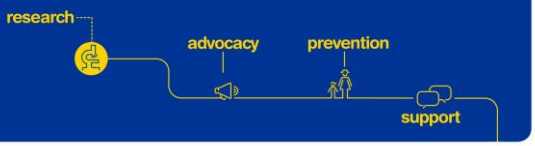
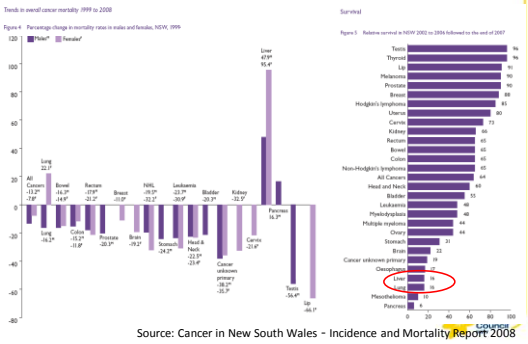
Characteristics of chronic hepatitis B infection in SW Sydney: clinical correlates and policy implications

Robotin M.[1,2] Masgoret X,[1] Porwal M,[1] Fraser A,[1] Goldsbury D,[1] George J[2,3]



1 Cancer Council NSW 2 University of Sydney 3 Westmead Millenium Institute

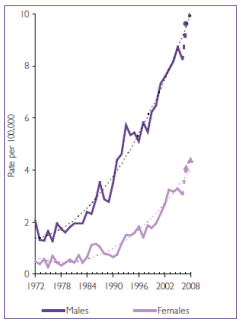
HCC in NSW: rising incidence and poor survival

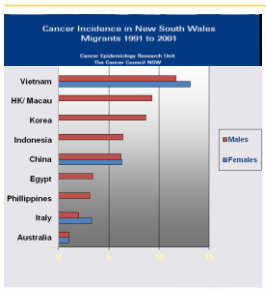


Source: Cancer in New South Wales - Incidence and Mortality Report 2008

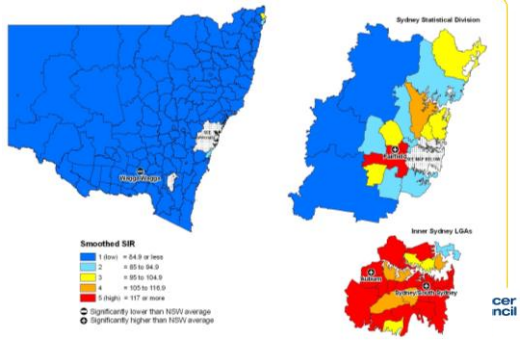
HCC statistics in NSW, Australia

Age-standardised incidence, NSW





Primary liver cancer incidence in NSW males by local government area, 1998-2002

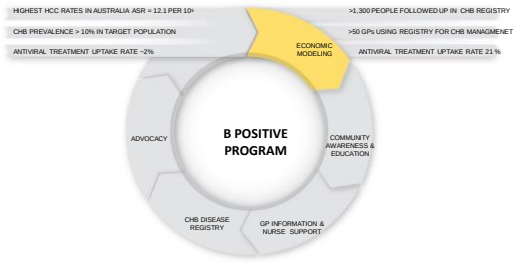


Hepatitis B in NSW

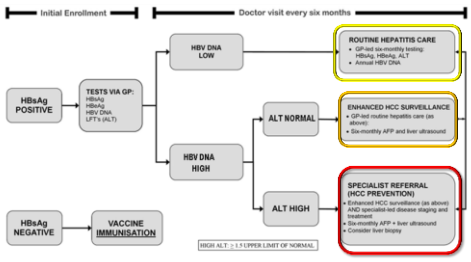
- 77,000 people living with CHB
- High prevalence Medicare Locals:
  - South West Sydney ~13,500
  - Western ~ 12,500
  - Inner West ~ 9,000
  - Northern ~ 5,000

. MacLachlan J, Cowie B. Hepatitis B Mapping Project: Estimates of chronic hepatitis B prevalence and cultural and linguistic diversity by Medicare Local, 2011 – National Report. Sydney: Australasian Society for HIV Medicine, 2013.

B Positive program elements and summary results

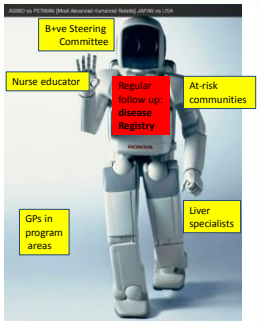


B Positive CHB management algorithm



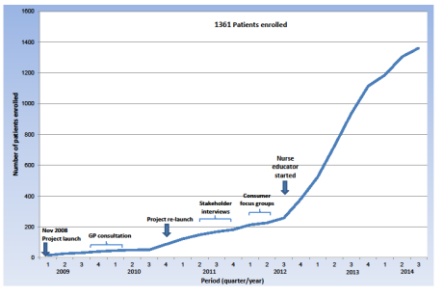
Integrated CHB response

- Community awareness & education
- GP education & support
- Reminder and recall system
- Effective linkage with tertiary care
- Timely referrals
- Short waiting times to see specialists
- Effective, supported back-referrals
- Ability to provide culturally appropriate & individualised care



https://www.youtube.com/watch?annotation_id=annotation_167765669&feature=iv&src_vid=9W7WE1oP7d4&v=dHSaUs0_A_4

CHB Registry enrolment trends



Demographic characteristics of first 1,000 B Positive enrolees

Characteristic	Number (%)
Gender	
Male	441 (44)
Female	555 (56)
Not recorded	4 (0.4)
Age group	
<35 years	170 (17)
35-50 years	409 (41)
>50 years	417 (42)
Not recorded	4 (0.4)
Country of birth	
Mainland China	371 (37)
Vietnam	335 (34)
Hong Kong/ Taiwan	96 (10)
Other Asian countries	99 (10)
Pacific Islands	40 (4)
Australia	7 (1)
Other	16 (2)
Not recorded	36 (4)

CHB disease characteristics

- 1,000 participants HBsAg +ve (100%)
- 967 HBeAg status documented (97 %)
  - 108 HBeAg positive (11%)
  - 859 (89%) HBeAg negative
- Antiviral treatment uptake
  - 213 (21%) on antiviral treatment @ enrolment
  - 787 participants (79%) not receiving antiviral treatment
    - Viral load and ALT levels at enrolment recorded in 657 (83%)

Viral load and ALT levels distribution in first 1000 people enrolled - *predicted* management pathways

NB: analysis restricted to 657 patients not on antiviral Rx

ALT level	VL undetectable N (%)	VL< 2,000 IU/ml N (%)	VL 2,000-20,000 IU/ml N (%)	VL> 20,000 IU/ml N (%)	TOTAL N (%)
ALT normal N (%)	128 (20)	260 (40)	87 (13)	55 (8)	530 (81)
ALT high N (%)	25 (4)	52 (8)	14 (2)	36(5)	127 (19)
Total N (%)	153 (24)	312 (48)	101 (15)	91 (13)	657 (100)

Yellow cells: routine surveillance
Orange cells: enhanced surveillance
Red & purple cells: specialist assessment

Data limitations

- Data representativeness
- Limited information – few data fields
- Unsophisticated –compared to other predictive scoring systems
- BUT:
- Well suited as a primary care-based triage system
- Registry delivers evidence-based CHB management by primary care providers and "frees up" clinic time
- Contributes to better allocation of economic resources

NSW Hepatitis B Strategy 2014-2020 priorities

1. Build on established hepatitis B prevention efforts
   - Increase childhood vaccination coverage
   - Vaccinate and provide Ig to babies of hep B +ve mothers
   - Vaccinate groups @ elevated risk
   - Enhance NSP programs
2. Increase Hep B testing and diagnosis
3. Improve monitoring, care and Rx
   - Support primary care to play a larger role in monitoring, managing and treating hep B
   - Improve self-management & health-seeking behaviour

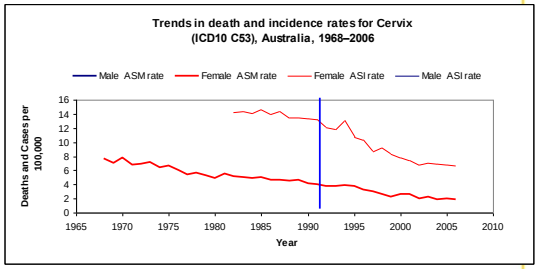
Integrated screening and treatment programs

	Hutton et al	Robotin et al	Veldhuizjen et al
Target population	Hypothetical cohort of 10,000 APIs with CHB, aged >40 years	Hypothetical cohort of 10,000 APIs, aged >35 years	All migrants with CHB (~44,000), all ages
Time horizon	Lifetime	50 years	20 years
Model perspective	US societal	Health care funder	Health care funder
Intervention(s) modeled	1. Status quo (voluntary CHB screening) 2. Universal vaccination (3-dose) 3. CHB screen and treat 4. CHB screen, treat and ring vaccinate 5. CHB screen, treat and vaccinate (all individuals) Treatment: IFN, LAM	1. Routine care: some background CHB& HCC screening and treatment 2. HCC surveillance for higher risk CHB 3. HCC prevention: antiviral treatment and HCC surveillance for high risk, primary care F/U for lower risk Treatment: 30%IFN, 70% ETV	One-off systematic screening and Rx of eligible patients (estimated ~4,500) who *choose* to participate in treatment program vs. all others with CHB who follow natural history of disease Treatment: ETV

Program outcomes

	Hutton et al	Robotin et al	Veldhuizjen et al
Epidemiologic variables	• 10% of cohort have CHB at outset, 50% immune, 40% susceptible	• 100% have CHB at outset • 0.5% have cirrhosis at outset • All referrals to specialist with high VL and high ALT get treatment	• 4% of active CHB treated under status quo, 15% with program • All referrals to specialist with high VL and high ALT get treatment
Measured outcomes	**ICER/QALY gained** **Intervention vs. status quo:** Universal vaccination =630,000 USD Screen, treat =36,088 USD Screen, treat, ring vaccinate= 39,000 USD Screen, treat, vaccinate all=388,000 USD	Antiviral treatment averts 56% of CHB-related deaths **ICER/QALY gained** • HCC surveillance vs. status quo 401,516 AUD • HCC prevention vs. status quo 12,956 AUD • HCC prevention vs. status quo 6,733 AUD	Antiviral treatment reduces HCC-related deaths by 80% in those receiving it (10% of those who need it) **ICER/QALY gained** Screen+ treat program vs. status quo: 8966 €
Cost-effectiveness threshold	50-100,000 USD/ QALY	40,000 AUD/ QALY	20,000€/ QALY

Trends in incidence and death rates, cervical cancer, Australia 1968-2006



http://www.aihw.gov.au/cancer/data/acim_books/cervix.xls

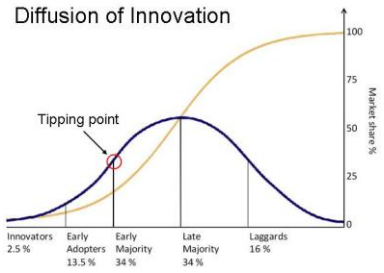
Viral load and ALT levels distribution in first 1300 people enrolled – *observed* management pathways

Analysis restricted to 961 CHB Registry patients not on antiviral therapy

Category	VL and ALT levels	Total under each category	Referred to specialist (n)	% referred
Routine Surveillance	VL "low" ALT "normal"	547	93	17%
Enhanced surveillance	VL "high" ALT "normal"	191	75	39%
Specialist assessment	VL "high" ALT "high"	70	40	57%
Specialist assessment	VL "low" ALT "high"	105	17	16%

VL "high" = VL>2,000 IU/ml ALT "high" = ALT >1.5ULN

Where we are @ with diffusion of innovation?



www.informationweek.com

Are we ready for "automatic pilot" in CHB management?

SMH Sun Sept 14, 2014 p 28 Extra

Thank you