

Trends in hepatocellular carcinoma, Victoria, Australia, 2004-2013

Carville KS^{1,2}, Cowie BC¹⁻⁴, MacLachlan JH¹⁻³

1. WHO Collaborating Centre for Viral Hepatitis, The Doherty Institute
2. VIDRL, Royal Melbourne Hospital, The Doherty Institute
3. School of Medicine, Dentistry, and Health Sciences, The University of Melbourne
4. Victorian Infectious Diseases Service, Royal Melbourne Hospital



Background

- Liver cancer is now the 9th most common cause of cancer death in Australia¹
- Most cases are preventable eg viral hepatitis is a major cause²
- We examined Victorian Cancer Registry data to provide up-to-date detail on hepatocellular carcinoma (HCC) cases
 - Aim to describe trends and burden of disease



1. Australian Institute in Health and Welfare 2013. 2. Global Burden of Disease 2013.

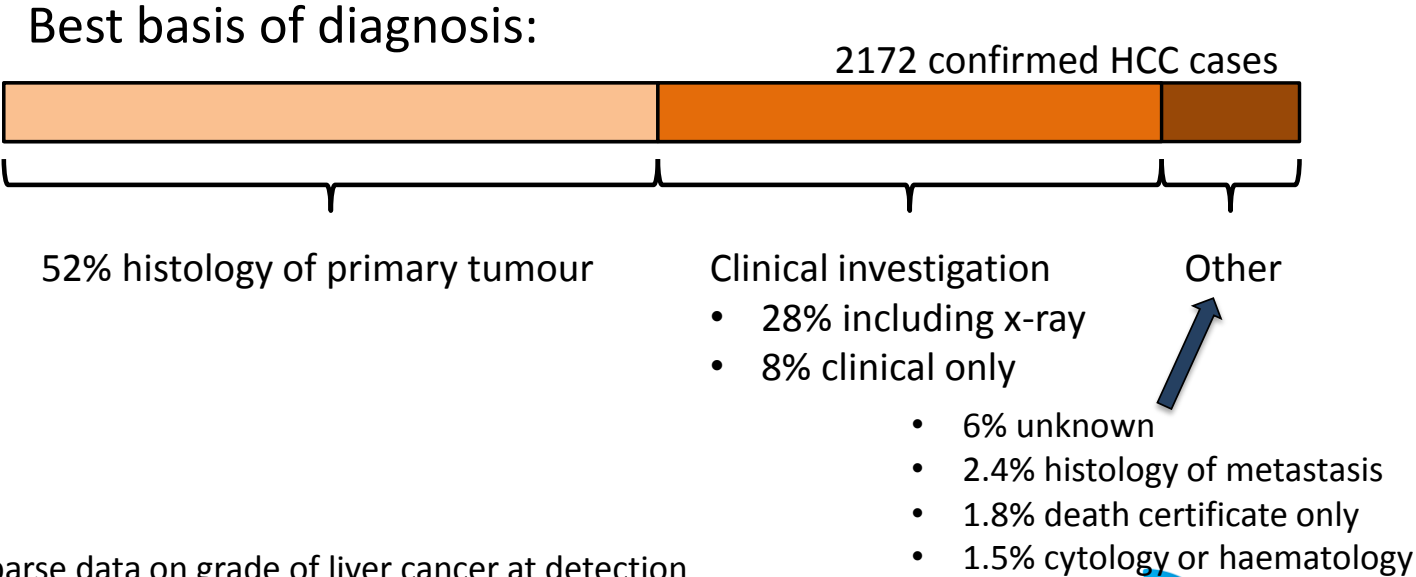
Methods

- Data sources
 - De-identified data on HCC diagnoses in the ICDO-3 range 8170/3 to 8180/3 in Victorian residents from 1st January 2004 to 31st December 2013 from the Victorian Cancer Registry (VCR)
 - Population data from Australian Bureau of Statistics
- Analysis
 - Stata 14
 - Descriptive statistics: age, sex, metro/rural residence, country of birth, basis of diagnosis (ranksum)
 - Trends in age standardised rates (negative binomial regression)
 - Impact of demographics (age, gender, metro/rural residence) on HCC incidence (negative binomial regression)
 - Impact of demographics (age, gender, metro/rural residence, born in Australia/born overseas) on risk of death (Cox regression)

Who was diagnosed with liver cancer in Victoria, 2004 - 2013?

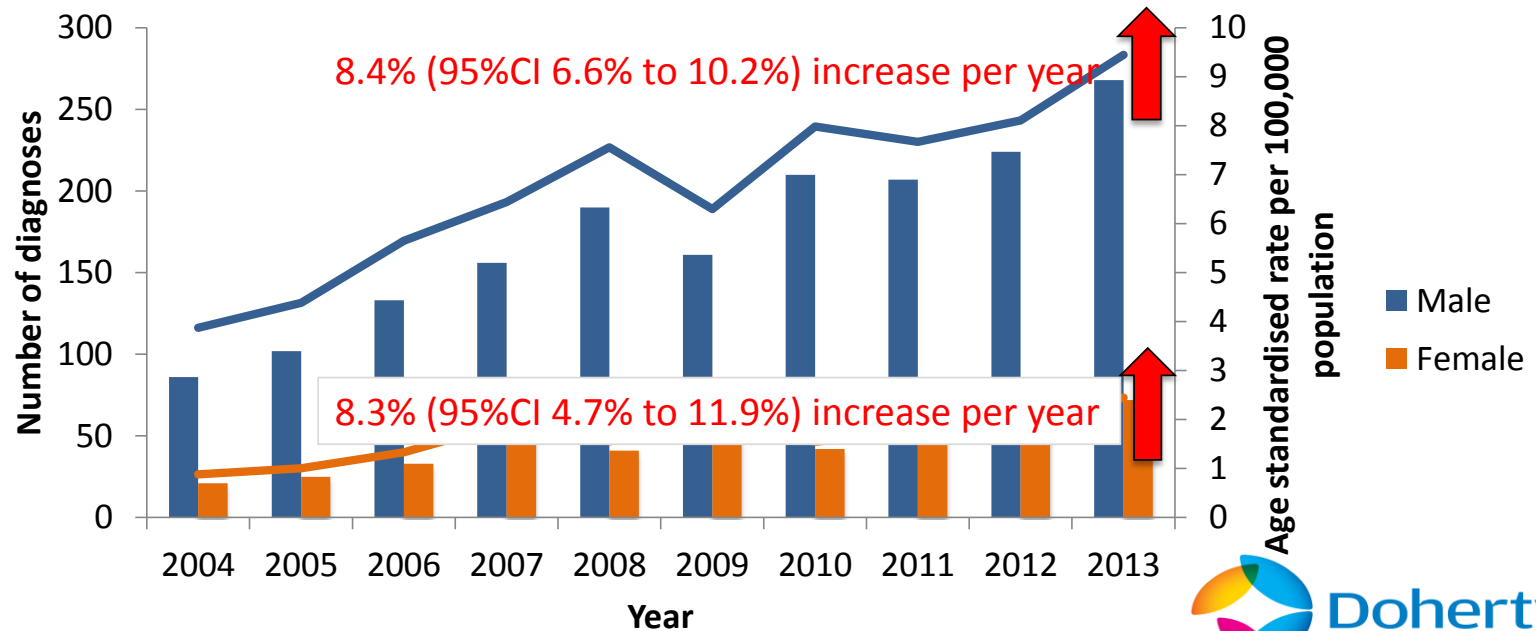
Demographic characteristics (N=2172)	
80% male	Male: median age 65 years (IQR 56 to 74) Female: median age 70 years (IQR 59 to 78) p<0.001
81% resident in metro Melbourne	No difference in median age at diagnosis (66 years)
57% born overseas	Southern/Eastern Europe (21%, n=454) South/East Asia (10%, n=224) North/West Europe (9%, n=195)
0.8% identified as Aboriginal and/or Torres Strait Islander	Compared with 0.9% of the Victorian population

How were people diagnosed with HCC?

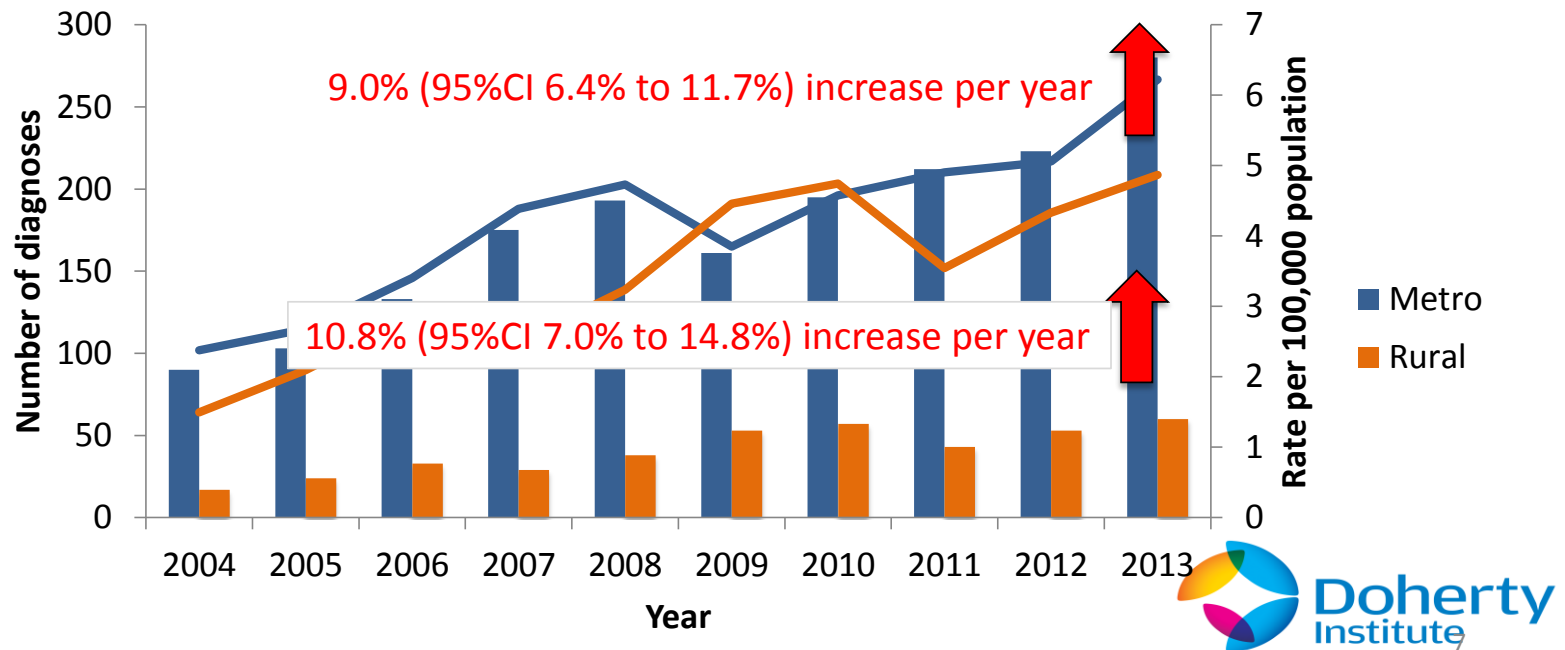


Sparse data on grade of liver cancer at detection
Data for 569 cases (26%)

HCC diagnoses increased in men and women in Victoria, 2004 - 2013



HCC diagnoses increased in Melbourne and rural Victoria, 2004 - 2013



Impact of demographics on HCC diagnosis

	IRR	95% CI	P value
Live in metro Melbourne	1.5	1.4 – 1.7	<0.001
Age (years)			
50-59	13.6	11.3 – 16.3	<0.001
60-69	20.5	17.1 – 24.6	<0.001
70-79	36.0	30.0 – 43.2	<0.001
80+	27.5	22.5 – 33.6	<0.001
Male	4.5	4.0 – 5.1	<0.001
Year	1.1	1.1 – 1.1	<0.001

- Multivariate Poisson regression
- Interpretation:
 - People who live in the metro area have a HCC rate 1.5 times greater than people who live in rural areas, holding the other variables constant
 - For each year increase from 2004, there's a 10% increase in the rate of HCC diagnosis, holding all other variables constant

Impact of demographics on HCC risk of death

- Median survival was just over one year (384 days, 95%CI 345 to 412 days)
- Five-year survival rate was 0.16 (95%CI 0.14 – 0.18)

	HR	95% CI	P value
Born in Australia	1.3	1.2 – 1.5	<0.001
Live in metro Melbourne	0.9	0.7 – 1.0	0.016
Age (years)			
50-59	1.1	0.9 – 1.4	0.212
60-69	1.3	1.0 – 1.5	0.026
70-79	1.7	1.4 – 2.1	<0.001
80+	2.7	2.1 – 3.3	<0.001
Male	1.1	1.0 – 1.2	0.162

- Multivariate Cox regression
- Interpretation
 - Year and sex did not affect survival over 2004 – 2013
 - The rate of death was 10% lower for people who live in the metro area compared with people who live in rural areas, holding the other variables constant.

Limitations and further work

- Registry collects limited explanatory variables, no data on etiology
 - Linking liver cancer diagnoses with notifications for hepatitis B and C
- Potential under-counting of clinical diagnoses in registry data¹
- Further exploration of country of birth impact

1. Hong 2015

Summary and implications

- Increasing incidence
 - National increase reflected in Victoria, with rates more than doubling in 10 years among both men and women
- Very low survival
 - No great change in survival over the decade
 - Substantial impact of late diagnosis
 - Missed opportunities for prevention
- Priorities for prevention
 - Diagnoses 4.5x higher in males, but rates increasing similarly for males and females and risk of death does not differ
 - Diagnoses 1.5x higher in the metro area, although survival 10% lower
 - Those born overseas disproportionately affected

doherty.edu.au

Facebook: The Doherty Institute

Twitter: @TheDohertyInst

#DohertyInstitute #TheDoherty

