



Trends in hepatocellular carcinoma among people with HBV or HCV notification in Australia (NSW, 2000-2014)

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HCC global estimates

3rd

Leading cause of cancer **death**

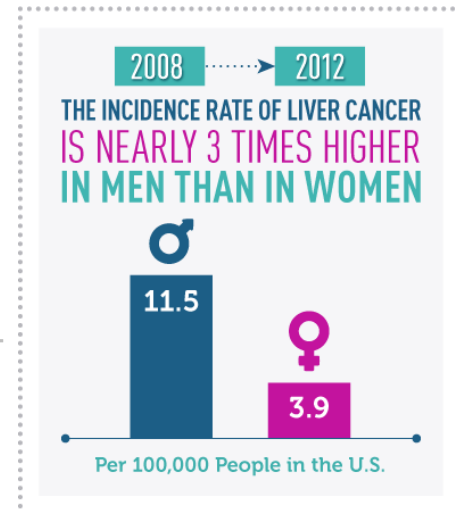
5th

Most common malignant disease in **men**



6th

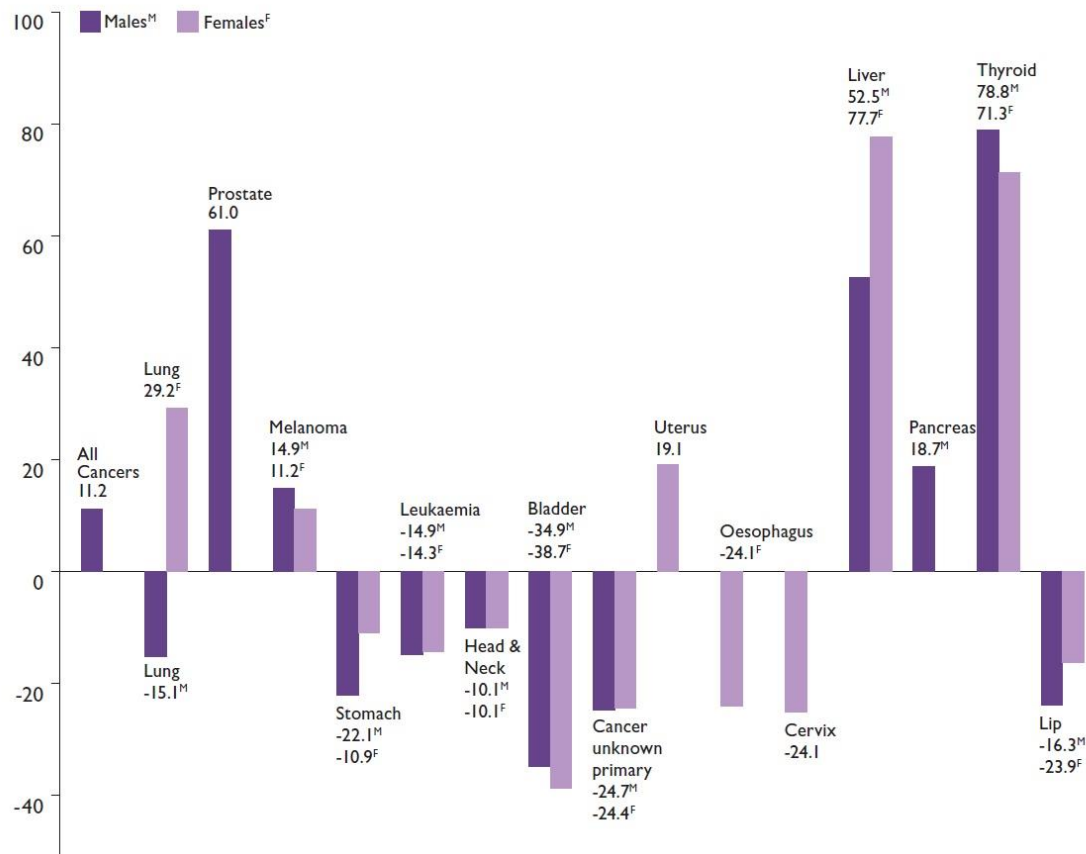
Most common cancer **worldwide**



www.seer.cancer.gov

Source: Annual Report to the Nation on the Status of Cancer, 1975-2012

Trends in overall cancer incidence in NSW



- Percentage change in incidence rates in males and females, NSW, 1999-2008

Source: NSW Cancer incidence and mortality report 2008

The HBV and HCV population

- Ageing population



Time since HBV
or HCV diagnosis

Extent of liver
fibrosis

Aims

Aim.1.

Evaluate trends in HCC among people with HBV or HCV

Aim.2.

Identify factors associated with HBV and HCV-related HCC

Hypothesis

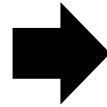
HBV antiviral therapy has been effective in reducing HCC risk at a population level in Australia (NSW, 2000-2014)

Linkage



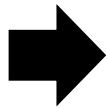
Population

People notified with
HBV or HCV in
NSW 1993-2012



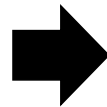
NSW Admitted Patient Data Collection

2000-2014



Registry for Births, Deaths & Marriages

1993-2014



HIV Administrative dataset

1993-2013

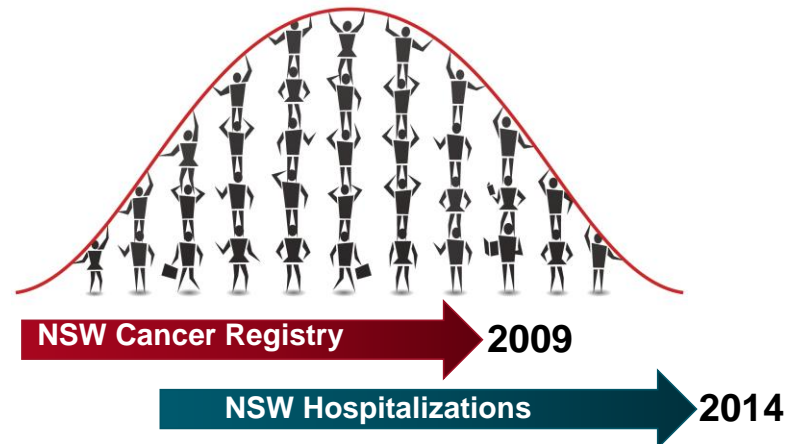
HCC ascertainment

ICD-10-AM*: C22.0 (HCC)

As a principle or additional diagnosis

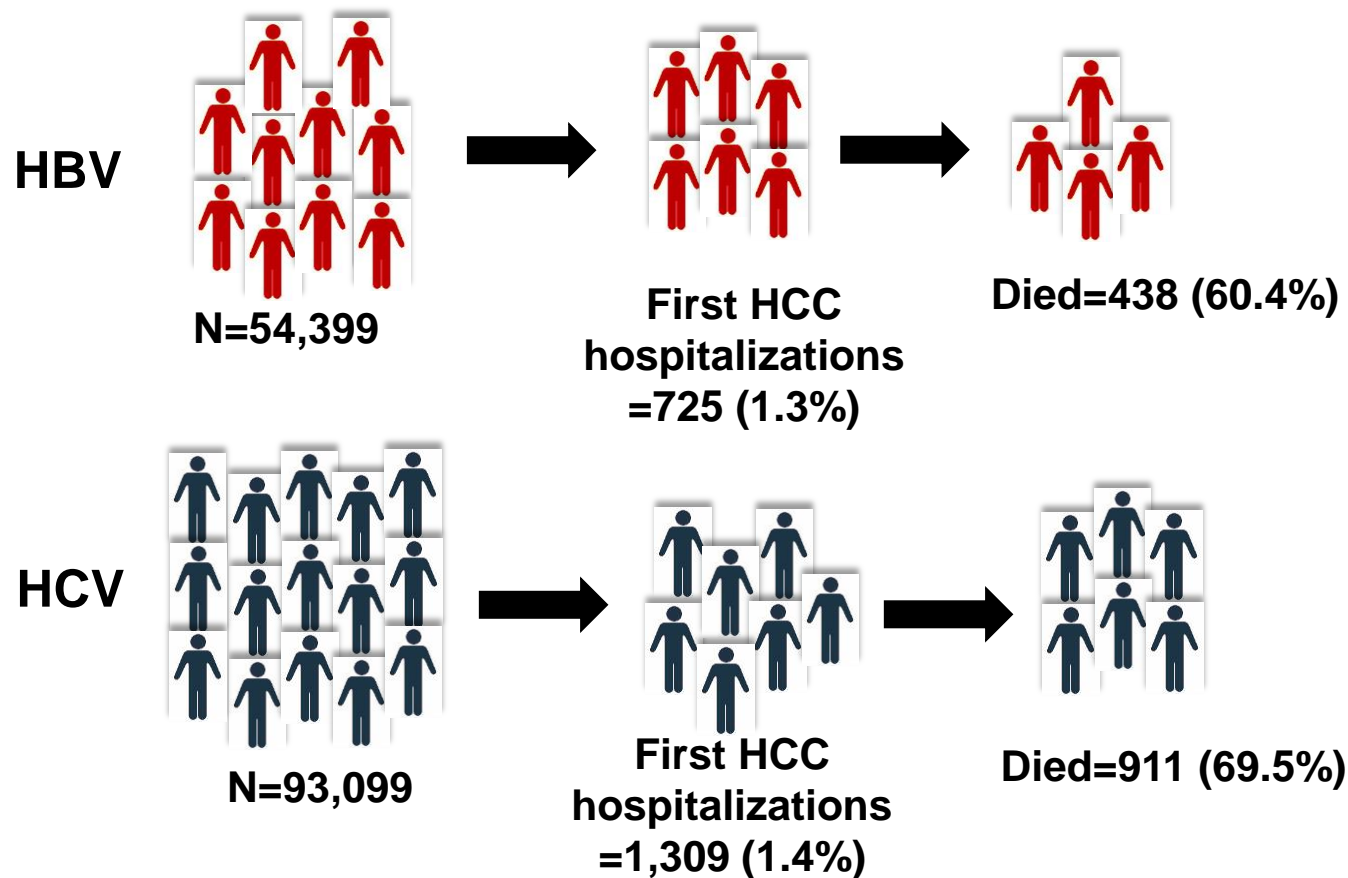
Validation

Concordance between APDC and CCR was measured (2000-2009)



*ICD-10-AM: Australian modification of the International Classification of Diseases

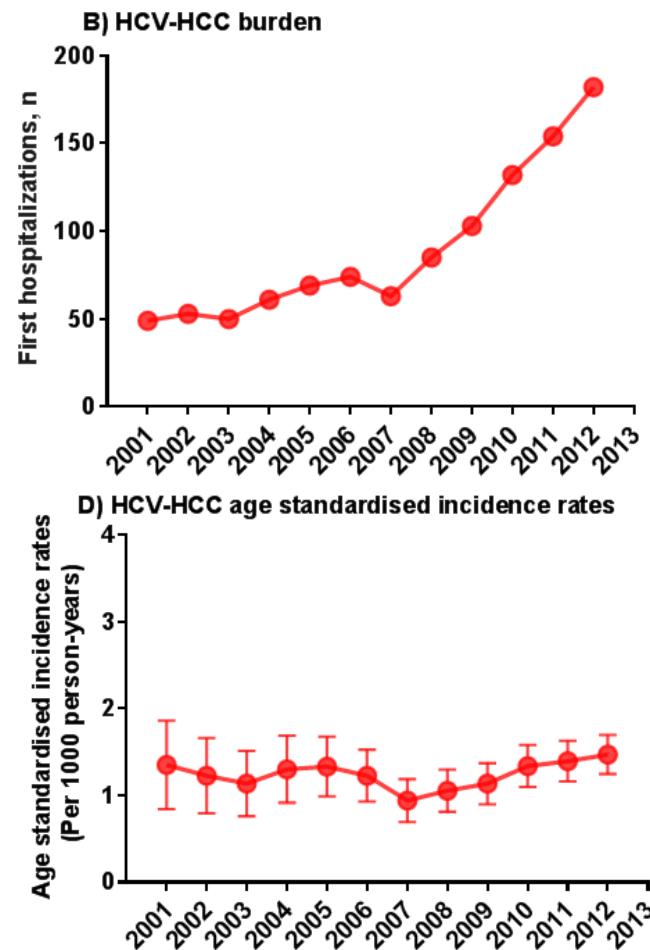
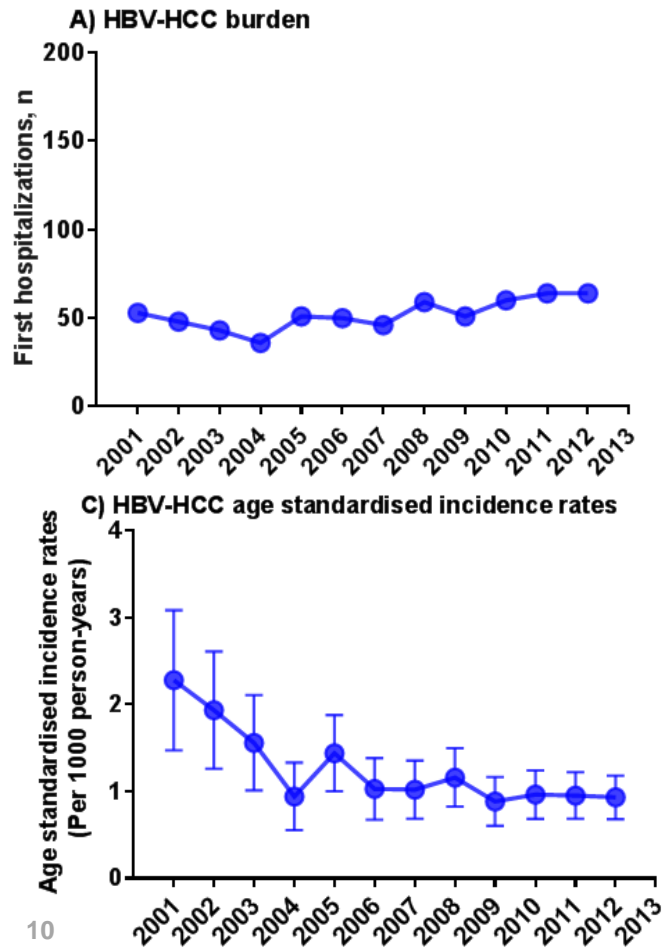
In NSW 2000-2014



Baseline characteristics

	HBV (n=54,399)	HCV (n=93,099)
Year of birth, Median (IQR)	1966 (20)	1965 (15)
Year of birth		
>1965	27,934 (51)	43,449 (47)
1956-1965	13,820 (25)	32,388 (35)
<1956	12,634 (23)	17,235 (18)
Gender		
Female	24,524 (45)	34,765 (37)
Male	29,595 (54)	58,037 (62)
Place of residence		
Metro	24,299 (44)	29,629 (31)
Outer-Metro	24,730 (46)	29,955 (32)
Rural	4,850 (9)	31,742 (34)
Country of birth		
Australia	4,269 (8)	48,257 (52)
Asia Pacific	16,440 (30)	4,794 (5)
Europe	1,581 (3)	4,614 (5)
Other	944 (2)	1,563 (2)
Missing	31,165 (57)	33,871 (36)
HIV positive	391 (1)	1,000 (2)
Alcohol related hospitalization	1,138 (2)	15,495 (17)
Died	2,636 (5)	10,277 (11)

HCC trends in NSW 2001-2013



Factors associated with HBV-HCC risk

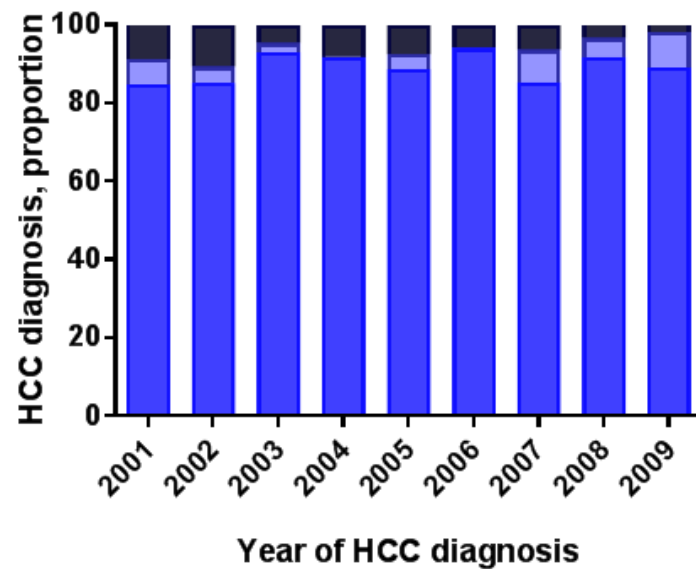
	Person-years	HCC (n=552)	Adjusted HR (95% CI)	P
Study period				
2000-2004	126,501	134	1.00	--
2005-2009	196,827	195	0.75 (0.59,0.94)	0.01
2010-2014	219,230	223	0.54 (0.42,0.70)	<0.001
Age[†]	--	--	1.06 (1.05,1.06)	<0.001
Gender				
Male	290,337	458	4.50 (3.6, 5.6)	<0.001
Country of birth				
Australia	42,674	31	1.00	--
Asia Pacific	159,955	400	3.84 (2.58, 5.71)	<0.001
Europe	15,246	52	2.14 (1.34, 3.39)	<0.01
Other	7,724	12	2.91 (1.48,5.74)	<0.01
HIV				
Yes	2,907	7	2.25 (0.99,5.10)	0.05
Alcohol-related hospitalization				
Yes	9206	38	2.84 (1.95, 4.13)	<0.001

Factors associated with HCV-HCC risk

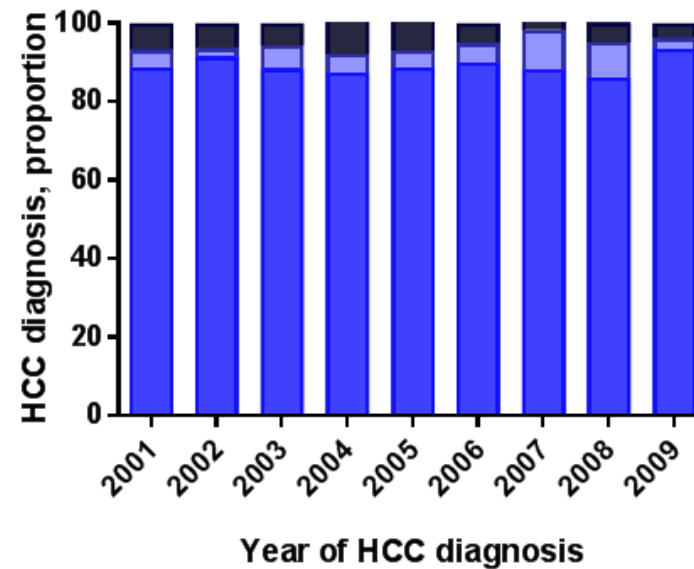
	Person-years	HCC (n=1168)	Adjusted HR (95% CI)	P
Study period				
2000-2004	249,848	184	1.00	--
2005-2009	360,922	350	0.86 (0.71, 1.04)	0.12
2010-2014	373,389	634	0.85 (0.69, 1.03)	0.10
Age	--	--	1.1 (1.08, 1.09)	<0.001
Gender				
Male	608,106	937	2.56 (2.20, 2.98)	<0.001
Country of birth				
Australia	503,627	569	1.00	--
Asia Pacific	49,684	236	2.37 (1.99, 2.82)	<0.001
Europe	46,998	188	1.59 (1.33, 1.90)	<0.001
Other	16,174	60	2.00 (1.52, 2.64)	<0.001
HIV				
Yes	8,584	7	0.76 (0.36, 1.62)	0.48
Alcohol-related hospitalization				
Yes	138,570	389	3.90 (3.39, 4.49)	<0.001

Validation

a) HBV



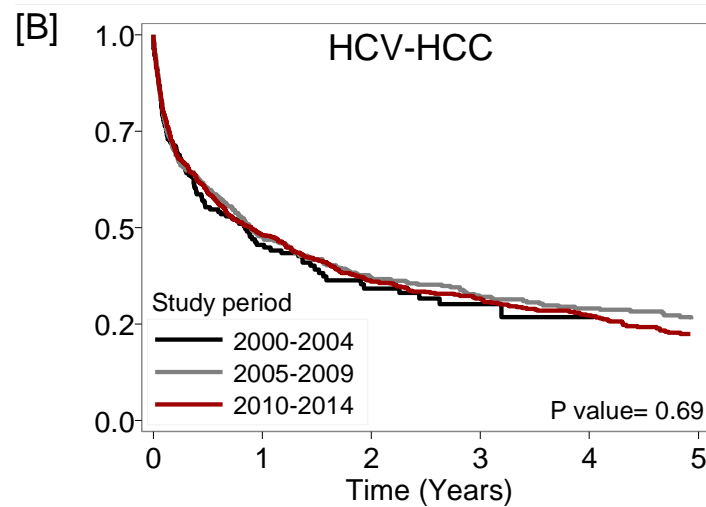
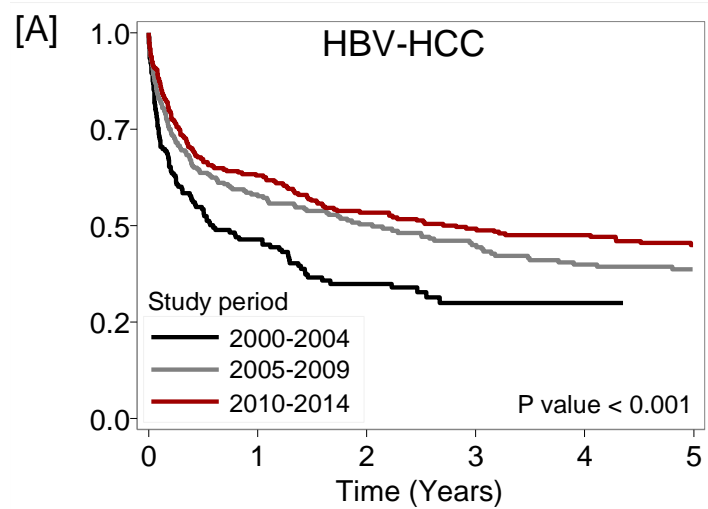
b) HCV



■ Admitted Patient Data Collection only ■ Central Cancer Registry only ■ Both

- **89.9%** of the HBV-HCC and **91.3%** of the HCV-HCC were recorded on both datasets

Survival following HCC in NSW 2000-2014



Take home messages



- The individual-level risk of HCC among people with HBV in NSW has more than halved over the period 2001 to 2013
- This suggests an impact of more effective antiviral therapy from mid-2000s



- The individual-level risk of HCC among people with HCV in NSW has remained stable over the period 2001 to 2013
- The population-level HCV-HCC burden continues to escalate

Acknowledgments

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