 2013 Aust N Z J Public Health 37(5): p. 416-422; Australian Government DoH 2nd National Hepatitis B Strategy 2014 – 2017.

Community-Based Treatment is Possible

- The management of non-cirrhotic persons with CHB is protocol-driven and algorithms for care have been developed
 - Phase 1 / 3 disease – monitoring
 - Phase 2 / 4 disease – treatment plus monitoring
- Entecavir / Tenofovir antivirals available
 - Very effective
 - Low resistance rates
 - Safe
 - Monitoring schedule is not demanding
 - s100 community prescribing now possible



Aims

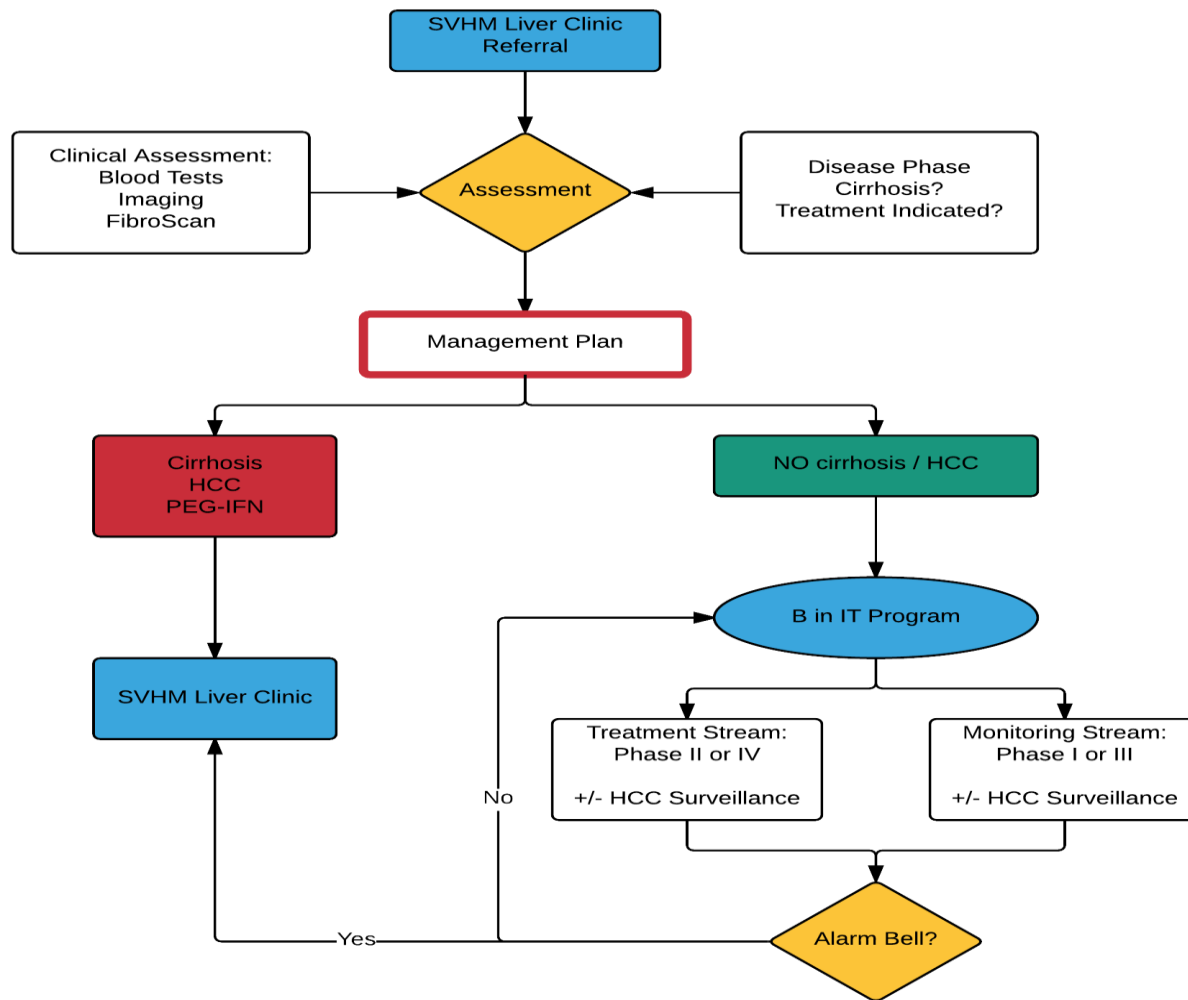
- Increase treatment uptake and enrolment in liver cancer screening for people with CHB
- Using a web-based tool, facilitate a shared care model for CHB treatment
- Support primary care and build capacity for community-based management of people with CHB
- Improve the health and well-being, and prevent unnecessary hospital attendance, of individuals with CHB



B in IT programme

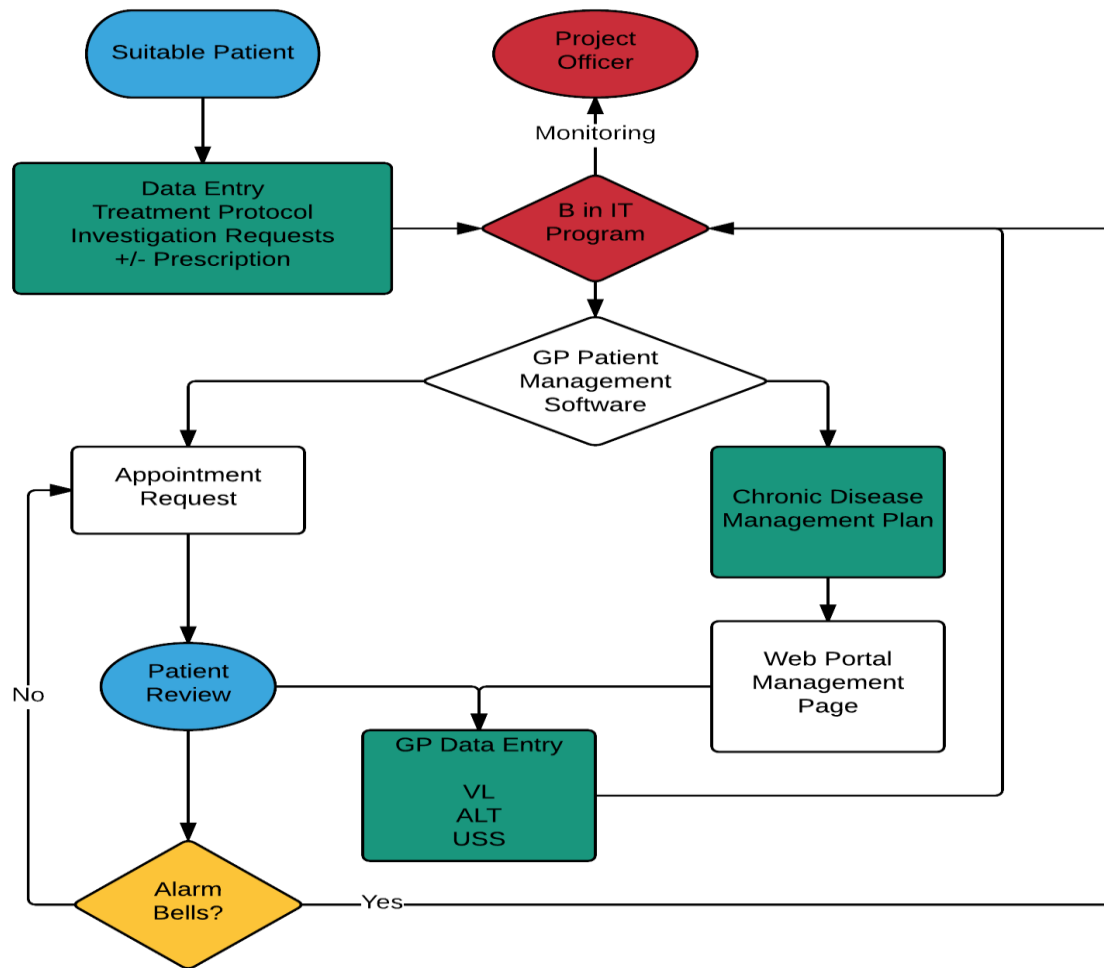
- A web-based clinical guide using EpiSoft's CareZone software
- Provides an individualized plan according to current best practice:
 - Virological monitoring
 - Antiviral treatment
 - HCC surveillance
- Tracks adherence and flags patients who miss appointments / blood tests / ultrasound
- Database capacity





Patient Pathway





Data Flow & Monitoring



**Protocol Actions - "8 in IT" for chronic HBV (SP managed) on
antiviral with HCC screening**

Gender: 2015 000 41021072 (42 years) UNF 704321 00 237 (0)



Summary Clinical Information

Please tick "Attended" on the protocol appointment before entering test result data.

Value	Date
HBV DNA Level	24096 IU/mL
Serum ALT	
HBeAg (Value ; Level)	Negative ;
HBsAg (Value ; Level)	Positive ; 7600
Fibroscan (Elastogram ; IQR)	6.3 kPa
Biopsy Results (Fibrosis Stage)	
Focal lesions on liver US	No

Summary Clinical Information

Please tick "Attended" on the protocol appointment before entering test result data.

	Initial Visit (22/09/2015)	
	Value	Date
HBV DNA Level	24096 IU/mL	24/04/2014
Serum ALT		
HBeAg (Value ; Level)	Negative ;	
HBsAg (Value ; Level)	Positive ; 7600	
Fibroscan (Elastogram ; IQR)	6.3 kPa	16/01/2015
Biopsy Results (Fibrosis Stage)		
Focal lesions on liver US	No	16/01/2015

Refer to Liver Clinic if there is:

- HBV DNA Level > 10-fold (or from undetectable to detectable) **OR**;
- decrease in renal function **OR**
- new focal liver lesion on ultrasound **OR**;
- increase in fibroscan score > 2.5kPa (or > 10kPa score)

Protocol Actions - "B in IT" for chronic HBV (GP managed) on entecavir with HCC screening

Gastro, 2015 **DOB** 4/10/1972 (42 years) **UR#** 7654321 **ID** 237 **(I)**



Summary Clinical Information

Please tick "Attended" on the protocol appointment before entering test result data.

	Initial Visit (22/09/2015)		Latest Visit (22/09/2015)	
	Value	Date	Value	Date
HBV DNA Level	24096 IU/mL	24/04/2014	24096 IU/mL	24/04/2014
Serum ALT				
HBeAg (Value ; Level)	Negative ;		Negative ;	
HBsAg (Value ; Level)	Positive ; 7600		Positive ; 7600	
Fibroscan (Elastogram ; IQR)	6.3 kpa	16/01/2015	6.3 kpa	16/01/2015
Biopsy Results (Fibrosis Stage)				
Focal lesions on liver US	No	16/01/2015	No	16/01/2015
Refer to Liver Clinic if there is: <ul style="list-style-type: none"> HBV DNA Level > 10-fold (or from undetectable to detectable) OR; decrease in renal function OR new focal liver lesion on ultrasound OR; increase in fibroscan score > 2.5kPa (or > 10kPa score) 				

Appointments

Clinician	Date	Time	Location	Reason	External System	Attended	Cancel
Darren Wong	22/03/2016	9:00 AM - 9:15 AM		Hepatitis B	External System	<input checked="" type="checkbox"/>	Cancel

Community Pharmacy Scripts

Medication	Prescribed Dose	Prescribing Doctor	Repeats	Instructions
Produce repeat script - 22/03/2016				
Entecavir monohydrate 0.5mg Oral Tablet	0.5 mg 1 tablet mane	Wong, Darren (Hepatologist - B in IT Training)	2	Take 2 hours before or after food <input type="checkbox"/>

Select script format: Medicare DHS Prescription

Diagnostic tests / investigations

Test Type	Test Name	Order By	Order Date
Order follow up investigations (GP) - 22/03/2016			
Imaging	Liver Ultrasound	Darren Wong	22/03/2016 <input type="checkbox"/>
Pathology	AFP, Full blood count, Liver function tests, Renal Function Tests	Darren Wong	22/03/2016 <input type="checkbox"/>
Virology	HBV DNA Level, HBV Serology (HBeAg, Anti-HBe, HBsAg, Anti-HBs)	Darren Wong	22/03/2016 <input type="checkbox"/>

Melbourne Pathology

Protocol Actions - "B in IT" for chronic HBV (GP managed) on entecavir with HCC screening

Gastro, 2015 **DOB** 4/10/1972 (42 years) **UR#** 7654321 **ID** 237 **(I)**



Summary Clinical Information

Enter test results for 22/03/2016

	Initial Visit (22/09/2015)		Latest Visit (22/03/2016)	
	Value	Date	Value	Date
HBV DNA Level	24096 IU/mL	24/04/2014		
Serum ALT				
HBeAg (Value ; Level)	Negative ;			
HBsAg (Value ; Level)	Positive ; 7600			
Fibroscan (Elastogram ; IQR)	6.3 kPa	16/01/2015		
Biopsy Results (Fibrosis Stage)				
Focal lesions on liver US	No	16/01/2015		
Refer to Liver Clinic if there is: <ul style="list-style-type: none"> HBV DNA Level > 10-fold (or from undetectable to detectable) OR; decrease in renal function OR new focal liver lesion on ultrasound OR; increase in fibroscan score > 2.5kPa (or > 10kPa score) 				

Appointments

Clinician	Date	Time	Location	Reason	Attended	Cancel
Darren Wong	22/03/2016	9:00 AM - 9:15 AM		Hepatitis B	External System	

Community Pharmacy Scripts

Medication	Prescribed Dose	Prescribing Doctor	Repeats	Instructions
Produce repeat script - 22/03/2016				
Entecavir monohydrate 0.5mg Oral Tablet	0.5 mg 1 tablet mane	Wong, Darren (Hepatologist - B in IT Training)	2	Take 2 hours before or after food <input type="checkbox"/>

Select script format: Medicare DHS Prescription **Print Selected** **Save**

Diagnostic tests / investigations

Test Type	Test Name	Order By	Order Date
Order follow up investigations (GP) - 22/03/2016			
Imaging	Liver Ultrasound	Darren Wong	22/03/2016 <input type="checkbox"/>
Pathology	AFP, Full blood count, Liver function tests, Renal Function Tests	Darren Wong	22/03/2016 <input type="checkbox"/>
Virology	HBV DNA Level, HBV Serology (HBeAg, Anti-HBe, HBsAg, Anti-HBs)	Darren Wong	22/03/2016 <input type="checkbox"/>

Melbourne Pathology **Print Selected** **Save**

**Protocol Actions - "B to IT" for chronic HBV (GP managed) on
antiviral with HCC screening**

Gender, 2015 (DOB: 4/10/1972 (42 years) URM: 704021 88 237 (3)



Summary Patient Information

Enter test results for 20150101 Patient Name: 704021 88 237 (3) Patient DOB: 4/10/1972

You can arrange to cc B in IT program specialist your patient's electronic results or otherwise, please manually enter results critical for monitoring progress

Date of HBV DNA result	<input type="text"/>		Enter HBV DNA level	<input type="text"/>	IU/mL
Date of ALT result	<input type="text"/>		ALT results	<input type="text"/>	U/L
Date of liver ultrasound results	<input type="text"/>		Focal liver lesion(s)	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> N/A	

☐ Download to Excel Training B
☐ Add Patient Test Results to Laboratory B
☐ Download to Research work = 2.00% (or = 0.00% record)

Observations

Observer	Date	Time	Location	Report	Reviewed	Comment
Dennis Wing	20150101	9:25 AM - 9:27 AM		Report B	External System	

Community Pharmacy Scripts

Medication	Prescribed Date	Prescribing Doctor	Report	Instructions
Medication Report under 20150101				
Entecavir immediate-release 0.5mg Oral Tablet	0.5 mg 1 tablet twice	Wong, Dennis (Hepatology - B to IT Training)	2	Take 1 tablet twice a day after food

Select script format: Medication List Prescription =

Diagnostic Tests / Investigations

Test Type	Test Name	Order By	Order Date
Order History up to 20150101 (B to IT Training)			
Imaging	Liver ultrasound	Dennis Wing	20150101
Pathology	HBV Full blood count, Liver function tests, Renal function tests	Dennis Wing	20150101
Imaging	HBV DNA level, HBV Serology (HBsAg, Anti-HBs, HBeAg, Anti-HBe)	Dennis Wing	20150101

Hepatology Pathology =

Protocol Actions - "8 in IT" for chronic HBV (GP managed) on
antiviral with HCC screening

Gastro, 2015 (DOB: 4/10/1972) (42 years) UHF# 7054321 88 237 (3)



Diagnostic tests / investigations

Test Type

Test Name

✓ Order follow up investigations (GP) - 22/03/2016

Imaging

Liver Ultrasound

Pathology

AFP, Full blood count, Liver function tests, Renal Function Tests

Virology

HBV DNA Level, HBV Serology (HBeAg, Anti-HBe, HBsAg, Anti-HBs)

Medication	Date	Time	Location	Reason	Medication	Status
Carbamazepine	22/03/2016	12:00 AM	Wong, Darren Wang	Referral to	Carbamazepine	Active

Medication	Prescribed Date	Prescribing Doctor	Repeat	Instructions
Carbamazepine 200mg Tablets	0.1 mg / 1 tablet daily	Wong, Darren Wang	2	Take 1 tablet twice a day with food

Select script format: Medication List Prescription =

Test Type	Test Name	Order No	Order Date
Imaging	Liver Ultrasound	7054321	22/03/2016
Pathology	AFP, Full blood count, Liver function tests, Renal Function Tests	7054321	22/03/2016
Virology	HBV DNA Level, HBV Serology (HBeAg, Anti-HBe, HBsAg, Anti-HBs)	7054321	22/03/2016

Medication Pathology =

Audit Report

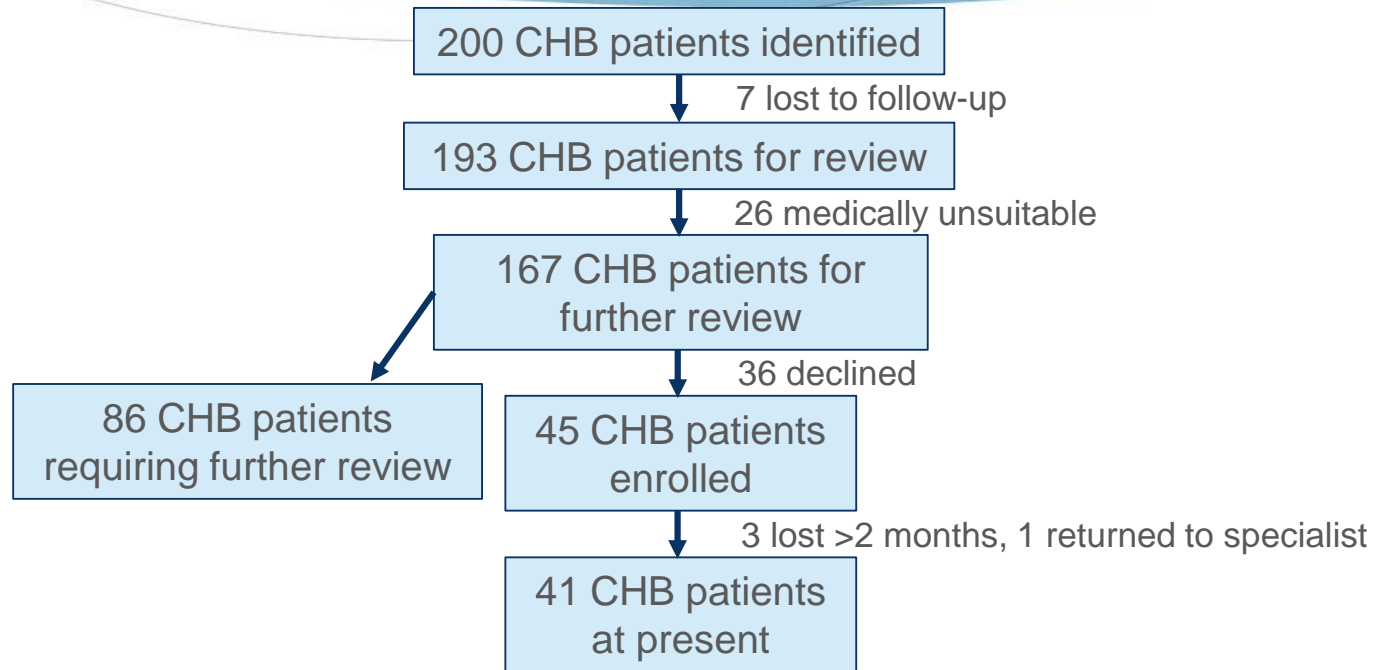
Link key	Protocol (current active)	Initial clinic visit	Last appointment date (scheduled)	Last appointment date (attended)	Next appointment date	Overdue	ALT result last visit	ALT result date	HBV DNA last visit	HBV DNA result date	Liver lesion (U/S) last visit	Liver lesion (U/S) result date
HA2IZ010919371	GP4 ph3 no DAA+DNA HCC	27-02-15			02-08-16	Y	40	02-02-16	53	02-02-16	No	10-02-15
AN2UA110419581	SP5 TDF HCC	30-10-15	03-02-16	03-02-16	03-08-16	Y	18	30-10-15	N/A		No	27-01-16
RA2HI231119592	SP6 ETV HCC	11-03-15	03-02-16	03-02-16	03-08-16	Y	18	23-02-16	20	23-02-16	No	03-03-16
HOSUS280219671	SP9 ETV HCC cirr	01-10-15			04-08-16	Y	25	29-09-15	20	10-03-15	No	29-05-15
GUEUU140519621	SP6 ETV HCC	11-05-16			05-08-16	Y	94	13-05-16	212000	31-03-16	No	05-04-16
IEANA170319451	SP4 no DAA HCC	29-05-15	05-02-16	27-06-16	05-08-16	Y	11	23-05-16				
U22EL181219542	SP4 no DAA HCC	05-06-15	05-02-16	12-02-16	05-08-16	Y	21	22-10-15	2620	22-10-15	Yes	12-11-15
Y22IN101019591	SP6 ETV HCC	11-12-15	05-02-16	01-06-16	05-08-16	Y	19	09-01-16	20	09-01-16	No	06-11-15
IMKEO030219472	SP6 ETV HCC	12-06-15	05-02-16	12-02-16	05-08-16	Y	20	25-01-16	20	21-07-15		
UOGUO180319522	SP4 no DAA HCC	02-05-14	05-02-16	12-02-16	05-08-16	Y	17	29-01-16	392	29-01-16	No	01-02-16
ALEAL120619451	SP6 ETV HCC	26-06-15	05-02-16	12-02-16	05-08-16	Y	20	21-01-16	20	21-01-16	No	04-01-16
U22NA040819362	SP4 no DAA HCC	28-03-14	18-09-16	08-07-16	05-08-16	Y	149	23-06-16	346	23-06-16	No	09-11-15
LI2AM250919431	SP4 no DAA HCC	19-08-15	10-02-16	12-02-16	10-08-16	Y	16	03-02-16	21	03-02-16	No	01-02-16
HA2HA270119571	SP5 TDF HCC	23-09-15	10-02-16	25-05-16	10-08-16	Y	29	09-05-16	20	09-05-16	No	15-05-16



Results



Enrolment



Demographics

- 30 CHB patients scheduled to attend 1st GP visit by June 2016;
 - 24 Asian (80%)
 - 3 Sub-Saharan African (10%)
 - 2 European (6.7%)
 - 1 Pacific Islander (3.3%)
- 19 females (63.3%) and 11 males (36.7%)
- Average age = 55 years
- 24 (80%) phase 3 monitoring protocols – 20 with HCC screening
- 6 (20%) antiviral treatment protocols – 5 with HCC screening



Compliance

	Liver Clinic (Pre B in IT)	GP Clinic (B in IT)	Liver Clinic (Matched Controls)
Clinician Appointments	89%	94%* (84/89)	91%
Pathology	Average 1.97 LFTs per year	Average 2.00 LFTs per year 97%* (86/89)	Average 1.96 LFTs per year
HCC Screening	Average 1.57 US per year (t-test $P = 1.6 \times 10^{-4}$)	Average 2.00 US per year 95%* (61/64)	Average 1.39 US per year (t-test $P = 5.8 \times 10^{-7}$)

*Compliance defined as completed within 1 month of scheduled date for B in IT



Conclusions

- Supervised community-based care of stable CHB patients is feasible
 - Specialist clinic time more available for complex cases
- Advantages of web-based system;
 - Suitable for use by GPs and community-based hepatitis nurses
 - Shared treatment record
 - Care plan generation
 - Centralised monitoring for compliance
 - Electronic resources for clinicians and patients
 - Programme is suitable for expansion



Lessons Learnt

- GPs need high case load to enable frequent use of web-based tool
- Some patients still prefer to see a specialist
- No obvious cost saving, just cost shifting (state to federal)
- Key benefit is monitoring of compliance for HCC screening



Future Plans

- Expand the 'B in IT' programme in St Vincent's Melbourne and Monash Health catchments
- Monitor compliance of all CHB patients (>600) attending St Vincent's Melbourne liver clinics;
 - HCC screening
 - Appointment attendance



Acknowledgements

- North Richmond Community Health
- Richmond Family Medical Clinic
- Smith Street Medical Centre
- North Western Melbourne Primary Health Network
- South Eastern Melbourne Primary Health Network
- Project Steering Committee





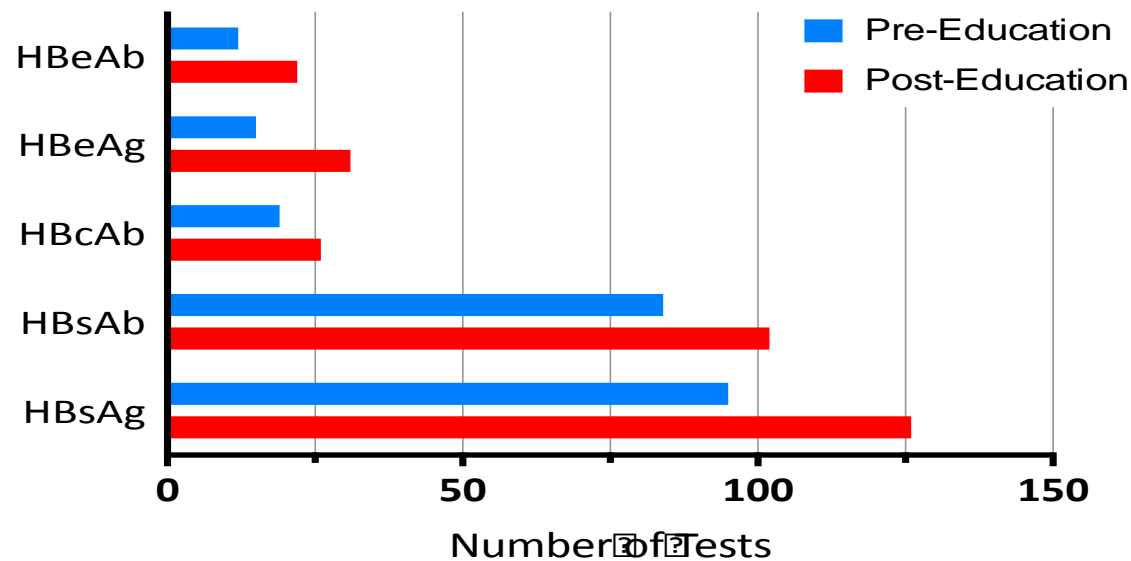
Clinic Audit Prior to Pilot

July 2012 – June 2013	Number
Total appointments attended	1675
Number of CHB patient appointments attended	615 (37%)
Number of CHB patients seen	304
CHB patient clinic non-attendance	25%



B in IT Improves Patient Monitoring

Increase in Requests for Complete HBV Serology by GPs



B in IT Builds GP Confidence

- 6 GPs and 1 practice nurse surveyed after >2 years participation in B in IT;
 - 6/6 GPs feel more confident monitoring CHB patients when sharing patient records with specialists
 - 5/6 GPs are happy to continue using Episoft's CareZone for CHB monitoring (1 neutral)
 - 4/6 GPs agree participation in B in IT has not increased their workload (2 neutral, 1 practice nurse disagreed)
 - 3/6 GPs find B in IT care plan documentation useful (3 neutral)
 - 3/6 GPs find Episoft's CareZone software easy to use (2 disagree, 1 neutral)

