



Unit of Cancer Epidemiology
CRO Aviano National Cancer Institute

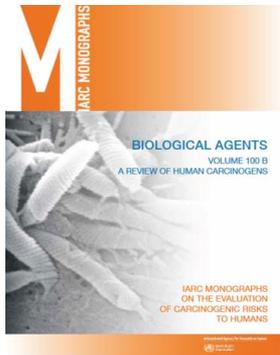


The impact of HBV vaccination on B-cell non-Hodgkin lymphoma

Polesel J, Taborelli M, Zucchetto A, Dal Maso L,
Montella M, Tedeschi R, Libra M, Serraino D

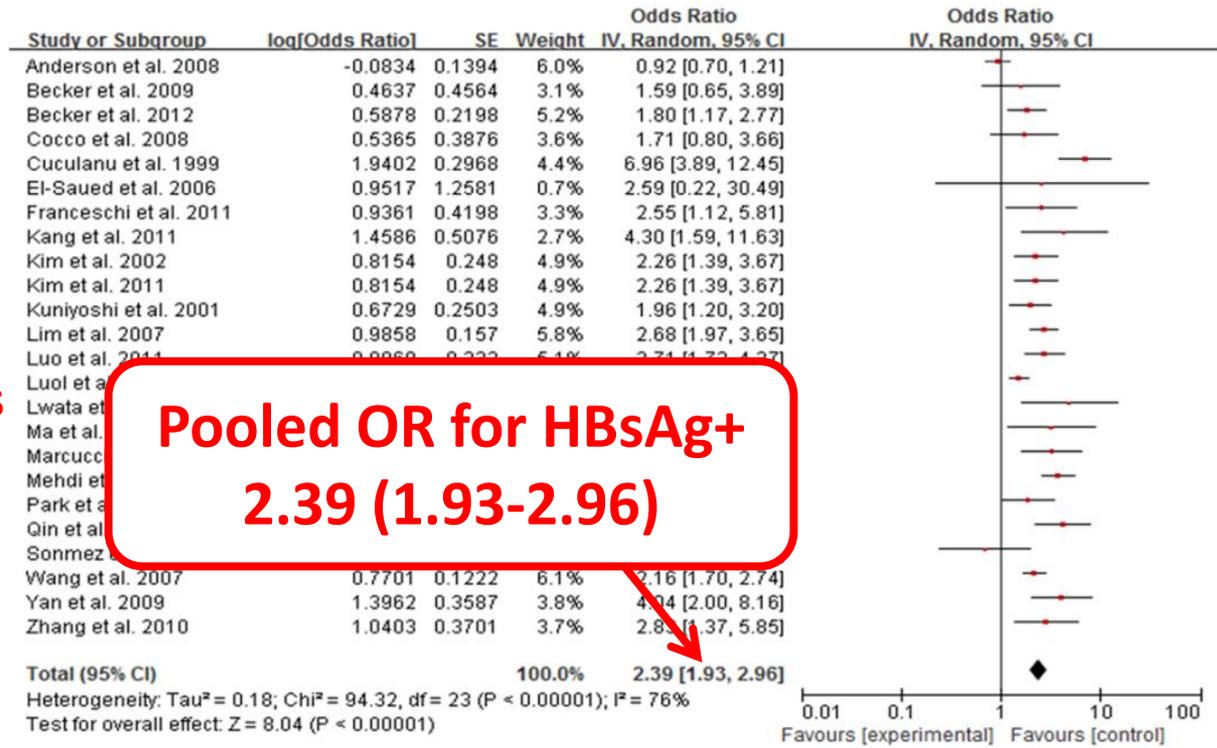


HBV & NHL: current evidence



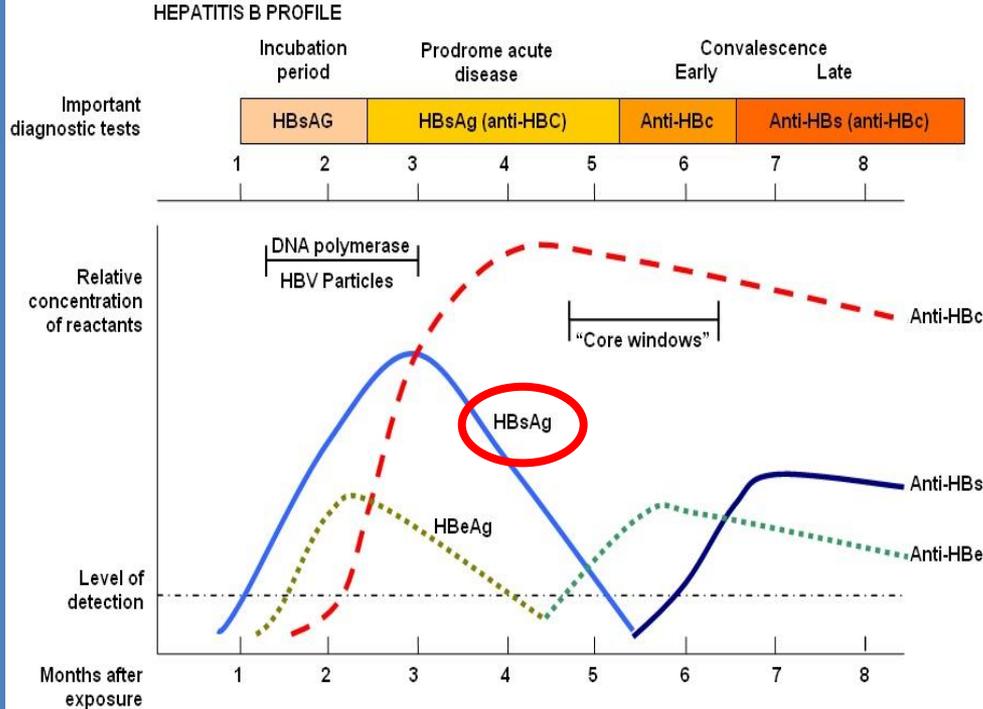
Chronic infection with HBV is carcinogenic to humans (Group 1). (Liver cancer)

in addition
 “...positive associations have been observed between chronic infection with HBV and ... non-Hodgkin lymphoma.”



**Pooled OR for HBsAg+
 2.39 (1.93-2.96)**

HBV: a complex serology

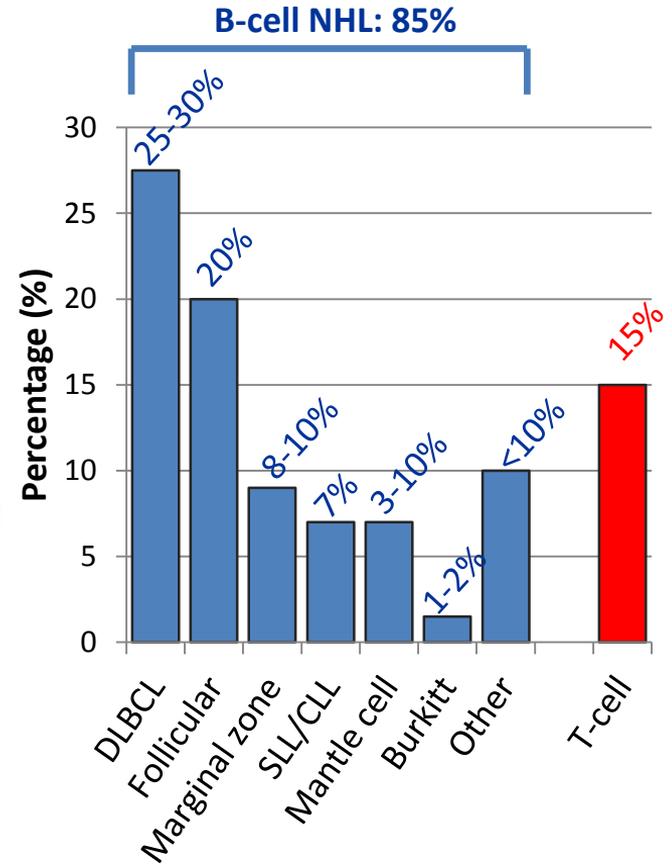


Interpretation	HBsAg	anti-HBc	anti-HBs
Susceptible to infection	-	-	-
Immune due to natural infection	-	+	+
Immune due to HBV vaccination	-	-	+
Acutely infected	+ IgM+	+	-
Chronically infected	+ IgM-	+	-
1. Resolved infection	-	+	-
2. False positive anti-HBc	-	+	-
3. "Low level" chronic infection	-	+	-
4. Resolving acute infection	-	+	-

Questions

Investigating the association of HBV and B-cell NHL using a comprehensive serological panel:

- Are people with chronic HBV infection at increased risk of B-cell NHL?
- Are people with resolved HBV infection at increased risk of B-cell NHL?
- **What is the risk of B-cell NHL among vaccinated people?**



Study design

Study type: Case-control

Period: 1999-2014

Study center: Aviano, Catania
Naples

Cases: 513 incident B-cell NHLs

Controls: 997 matched cancer-free
inpatients

Blood sampling: During hospital stay,
before any treatment

HBV serology: CRO Aviano



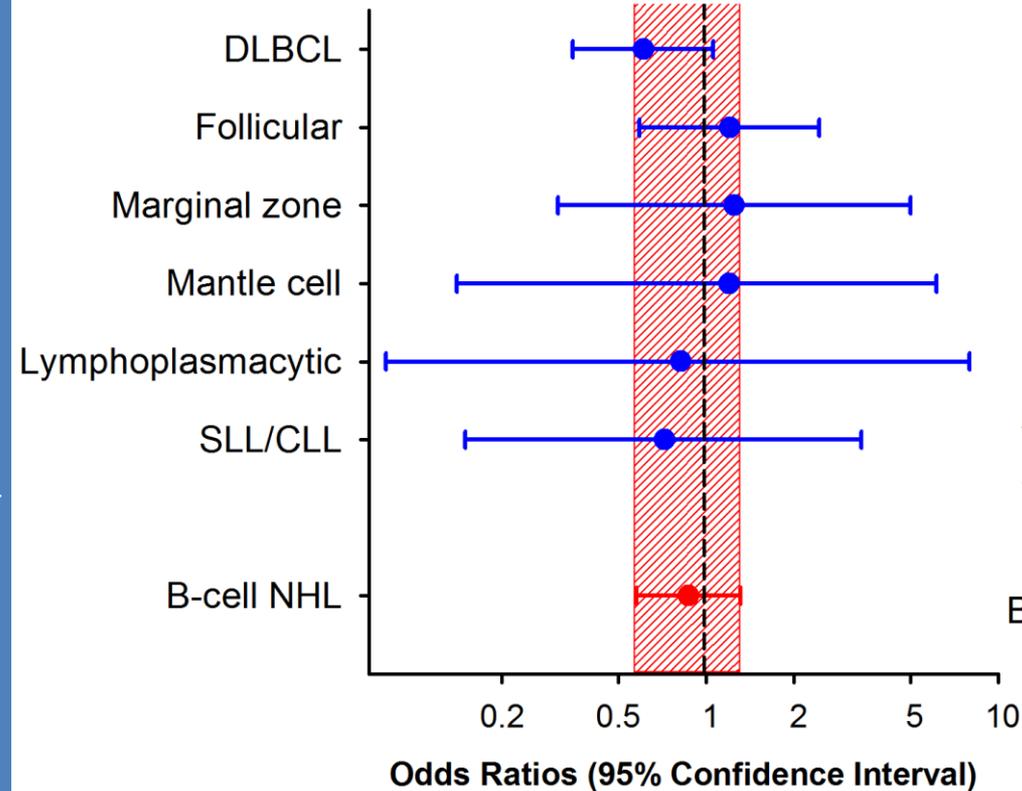
Study results

HBsAg	anti-HBc	anti-HBs	Interpretation	Cases n (%)	Controls n (%)	OR (95% CI) Adjusted for centre, sex, age, year of diagnosis, education, place of birth
-	-	-	Susceptible	321 (63%)	609 (61%)	Ref.
-	+	+	Resolved HBV infection	82 (16%)	179 (18%)	0.79 (0.58-1.10)
-	-	+	Vaccinated	47 (9%)	122 (12%)	0.87 (0.58-1.31)
-	+	-	False positive/Occult HBV	43 (8%)	70 (7%)	1.14 (0.75-1.73)
+	+	-	Chronic HBV infection	20 (4%)	17 (2%)	2.11 (1.07-4.15)

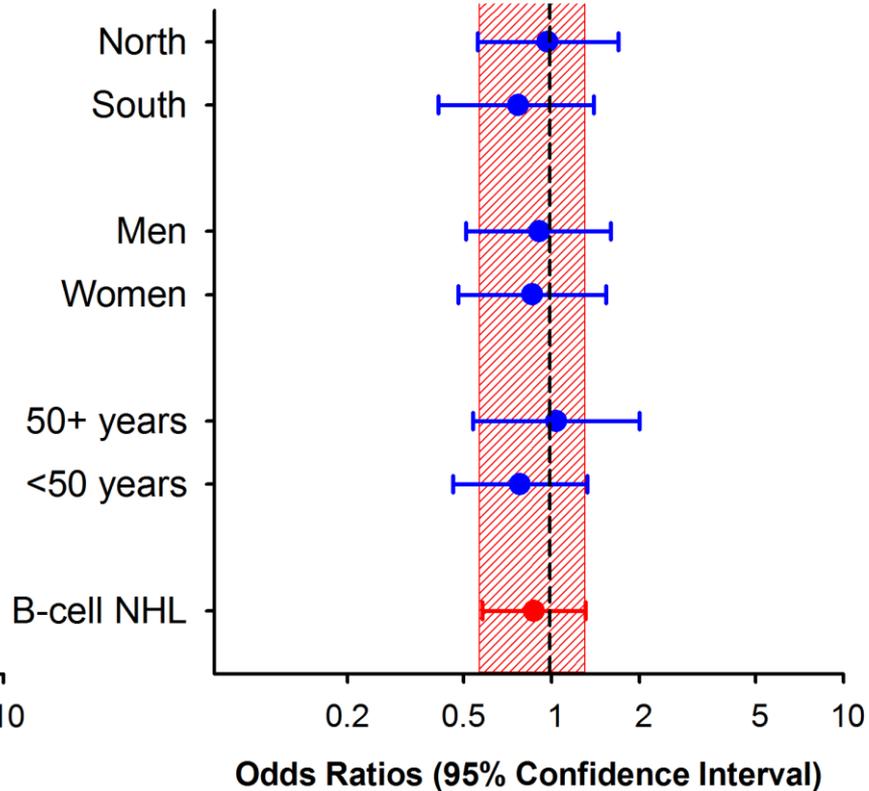
Study results

Risk of B-cell NHL among vaccinated people

by histological subtype



by patients' characteristics



Conclusions

- People with chronic HBV infection (HBsAg+) have a 2-fold increased risk of B-cell NHL
- No increased risk of B-cell NHL emerged for people immunized against HBV
- In the Italian population, **2.9%** (1.5%-4.2%) **of B-cell NHLs are attributable to chronic HBV infection**
- **Prevention** of HBV infection through vaccination and safe behaviors may **diminish NHL incidence**, notably in areas with high HBV/HCV prevalence.

WORLD HEPATITIS DAY 28 JULY

THINK YOU'RE NOT AT RISK OF
HEPATITIS?
THINK AGAIN.

Hepatitis virus types A, B, C, D and E cause infection and inflammation of the liver that can lead to severe disease and death.

HEPATITIS B, C & D

Spread by blood, semen and other body fluids

6 WAYS TO PROTECT YOURSELF

- ✓ Talk to your healthcare provider about the hepatitis B vaccine
- ✓ NEVER share needles, razors or toothbrushes
- ✓ If you are pregnant, talk to your doctor about how to prevent transmission to your baby
- ✓ Use only sterilized tattoo and piercing instruments
- ✓ Use condoms correctly and consistently
- ✓ Where possible, choose oral medications instead of injections

GET TESTED!
YOU ARE AT RISK IF:

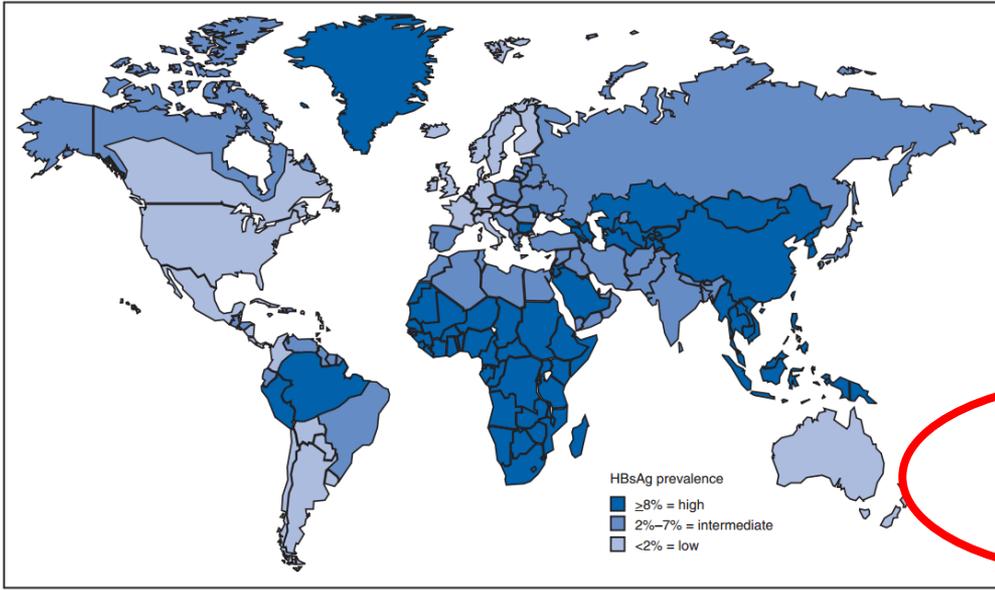
- ✓ You've ever had medical or dental treatment with unsterile instruments
- ✓ You've received a blood transfusion in a country that does not test for hepatitis
- ✓ Your mother was infected with hepatitis when you were born
- ✓ You have ever injected drugs
- ✓ You are living with HIV

More than **1 MILLION PEOPLE DIE** each year from disease caused by **hepatitis B & C**.

Most of those infected don't know they have it, **INCREASING THE RISK** of developing severe liver disease and transmitting the virus to others.



Translational implications



183 Countries with infants vaccination programs

HBsAg+
3.6%

- raising awareness;
- promoting prevention of transmission through **vaccination, safe injection practices and blood safety.**

Acknowledgments

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