

HBV in New Zealand

Community HBV screening to long-term follow-up

John Hornell, CEO, The Hepatitis Foundation of New Zealand

The Hepatitis Foundation of New Zealand
www.hepatitisfoundation.org.nz | 0800 33 20 10

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A registered charitable trust whose mission is:

To improve health outcomes for people living with hepatitis B and C in New Zealand

Over 30 years experience in delivering community based services in a shared care environment - facilitation, assessment, follow-up, education and support.

Work extensively with Māori, Pacific and Asian ethnic populations and communities

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People Identifying as Māori in New Zealand

(5th March 2013)

- 598,602 Māori, 14.9% of the population
- 23.9 years median age (half are younger and half are older than this age)
- 48.2% male (288,636 people)
- 51.8% female (309,966 people)

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Asia-Pacific

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1976: Identification of endemic HBV

Notified cases of acute HBV in Whakatane (population 35,000), NZ, from 1976 to 1978

Milne A et al. *NZ Med J* 1980; 92: 87-91

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1984: Kawerau community study

- Township built in 1953 around paper mill
 - Population 10,000, predominantly Māori
 - 98% of population ⇨ screened

Mode of HBV transmission is early horizontal, not vertical

Milne A et al. *I J Epidemiol* 1987; 16: 84-80

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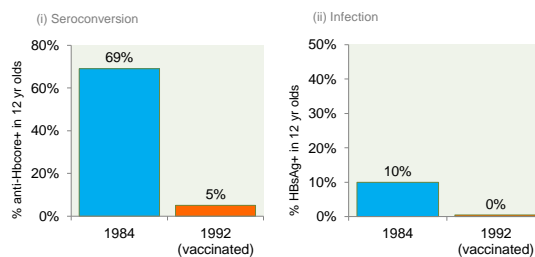
HBV vaccination: Beginnings

- 1983: Government decides to fund vaccines only for at-risk adults, health-care workers
- 1985: Hepatitis Foundation initiates and funds own mass childhood vaccination programme:
 - Plasma-derived vaccine (MSD)
 - IM low dose (2mg x3)
 - Anti-HBs neg children <12 years
 - >8000 vaccinated (>95% target)
 - Subsequent followed for protective immunity

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Follow-up of low-dose vaccination programme in Kawerau children



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Roll out of HBV vaccination: Milestones

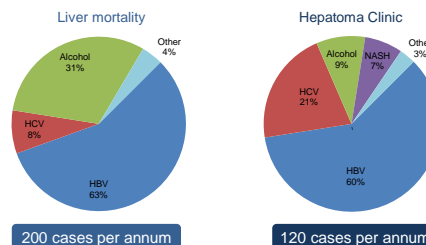
- 1985: International Vaccination Workshop
 - Saul Krugman, Palmer Beazley, Ron Lucas, Mary Dimitrikakas, Brian McMahon, Jim Maynard
- 1986: Vaccinate infants of HBsAg+ mothers
- 1987: Vaccinate all infants (80,000/year)
- 1988: Catch-up vaccination in all 12 yr olds

What about those already infected?

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Impact of endemic HBV infection in NZ



Weir, R, et al. J Gastro Hepatol 2002;17: 582-588

Fung J, et al. Hepatology 2005; 42:258A

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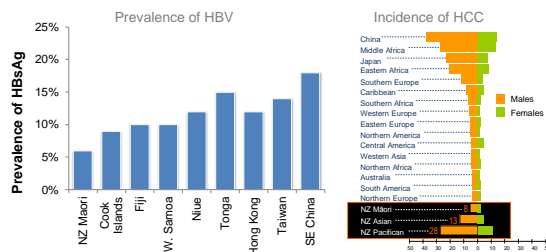
National HBV screening takes shape

- 1991-1995: MoH HBV carrier workshops
- 1997: Ministry announce funding for screening pilot for Māori in South Auckland
- Hepatitis Foundation disputes that the pilot would be:
 - unnecessary, given that reliable testing, vaccination, treatment, follow-up are available
 - unethical as carriers living outside the pilot area would be an untreated "control" group
 - too small to collect accurate data on complication rates (HCC, liver-related mortality)
 - non-Māori high-risks groups must be included

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Who should be included in a National HBV Screening Programme?

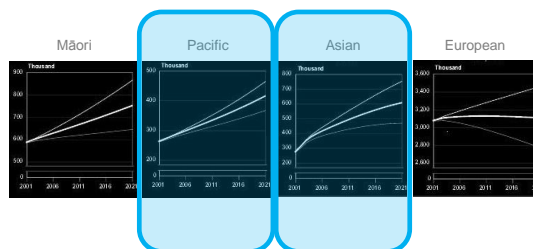


Parkin D, et al. CA Cancer J Clin. 2005;55:74-108; Tuakitonga C, et al. NZMJ 1992.

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Projected ethnic populations 2001-2021



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<http://www.stats.govt.nz/products-and-services/Articles/pop-proj-jun04.htm>



National HBV Screening Programme

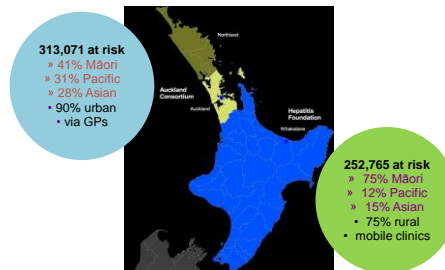
- June 1998: Pilot programme scrapped
- National screening programme funded from July 1999 until June 2002
- Targeting "at-risk" adults
 - » Asian, Pacific Islander, Māori
 - » ≥15 years old (post vaccination)
- Total to be screened= 566,000
- All HBsAg+ offered life-long follow-up



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Target population for screening

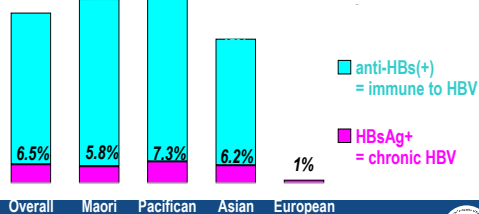


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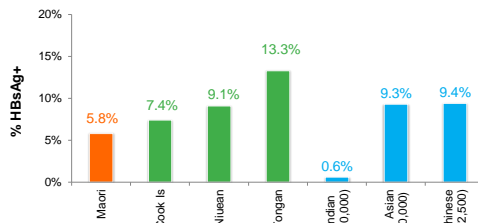
National HBV Screening Programme

July 1999 - July 2002
 - 177,292 Screened
 + 11,936 HBsAg+ identified



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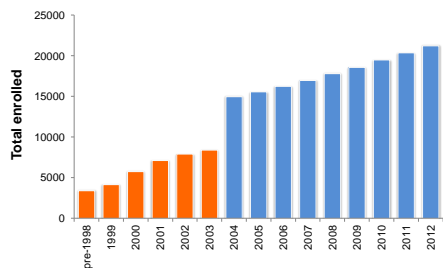
National HBV Screening Programme prevalence according to ethnicity



Robinson T, et al. NZ Med J. 2005; 118: No. 1211

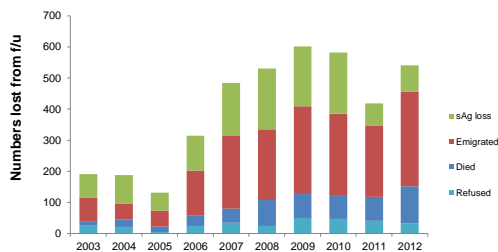
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National HBV Screening Programme followed by opportunistic screening in the community



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Numbers exiting from the National HBV Surveillance Programme

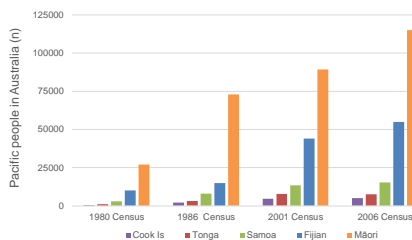


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Polynesians in Australia



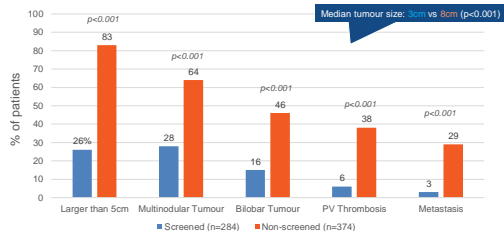
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What are the long-term benefits of the national HBV screening programme?



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Characteristic of Hepatoma: Screened vs Non-screened tumours

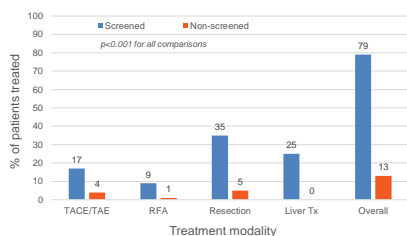


Fung J, et al. Hepatology 2005; 42:258A

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Characteristic of Hepatoma: Screened vs Non-screened tumours

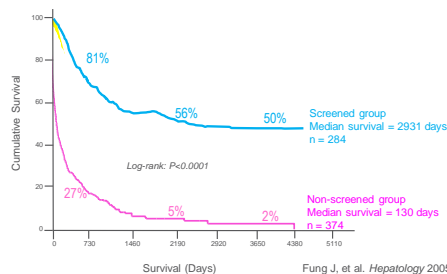


Fung J, et al. Hepatology 2005; 42:258A

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Survival in hepatocellular carcinoma: Screened vs non-screened HBV tumours



Fung J, et al. Hepatology 2005; 42:258A

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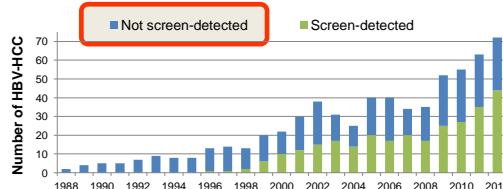
Conclusions

- In a country with endemic HBV infection, neonatal vaccination will prevent chronic infection, thereby reducing the risks of liver-related complications
- Adults with chronic infection should be identified through targeted screening and recruited into a low cost national community-based surveillance programmes

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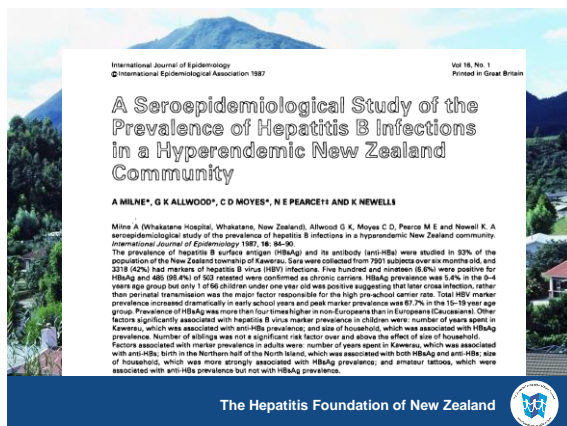
Unresolved issues



- Need to increase recruitment into national programme
- Need to optimise current surveillance strategies
 - identify predictors and tailor screening to risk profile?

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Kawerau cohort HRC study

- 1984: 572 HBsAg+ Māori children diagnosed with chronic HBV
- 2012: 511 original cohort alive. 497 traced and contacted, **384** /511 patients reassessed (105 in Australia, Sydney, Brisbane, Perth & Melbourne)
 - 4% ⇨ HCC; 11% ⇨ cirrhosis (Fibroscan)
- Age, HBeAg status and baseline HBV DNA strongest predictors of HCC*
- 2013-5: Further studies on 1984 and 2012 sera including whole genomic sequencing
 - 1) Determine impact of HBV genotype (C/D)
 - 2) Identify which HBV mutations/deletions predict long term risk of HCC and cirrhosis
- Develop predictive model for liver-related complications based on baseline factors

*Lim T-H et al. (in press)

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Special thanks to:

- Trustees and Staff at the Hepatitis Foundation of New Zealand
- Professor Ed Gane (Auckland)
- Dr. Tien Huey Lim (Auckland)
- Helen Purcell
- Professor Chris Cunningham (Massey University)
- Dr. James Fung (QMH Hong Kong)
- Dr. Brian McMahon (Alaska)
- Health Research Council (NZ)

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Thank you

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