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HCC surveillance:

Re-engaging people,
strengthening systems,
preventing avoidable
liver cancer

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Burnet Institute & University of Melbourne

St Vincent's Hospital Melbourne



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Disclosures

- Advisory board: Astra Zeneca, Roche Diagnostics, Roche Pharmaceuticals, Abbott Diagnostics
- Speaker fees: Roche Pharmaceuticals
- Grant support: Gilead Sciences, Roche Diagnostics

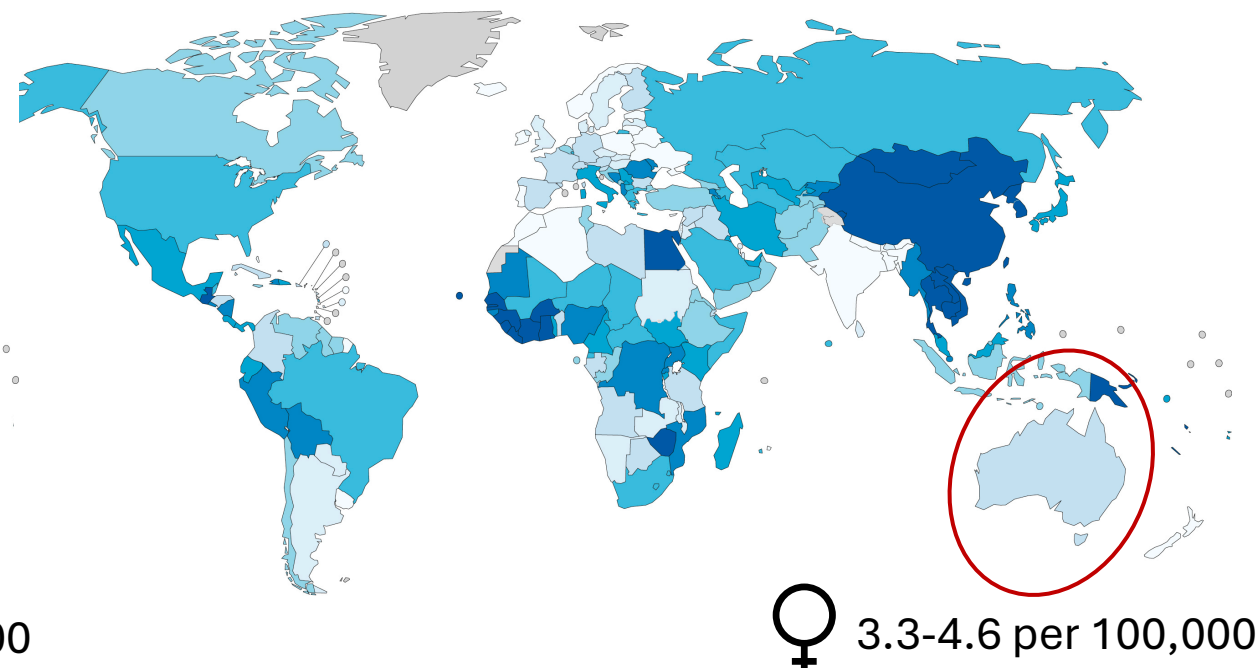
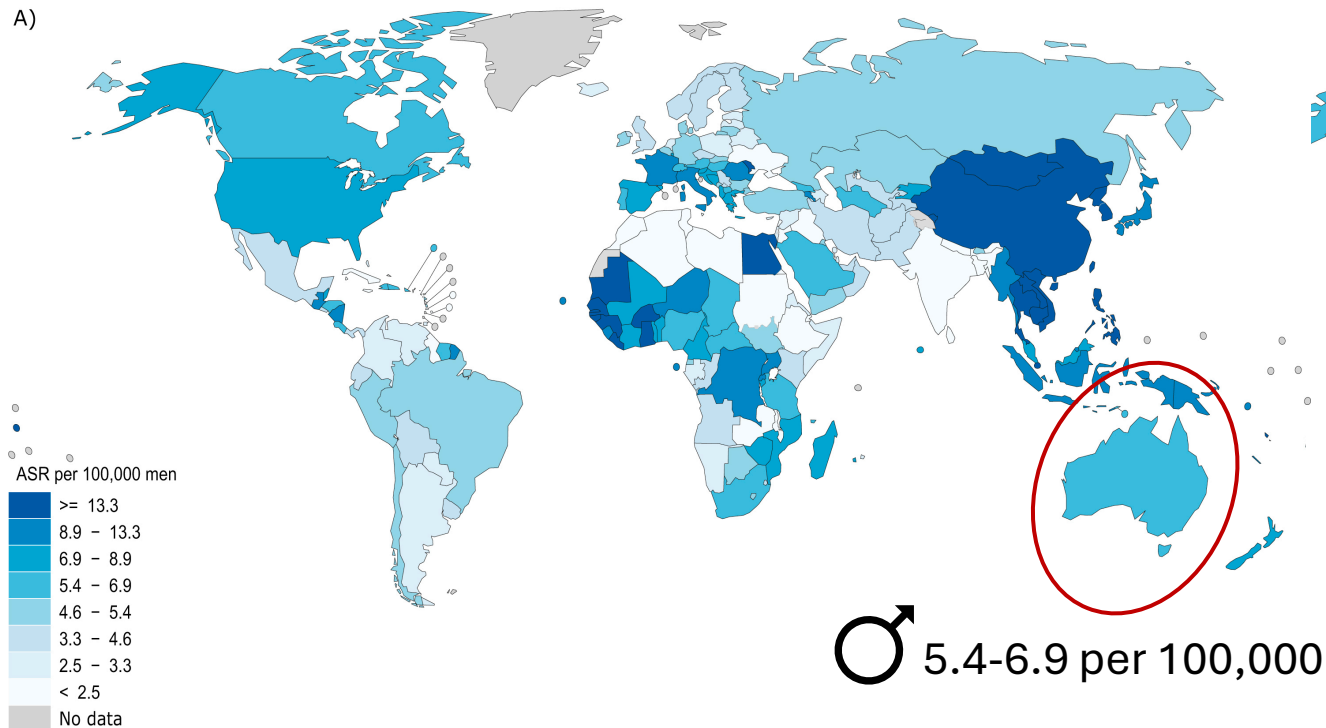
Primary liver cancer

- Estimated 6th most common incident cancer worldwide (7.3 per 100,000)
- 3rd lead cause of cancer death
- **5-year survival 17-20%**
- 80% hepatocellular carcinoma (HCC); 90% in people with cirrhosis

HCC incidence in Males, 2018

HCC incidence in Females, 2018

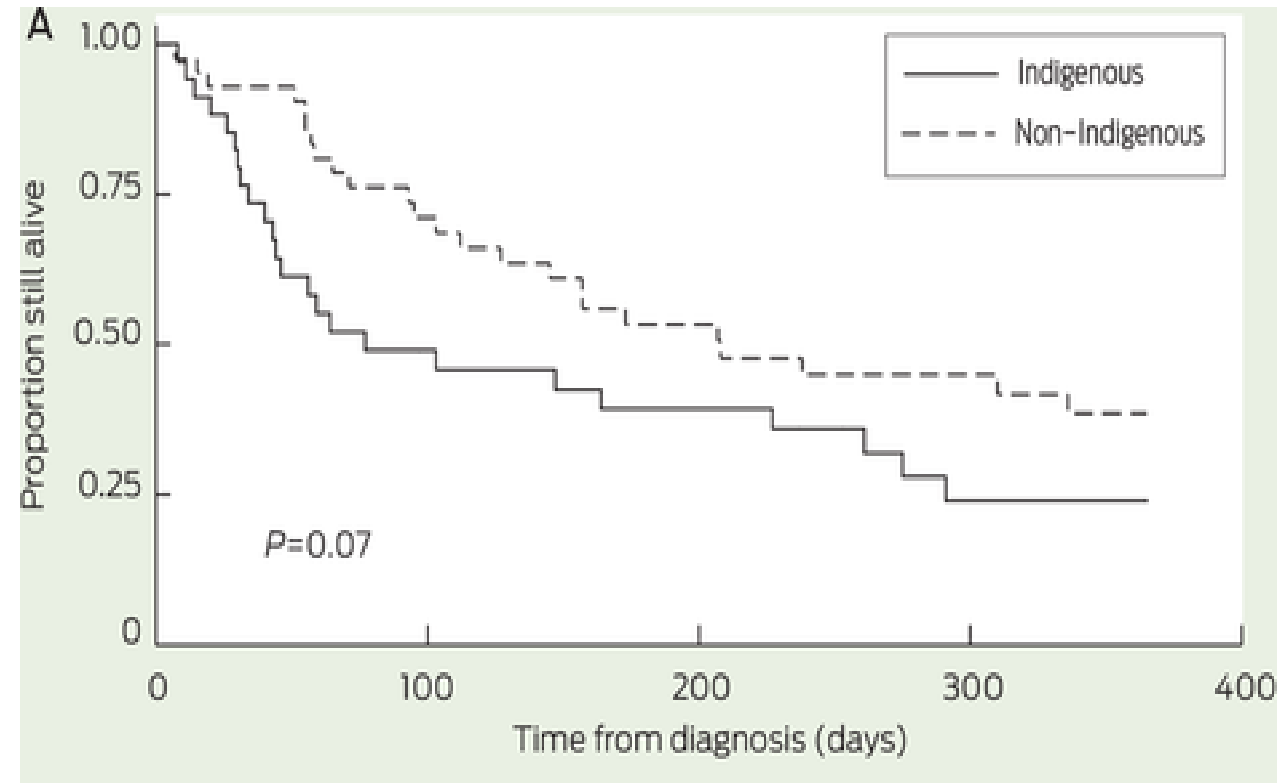
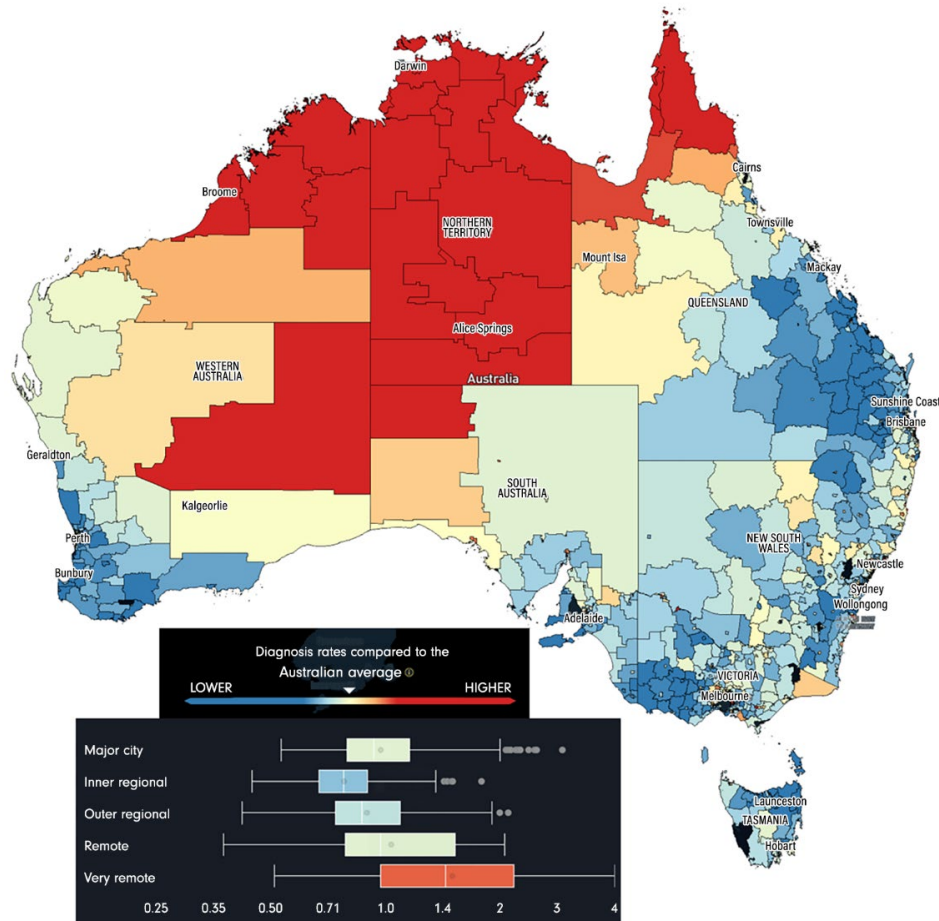
A)



Rumgay H, GLOBOCAN data, E J Cancer 2022

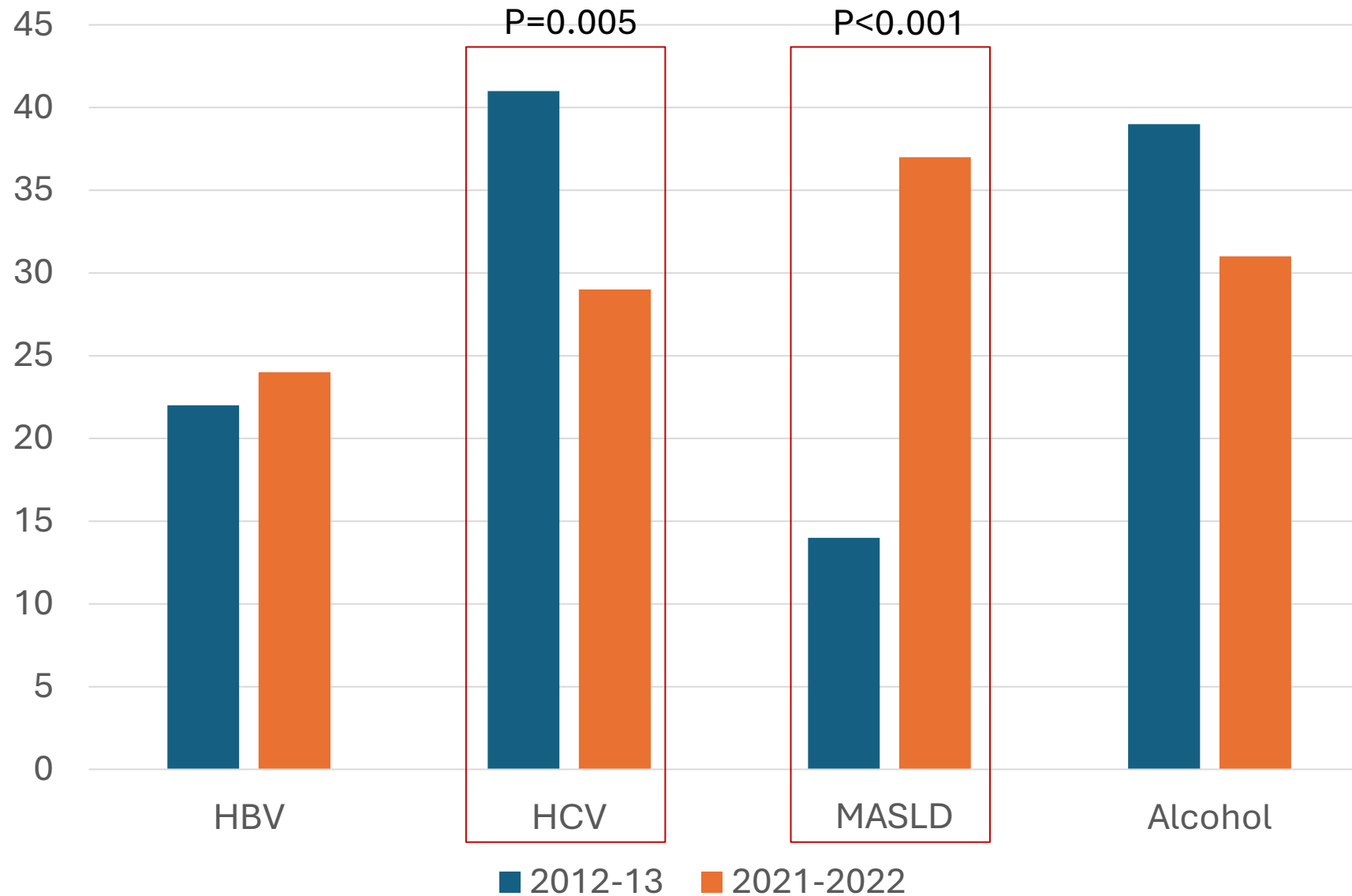
Primary liver cancer- Distribution in Australia

- Around 2800 Australians diagnosed annually, 2400 deaths annually
- Greatest prevalence in remote areas- limited healthcare access, resources
- Higher prevalence and greater mortality among Indigenous Australians



Wigg A, *EClinical medicine* 2021

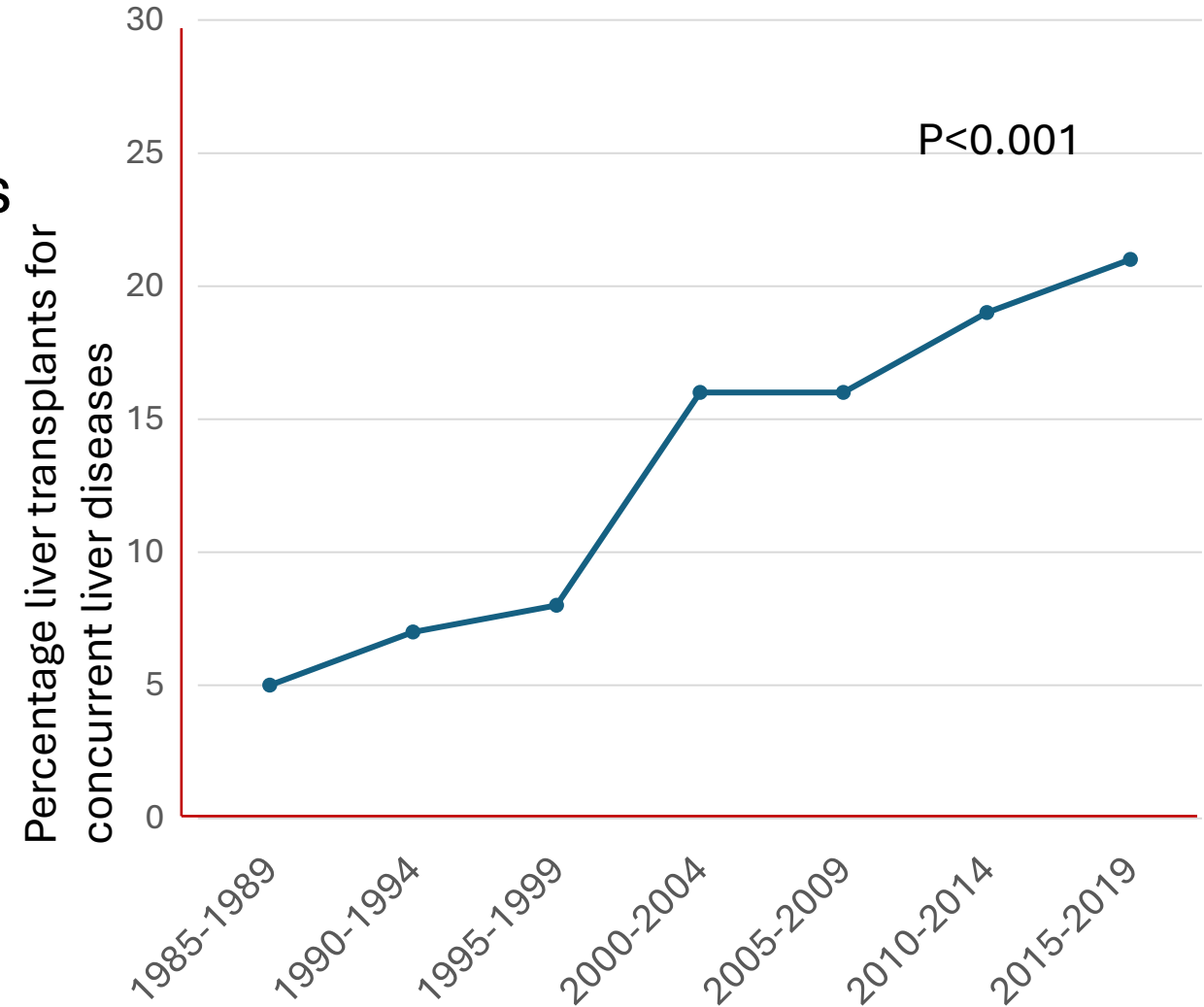
Change in proportion of HCC cases due to different liver disease aetiologies in Victoria: Comparison 2012-13 to 2021-22



Concurrent liver diseases

- Prevalence increasing globally
- 30-40% of HCC >1 risk factor
- Higher among First Nations Peoples
- **Australia:**
- **30-35%** of people with HCC in NT, SA, QLD, VIC

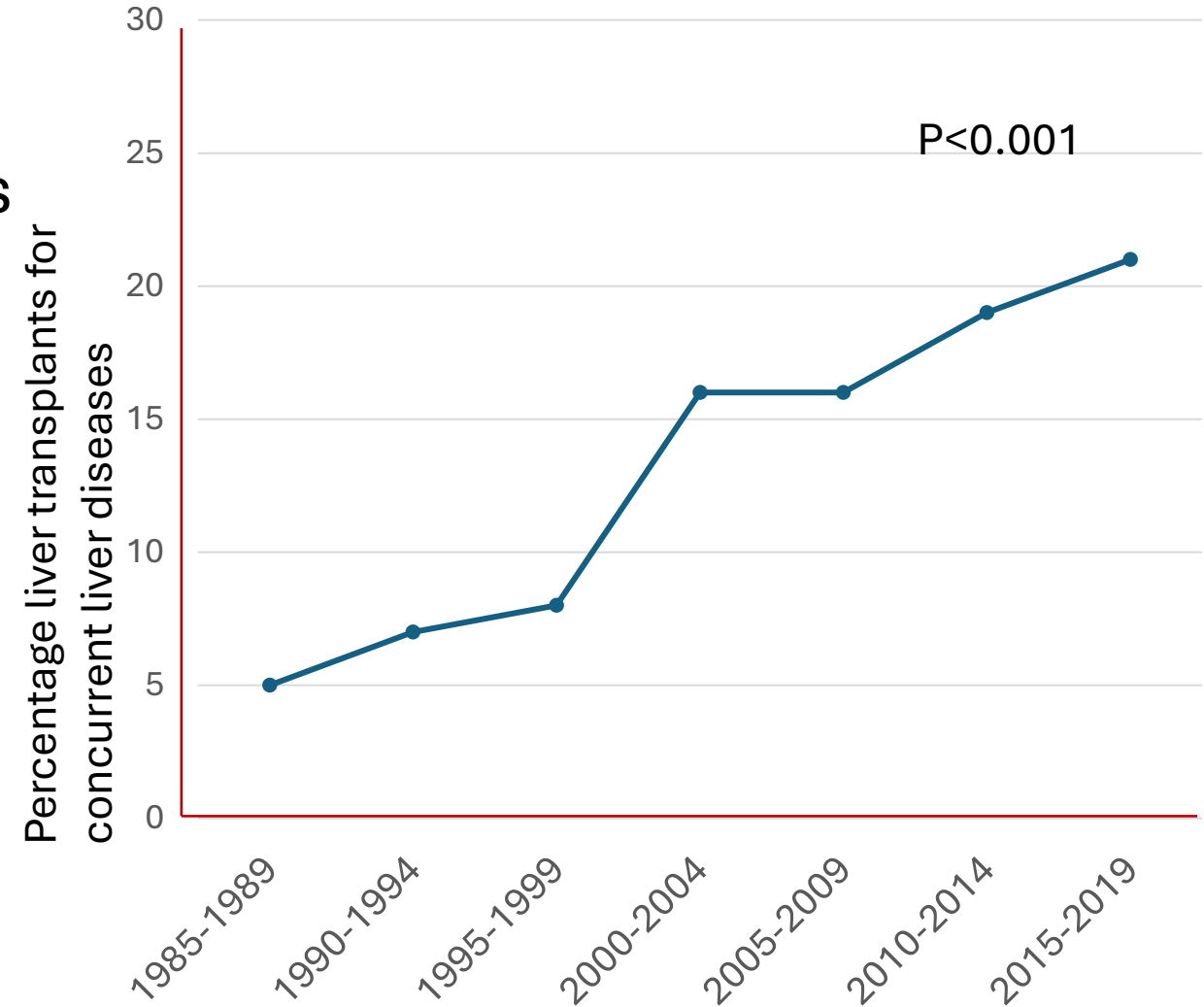
Proportion of liver transplants for concurrent liver disease in Australia and New Zealand



Concurrent liver diseases

- Prevalence increasing globally
- 30-40% of HCC >1 risk factor
- Higher among First Nations Peoples
- **Australia:**
 - **30-35%** of people with HCC in NT, SA, QLD, VIC
 - **>50% people with HCV**
 - **>45% people with HBV**

Proportion of liver transplants for concurrent liver disease in Australia and New Zealand



Survival from HCC diagnosis- Victoria

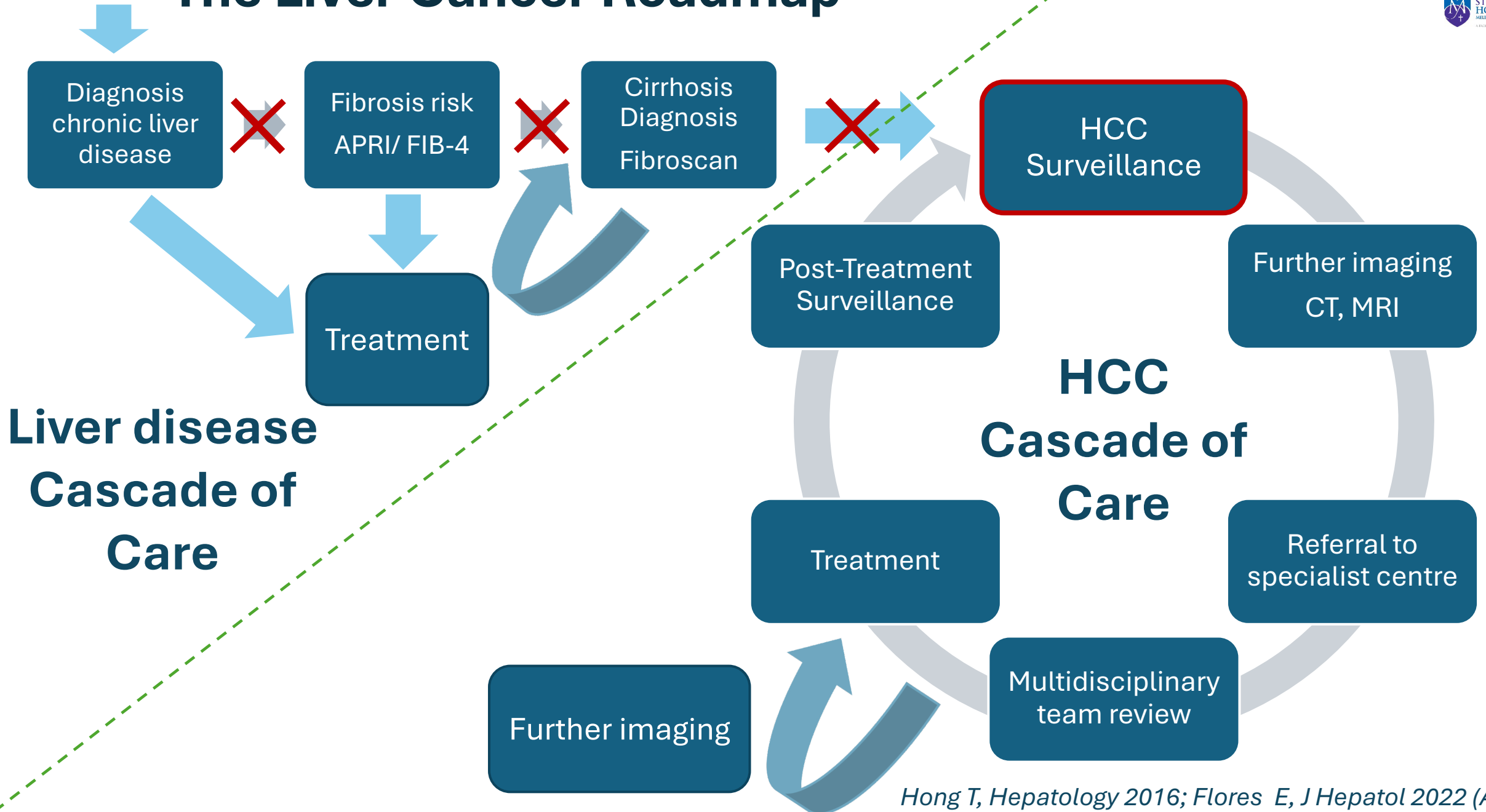
- **Median survival 35 months**
 - (IQR 8.5, 68.5 months)
 - **5 yr survival 33%**
 - **Survival associated with:**
 - **Age category** at diagnosis
 - 20% higher risk every decade
 - **Child-Pugh class** (*liver function*)
- **Surveillance uptake**
 - 40% reduced risk death

N=1203

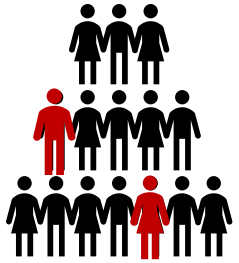
Improving survival: HCC Surveillance

- Surveillance is recommended in specific target populations
 - People with cirrhosis
 - High risk groups of people with hepatitis B and no cirrhosis
- **Liver US every 6 months with alpha-fetoprotein (AFP)**
- Time interval of liver US based on rate of tumour growth
- **6-month interval is reasonable and cost-effective**
 - **3 months:** no clinical benefit
 - **12 months:** fewer early-stage diagnoses and shorter survival

The Liver Cancer Roadmap



Missed opportunities for early HCC detection



Hepatitis B

- 100% known to have HBV

- 78% eligible were on treatment

- 74% known to have cirrhosis

- 46% enrolled in surveillance

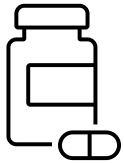
Hepatitis C

- 61% known to have HCV

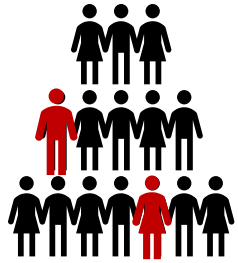
- 61% were treated and cured

- 72% known to have cirrhosis

- 50% enrolled in surveillance

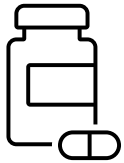


Missed opportunities for early HCC detection



Hepatitis B

- 100% known to have HBV



- 78% eligible were on treatment



- 74% known to have cirrhosis

- 46% enrolled in surveillance

- **72% in specialist liver clinics**

Hepatitis C

- 61% known to have HCV

- 61% were treated and cured

- 72% known to have cirrhosis

- 50% enrolled in surveillance

- **86% in specialist liver clinics**



How do we fare compared to other screening?



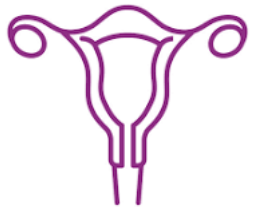
- **HCC surveillance uptake 40% (2021-2022)**
- *70% among those who know they have cirrhosis (all liver diseases)*



Breastscreen uptake 50% (2021-2022)



- Colon cancer screening uptake 40% (2021-2022)



- Cervical cancer screening uptake 68% (2021-2022)

Barriers to HCC surveillance uptake

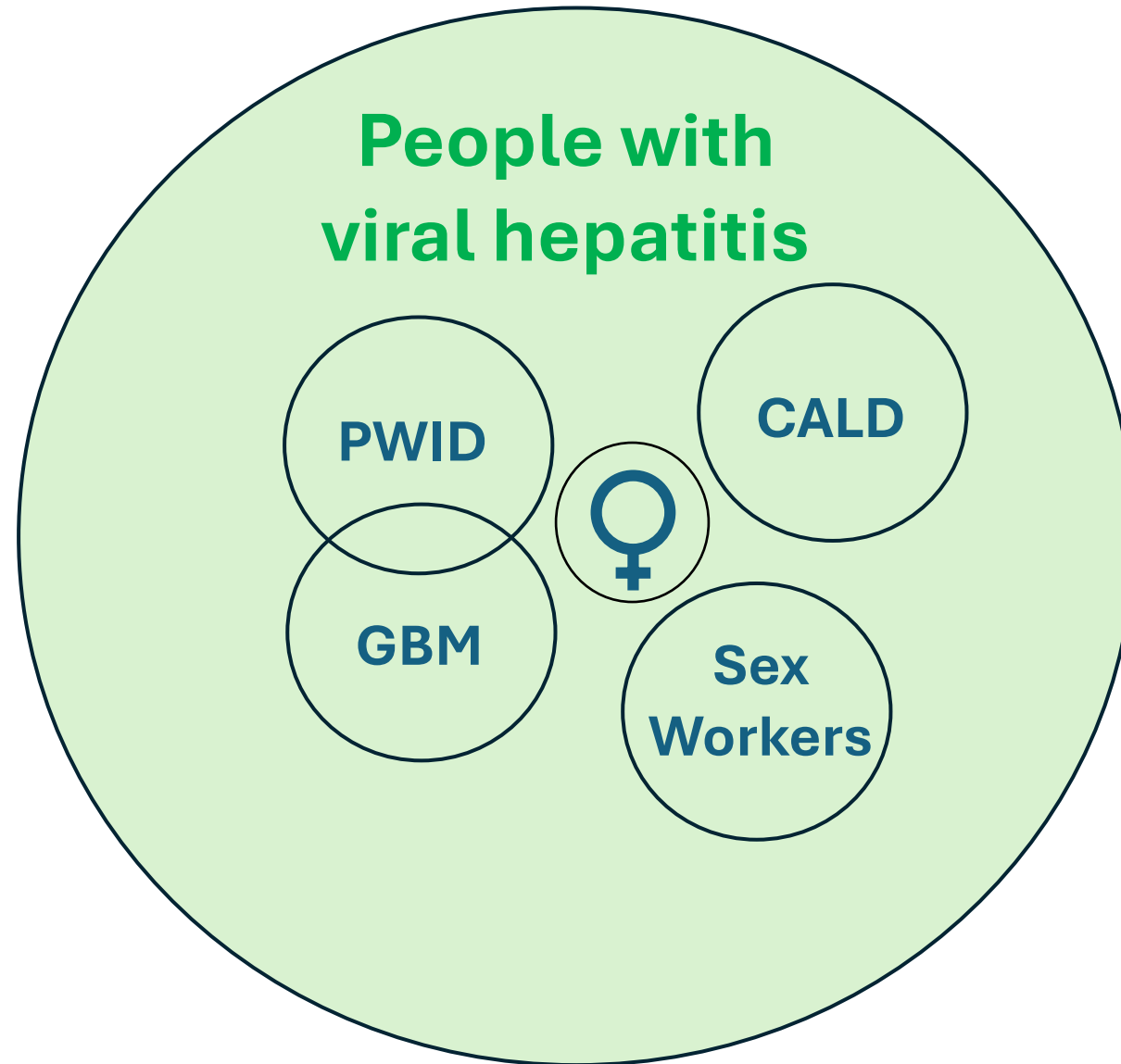
ENGAGEMENT

- **Low awareness of HCC surveillance among healthworkers**
 - People with chronic hepatitis B without cirrhosis
 - People who have achieved HCV SVR with cirrhosis
- **Barriers to uptake of HCC surveillance**
 - Remoteness, logistics, competing priorities
- **No National HCC Surveillance Registry**

HEALTH SYSTEMS

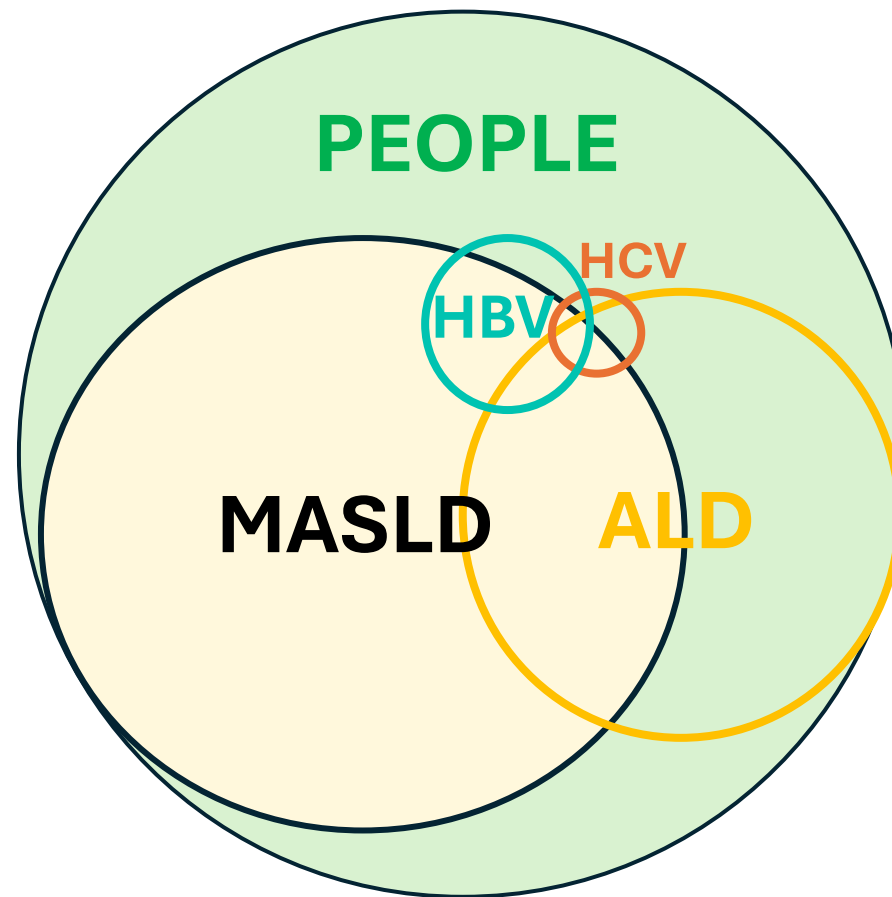
- **Low access and uptake of tools for cirrhosis diagnosis**
- Including repeat testing for cirrhosis when active liver disease

Current public health approach:

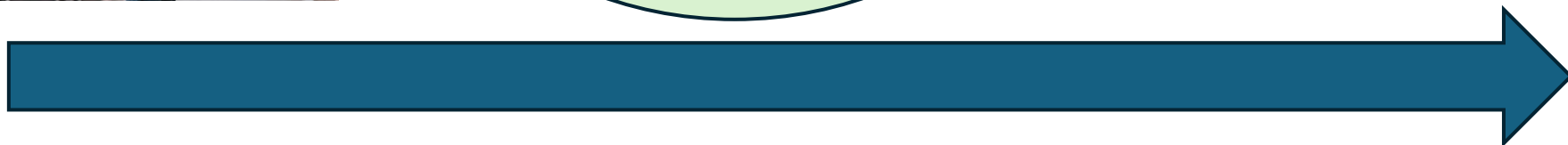
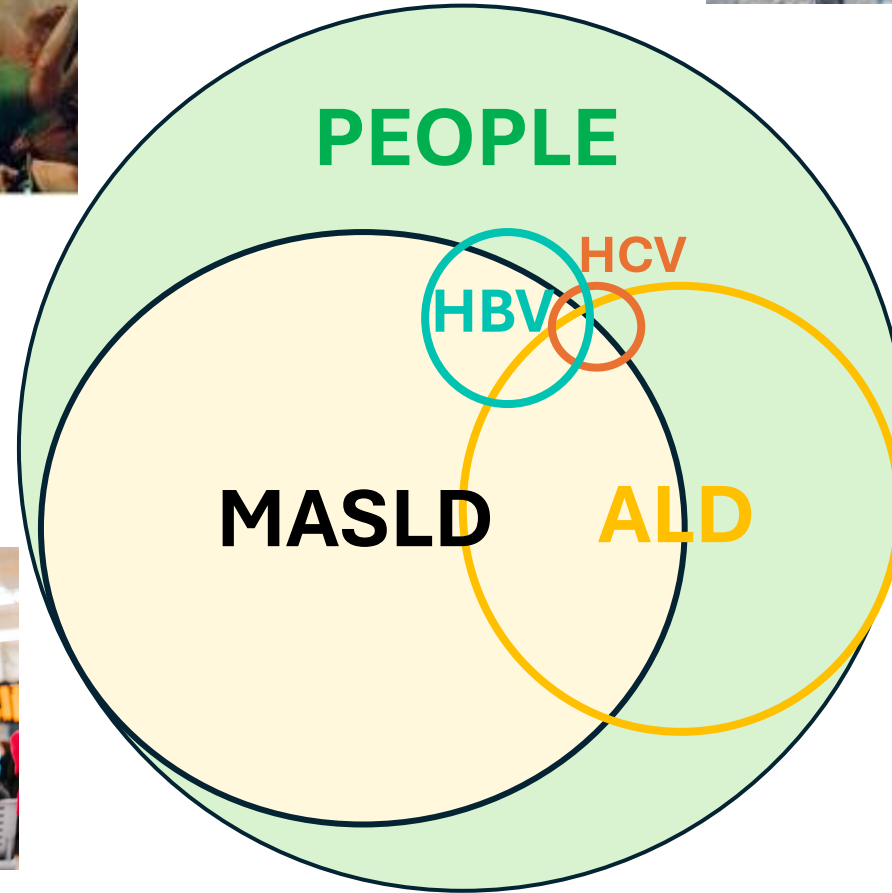


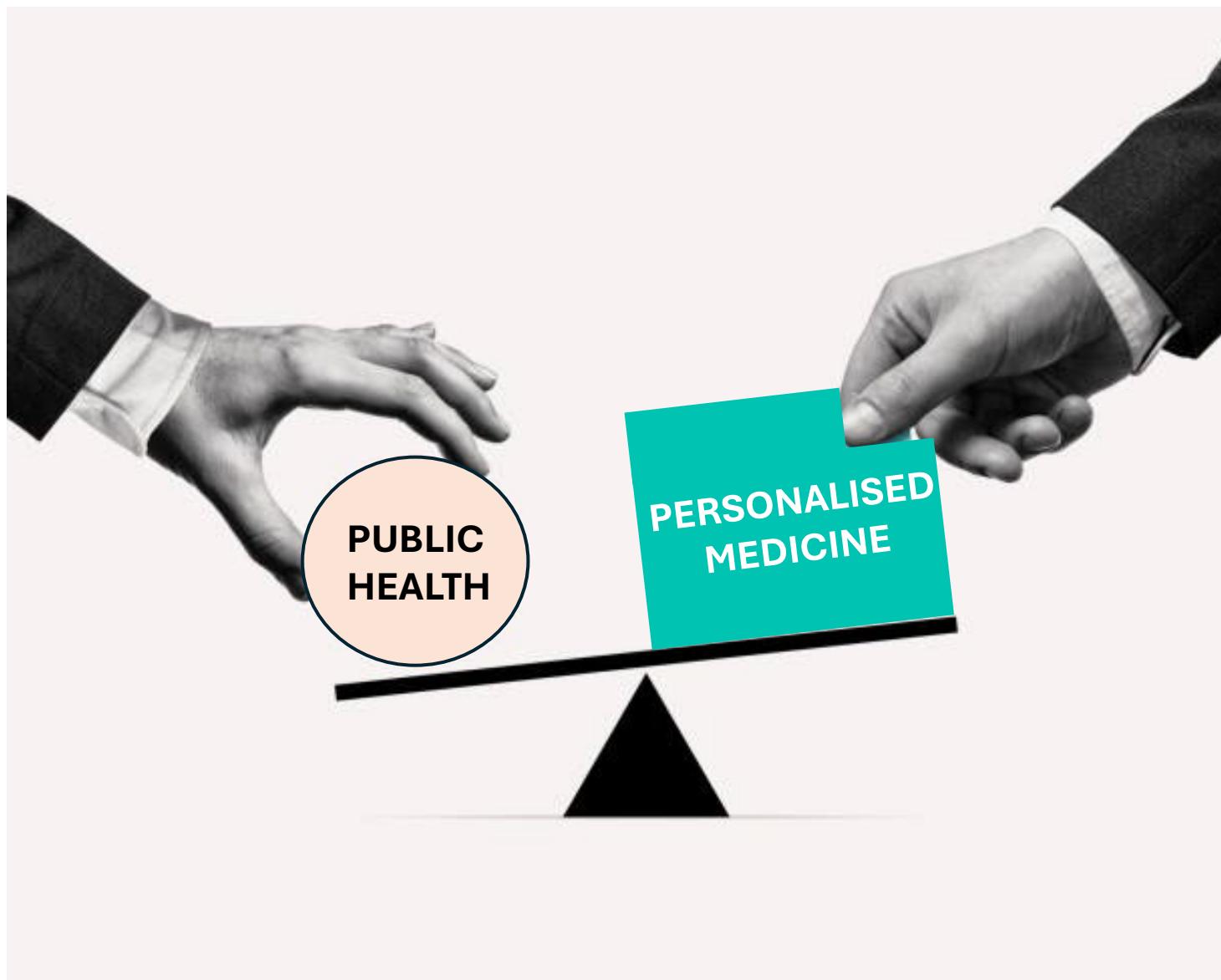
- **Vectors of infection**
- **Discrete identities**
- **Risk behaviours**
- **Snapshot in time**

Reality:



Reality:





Step 1: Strengthen (Re-) Engagement

- **GENERATE DEMAND**
- Policy change to reduce stigma
- Co-designed health promotion
- Co-designed models of testing and care
- Peers/ Navigators



Combo T, "Every Yarn Counts" 2025; Adamson E, "You Can't Get Hep B Here" 2026

Step 2: Strengthen HCC prevention



- **LIVER HEALTH MODEL**
- Whole lifespan approach



- Embed viral hepatitis in NCD systems *and vice versa*



- “No wrong door”- integration across sectors



- Nurse-led, peer-supported, hub-and-spoke models of care

Step 2: Strengthen HCC prevention

• TREATMENT AS PREVENTION

- **Hepatitis B** Expanded treatment criteria & future cures (eg: bepi)
- **Hepatitis D** Treatment (bulevirtide, pegIFN)
- **Alcohol** AUD diagnosis (eg AUDIT-C), treatment (eg: baclofen)
- **MASLD** Treatment- nutrition/ exercise/ GLP1 agonists

Step 3: Strengthen systems: Risk Assessment

- **INTEGRATION**
- **Add VH screening to NCD pathways**
- **AUTOMATION**
- **Risk factor assessment tools embedded in EMRs**
 - FIB-4, APRI – eg: IC3 RCT, SIMPLY-B
 - HBV-HCC risk scores (eg: PAGE-B)
- **Reflex reporting of risk algorithms on routine pathology tests**
 - FIB-4, APRI (population level)- eg: CAPRISE St Vincent's Pathology



Routine reporting of APRI -St Vincent's Pathology

- **3x higher rate of Fibroscan referrals** from non-hepatology services
- **3x higher F3-4 fibrosis detection** (17% compared to 5% pre-intervention, $p < 0.001$)

Flores JE, J Hepatology 2026 (Abs)

Strengthen Systems: Fibrosis assessment

• TOOLS FOR FIBROSIS EVALUATION

1) SCREEN: Blood tests

• FIB-4 and APRI

- First step to exclude cirrhosis

• Hepascore, ELF

- More accurate- sensitivity 63-71%, specificity 89%

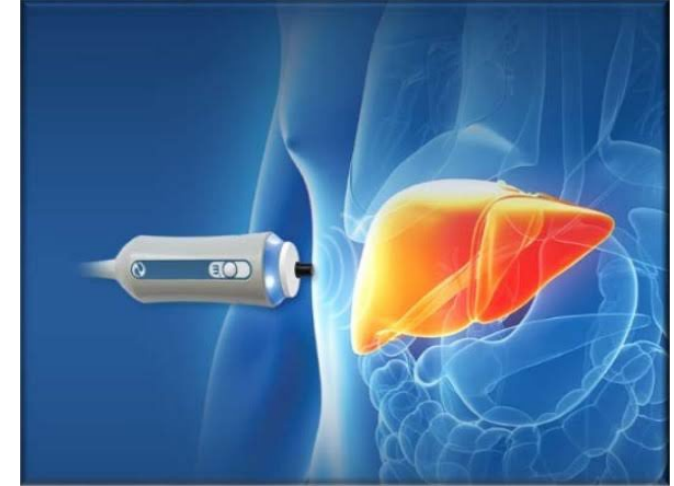
2) DIAGNOSE: Elastography

• VCTE

- Gold standard, PHT measurement; failure rate 20% (less XL probe)

• SWE/ ARFI

- Available for ultrasound machines- improve access
- Failure rate 20-40%, not validated portal hypertension measurement



Strengthen Systems: Fibrosis assessment

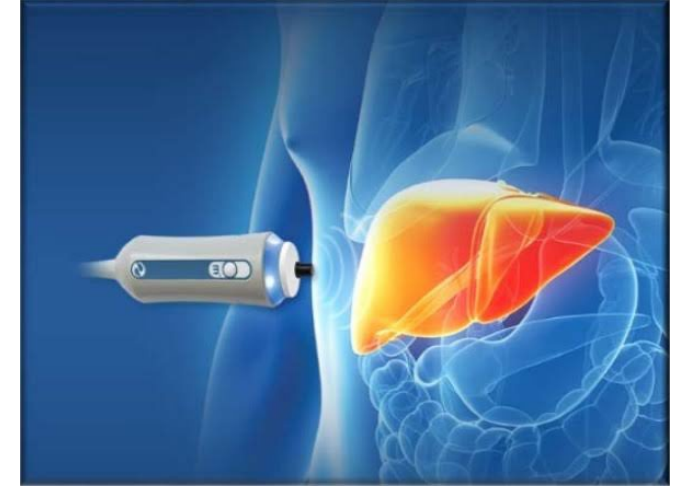
- **TOOLS FOR FIBROSIS EVALUATION**

- 1) SCREEN: Blood tests**

- **FIB-4 and APRI**
 - **Covered by Medicare**
 - **Hepascore, ELF**
 - **NOT ON MEDICARE**

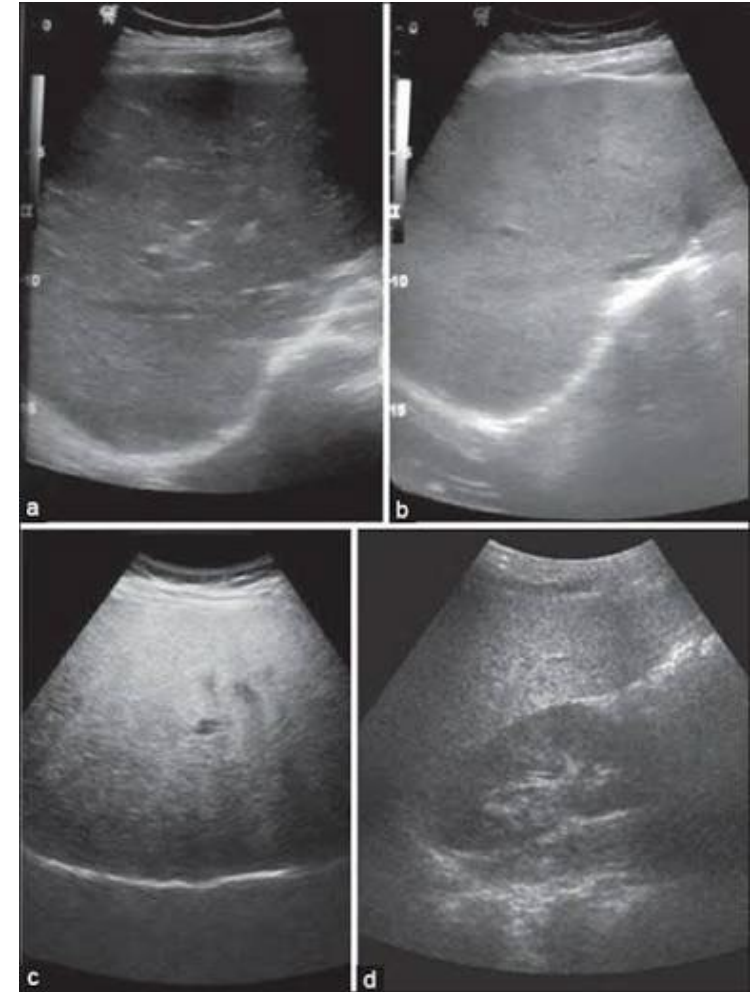
- 2) DIAGNOSE: Elastography**

- **VCTE**
 - **NOT ON MEDICARE**
 - **SWE/ ARFI**
 - **ITEM NUMBER US ON MEDICARE- but radiology charge extra**



Strengthen systems: HCC surveillance

- **Technical challenges of US surveillance**
- **Sensitivity:**
 - AFP ~30% of HCC
 - 60-90% any stage
 - 30-60% early BCLC stage 0/ A
- **Increasing prevalence of obesity/ MASLD**



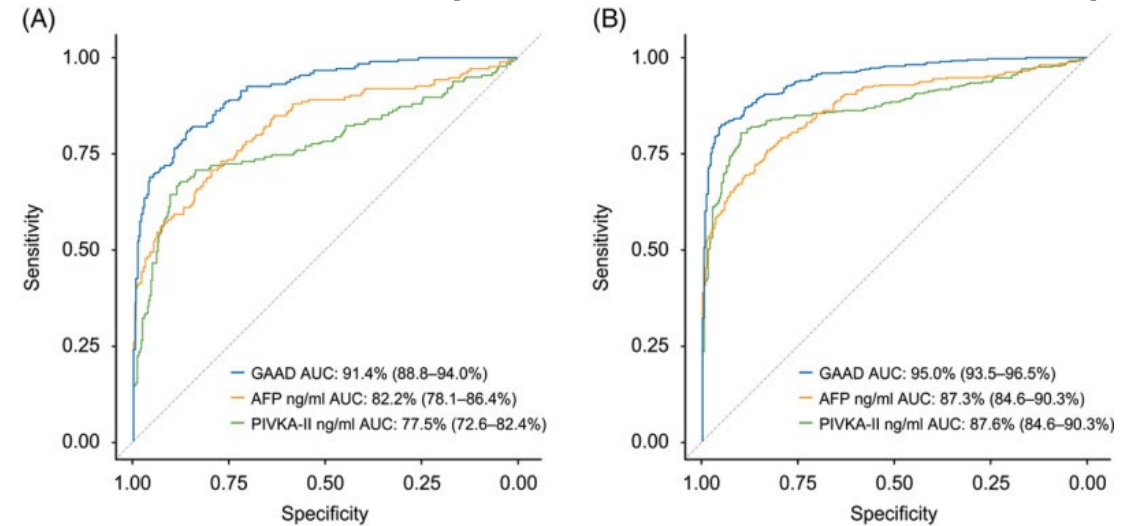
Khalili K, Can J Gastro Hep 2015

Innovations in HCC surveillance:

Blood based biomarker PIVKA-II

- Gender, Age, AFP and des-gamma carboxyprothrombin (DCP or PIVKA II)
 - GAAD (Roche), ASAP (Abbott)
 - Japan's HCC surveillance program
 - Sensitivity 70-85%, specificity 90-94%
-
- May improve HCC detection:
 - Access, acceptability
 - MASLD/ obesity
 - Cost-effective in UK, China

Validation cohort (N=877; 366 HCC 303 controls)



(C)

	Sensitivity, % (95% CI)		Specificity, % (95% CI)
	Early stage HCC (N=174)	All-stage HCC (N=366)	CLD controls (N=303)
Elecsys AFP assay (cut-off: 20 ng/mL)	41.4 (34.0–49.1)	53.8 (48.6–59.0)	98.0 (95.7–99.3)
Elecsys PIVKA-II assay (cut-off: 28.4 ng/mL)	60.9 (53.2–68.2)	78.4 (73.8–82.5)	90.4 (86.5–93.5)
GAAD score (cut-off: 2.57)	70.1 (62.7–76.8)	83.1 (78.8–86.8)	93.7 (90.4–96.2)

Conclusion

- Concurrent liver diseases are increasingly common
- Need holistic liver healthcare *across the lifespan*
- **Key barriers:**
 - Demand and Stigma
 - Fibrosis assessment
 - Linkage to HCC surveillance *by healthcare providers*
- Tailored HCC surveillance may improve cost-effectiveness, BUT
- Tension between delivering public health *versus* personalized healthcare
- New tools show promise eg PVKA II
- **Need to ensure no one is getting left behind- equitable access**





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Thankyou

Questions?

