HepLOGIC pilot and feasibility study

Liver cancer risk audit

Summary

Liver cancer is a preventable cancer, with low survival, and is often diagnosed late. The most common type of liver cancer is HCC (hepatocellular carcinoma). People have a higher chance of HCC if they have long-term hepatitis B, hepatitis C, fatty liver disease, or consume large amounts of alcohol (four most common causes).

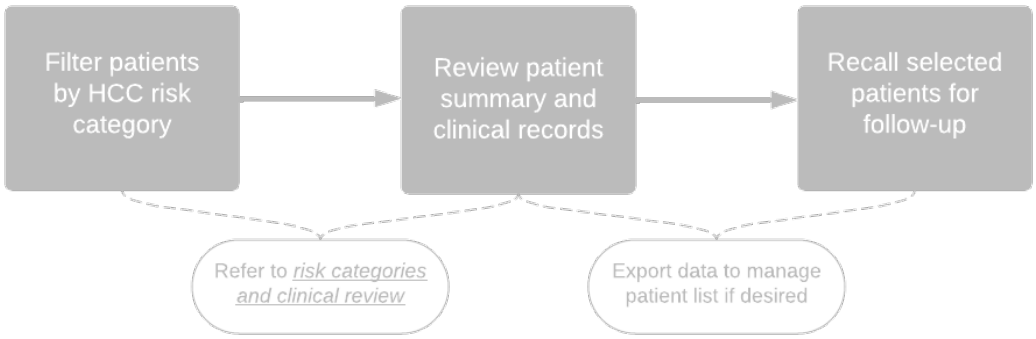
The 2023 NHMRC-approved *Clinical practice guidelines for HCC surveillance for people at high risk in Australia* provide information and recommendations to guide surveillance for people at high risk of HCC, and recommend HCC testing for groups including:

- people with liver cirrhosis
- people with hepatitis B who are at higher risk (based on age and background)
- people with liver cirrhosis and hepatitis C (even if cured)
- people with other long-term liver problems.

A liver cancer risk audit tool has been developed within the POLAR data environment to rapidly identify and export a list of patients who may be at risk of liver cancer for further review. The tool was developed as part of the HepLOGIC pilot and feasibility study, a project led by the Doherty Institute and funded by the Victorian Cancer Agency.

Jump to:

Suggested workflow



Data limitations and the need for clinical review of patient records

The liver cancer risk audit tool provides a starting point to identify patients who have a risk of liver cancer. A clinician needs to review patient records in the clinical software before a final decision to follow-up/recall can be made.

POLAR does not extract free text notes and is unable to read certain pathology results (such as pdf files and some non-numeric results, which may include hepatitis serology). POLAR only extracts pathology and medications data from the past seven years.

Sample recall messaging

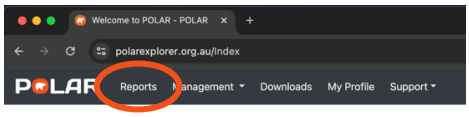
Stigma and discrimination can be a barrier to people engaging in healthcare. It is strongly recommended that recall messages sent by healthcare providers respect patient privacy. Consider using a neutral message such as:

"Hi [name], your doctor at [practice] would like to see you for a liver health check. Please call [practice number] to book an appointment."

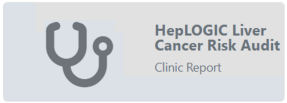
We acknowledge Aboriginal and Torres Strait Islander people as the Traditional Custodians of the land.

Accessing the liver cancer risk audit tool

1. Go to www.polarexplorer.org.au, log in with your POLAR credentials and click 'Reports'

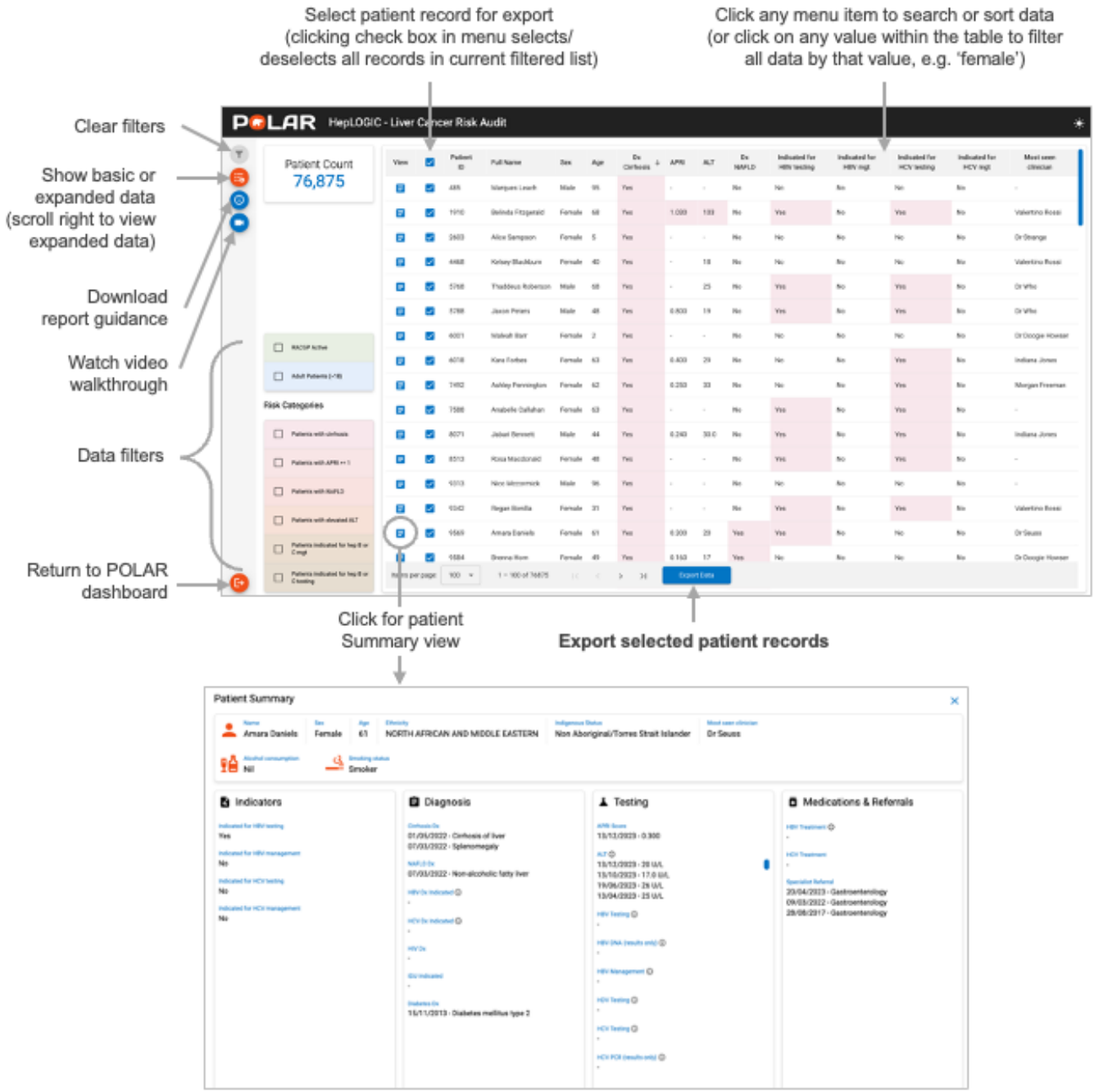


2. Select "HepLOGIC Liver Cancer Risk Audit"



If the above report is not visible, contact your PHN.

Navigating the liver cancer risk audit tool



Liver cancer risk audit tool video walkthrough

Visit: www.doherty.edu.au/viralhepatitis/heplogicresources/audit-tool-video

Contact us with any questions, issues or concerns about the audit tool:

whoccvh@mh.org.au

HCC risk categories and clinical review

Risk category	Clinical review and actions	Further risk prioritisation (if required)
Cirrhosis *Strongest risk factor for HCC*	• Confirm diagnosis with history and examination or non-invasive test e.g. APRI and FibroScan® or Shear Wave Elastography • Investigate cause or co-factors: - HBV/HCV - NAFLD - Diabetes - Alcohol - Smoking - Other • If cirrhosis is confirmed, evaluate decompensated vs compensated • If cirrhosis is confirmed, regular HCC surveillance is required • Manage per clinical guidelines, including further testing/managing modifiable risk factors/referring if required	All patients who are not being managed or monitored for cirrhosis (any cause) should be followed up
APRI ≥1 *APRI is an index of liver fibrosis and cirrhosis (APRI ≥1 predictive of cirrhosis)*	• Assess fibrosis with FibroScan® or Shear Wave Elastography • Investigate cause or co-factors: - HBV/HCV - NAFLD - Diabetes - Alcohol - Smoking - Other • If cirrhosis is confirmed, evaluate decompensated vs compensated • If cirrhosis is confirmed, regular HCC surveillance is required • Manage per clinical guidelines, including further testing/managing modifiable risk factors/referring if required	Prioritise those at highest risk of HCC for follow-up: • Cirrhosis or highest APRI scores • Patients indicated for hepatitis B or hepatitis C management • Age (suggest prioritise patients ≥40 years)
NAFLD (or MAFLD) *Projected to be a rapidly growing cause of HCC in Western countries*	• Investigate co-factors: - HBV/HCV - NAFLD - Diabetes - Alcohol - Smoking - Other • Assess fibrosis with non-invasive test (e.g. APRI and FibroScan® or Shear Wave Elastography if indicated) • If cirrhosis is confirmed, evaluate decompensated vs compensated • If cirrhosis is confirmed, regular HCC surveillance is required • Manage per clinical guidelines, including further testing/managing modifiable risk factors (including cardiovascular risk)/referring if required.	Prioritise those at highest risk of HCC for follow-up: • Cirrhosis or APRI ≥1 • Indicated for hepatitis B or hepatitis C management • Age (suggest prioritise patients ≥40 years)
Elevated ALT *Persistent elevation (suggest >3 months) may be indicative of liver disease*	• Investigate potential cause or co-factors: - HBV/HCV - NAFLD - Diabetes - Alcohol - Smoking - Other • Assess fibrosis with non-invasive test (e.g. APRI and FibroScan® or Shear Wave Elastography if indicated) • If cirrhosis is confirmed, evaluate decompensated vs compensated • If cirrhosis is confirmed, regular HCC surveillance is required • Manage per clinical guidelines, including further testing/managing modifiable risk factors/referring if required	Prioritise those at highest risk of HCC for follow-up: • Cirrhosis or APRI ≥1 • Indicated for hepatitis B or hepatitis C management • Age (suggest prioritise patients ≥40 years)
HBV or HCV management indicated *Chronic infection increases HCC risk*	• People living with HBV require at least annual monitoring and may require treatment • HCV can be cured • Manage per clinical guidelines	All patients not being managed elsewhere for HBV or HCV should be followed up. Can prioritise those at greatest risk of HCC, if required: • Cirrhosis or APRI ≥1 or elevated ALT • People living with HBV of sub-Saharan African descent who are ≥ 20 years • People living with HBV who are ≥40 years
HBV or HCV testing indicated *Chronic infection increases HCC risk*	• People at risk should offered testing for HBV or HCV • Patient data used to indicate HBV and HCV risk is summarised in the supplementary information	Prioritise those at highest risk of HCC for follow-up: • Cirrhosis or APRI ≥1 • NAFLD or elevated ALT • Age (oldest to youngest)

ALT: alanine aminotransferase APRI: aspartate aminotransferase to platelet ratio index FIB-4: fibrosis-4 index for liver fibrosis HBV: hepatitis B virus
HCC: hepatocellular carcinoma HCV: hepatitis C virus NAFLD/MAFLD: non-alcoholic fatty liver disease/metabolic associated fatty liver disease

Clinical guidance

ALT

- Liver function tests (Australian Family Physician 40:3 March 2011)

Cirrhosis and APRI

Refer to HealthPathways (cirrhosis), if available
- HealthPathways Melbourne
- Gippsland Pathways

Alternative reference
- Cirrhosis care bundle (GESA 2022)

Compensated vs decompensated cirrhosis
- Good summary in the Australian Hepatitis C consensus statement (GESA 2022)

Hepatitis B and hepatitis C (testing, monitoring and treatment)

- Decision making in hepatitis B (ashm 2022)
- Decision making in hepatitis C (ashm 2022)

HCC surveillance

- Clinical guidelines for hepatocellular carcinoma surveillance for people at high risk in Australia (Cancer Council Australia, 2023)

NAFLD (or MAFLD)

Refer to HealthPathways (fatty liver), if available
- HealthPathways Melbourne
- Gippsland Pathways

Alternative reference
- RACGP updates in fatty liver disease (2021)

For more HepLOGIC study resources visit: https://www.doherty.edu.au/viralhepatitis/heplogicresources

For POLAR support contact your Primary Health Network

The HepLOGIC project was funded by the Victorian Government through the Victorian Cancer Agency.

Supplementary information - hepatitis B and hepatitis C risk criteria

The liver cancer risk audit tool identifies whether a patient is indicated to hepatitis B or hepatitis C testing or management. The risk criteria for those indications are described here. These same criteria are used in for relevant the hepatitis B and hepatitis C risk notifications in the POLAR WALRUS point of care tool.

Hepatitis B testing

Logic: *Adults who are at risk of hepatitis B, based on ethnicity, indicative diagnoses or pathology, excluding those with an existing diagnosis of hepatitis B, demonstrated immunity to hepatitis B, or evidence of prior testing.*

Clinical reference: *National hepatitis B testing policy:* https://testingportal.ashm.org.au/national-hbv-testing-policy/

Limitations: *Not all risk factors for hepatitis B can be identified using POLAR data, including sexual or household contacts and family members of people living with hepatitis B, men who have sex with men, sex workers, and people in custodial settings or undergoing dialysis. The POLAR data system only collects pathology results and prescriptions from the past 7 years.*

Criteria for hepatitis B testing notification:

Data field	Value	Notes
Age	18 – 75 years	• Upper age threshold is consistent with other cancer screening programs such as cervical & bowel cancer. • Doctors may offer testing to anyone at their discretion.
ANY of:		
Ethnicity	At risk ethnicity	• 170+ ethnicities indicated, including Aboriginal and Torres Strait Islander people.
Diagnosis	Hepatitis C	• Diagnosis must entered using coded drop-down lists within clinical software. Freetext/Doctor notes are not extracted by POLAR.
	HIV	
	Current/past injecting drug use	
	Cirrhosis or liver disease	
Pathology request	HCV nucleic acid	• Indicates past or current hepatitis C infection.
Pathology result	Hepatitis C antibody positive	• Many laboratories return hepatitis C serology results in a manner that cannot be extracted by POLAR. A positive result recorded in a pdf will not be recognised.
	ALT > 45 for males ALT > 30 for females	• Indicative of liver damage.
APRI	≥ 1	• AST to Platelet Ratio Index (APRI) is calculated if appropriate pathology results are available • https://www.mdcalc.com/calc/3094/ast-platelet-ratio-index-apri • APRI > 1 is indicative of cirrhosis.
Prescriptions	Hepatitis C treatment drugs	• Ever prescribed. • Indicates past infection with hepatitis C.
	Opiate substitution therapy	• Methadone or suboxone ever prescribed.
Excluding ANY of:		
Diagnosis	Hepatitis B	• Diagnosis must entered using coded drop-down lists within clinical software. Freetext/Doctor notes are not extracted by POLAR.
Pathology request	Hepatitis B serology	• Indicates testing has previously been offered.
	Hepatitis B DNA	• Indicates a prior hepatitis B diagnosis.
	Hepatitis B management serology (e.g Hepatitis B e antigen or antibody)	
	Hepatitis D	
Pathology result	Hepatitis B surface antibody ≥10 or = “immune”	• Indicates Hepatitis B immunity. • Many laboratories return hepatitis B results in a manner that cannot be extracted by POLAR. A result recorded in a pdf will not be recognised.

Hepatitis C testing

Logic: *Adults who are at risk of hepatitis C, based on ethnicity, indicative diagnoses or pathology, excluding those who have an existing diagnosis of hepatitis C or evidence of prior testing.*

Clinical reference: *National hepatitis C testing policy:* https://testingportal.ashm.org.au/national-hcv-testing-policy/

Limitations: *Not all risk factors for hepatitis C can be identified using POLAR data, including people who: are in custodial settings, have tattoos or body piercings, are sexual partners of a person with HCV infection, received an organ transplant or blood transfusion prior to 1990, were born to mothers with HCV infection, or have had a needle-stick injury. Despite reinfection risk, patients with past evidence of infection and cure will not be flagged for retesting. The POLAR data system only collects pathology results and prescriptions from the past 7 years.*

C**riteria for hepatitis C testing notification:**

Data field	Value	Notes
Age	18 – 75 years	• Upper age threshold is consistent with other cancer screening programs such as cervical & bowel cancer. • Doctors may offer testing to anyone at their discretion.
ANY of:		
Ethnicity	At risk ethnicity	• 45+ ethnicities indicated, including Aboriginal and Torres Strait Islander people.
Diagnosis	Hepatitis B	• Diagnosis must entered using coded drop-down lists within clinical software. Freetext/Doctor notes are not extracted by POLAR.
	HIV	
	Current/past injecting drug use	
	Cirrhosis or liver disease	
Pathology request	Hepatitis B DNA	• Indicates hepatitis B infection.
	Hepatitis B management serology	
	Hepatitis D	
Pathology result	Hepatitis B surface antibody positive	• Many laboratories return hepatitis B serology results in a manner that cannot be extracted by POLAR. A positive result recorded in a pdf will not be recognised.
	ALT > 45 for males ALT > 30 for females	• Indicative of liver damage.
APRI	≥ 1	• AST to Platelet Ratio Index (APRI) is calculated if appropriate pathology results are available • https://www.mdcalc.com/calc/3094/ast-platelet-ratio-index-apri • APRI > 1 is indicative of cirrhosis.
Prescriptions	Opiate substitution therapy	• Methadone or suboxone ever prescribed.
Excluding ANY of:		
Diagnosis	Hepatitis C	• Diagnosis must entered using coded drop-down lists within clinical software. Freetext/Doctor notes are not extracted by POLAR.
Pathology request	Hepatitis C serology	• Indicates testing has previously been offered.
	Hepatitis C nucleic acid	• Indicates a prior hepatitis C diagnosis.
Prescriptions	Hepatitis C treatment drugs	• Ever prescribed. • Indicates a prior hepatitis C diagnosis.

Hepatitis B management

Logic: *Adults who are living with hepatitis B but have no evidence of monitoring within the past 18 months*

Clinical reference: *ashm Decision making in hepatitis B:* https://www.ashm.org.au/resources/decision-making-in-hepatitis-b/

Limitations: *The HBV viral load test (DNA test) is used here as the basic indicator that hepatitis B monitoring is being undertaken, noting that other monitoring is recommended depending on the infection phase the person is currently in. HBV viral load testing is only rebatable through Medicare once every 12 months. A period of 18 months has been used as the trigger for the HepLOGIC tool to ensure that patients due not inadvertently incur a fee for testing. The POLAR data system only collects pathology results and prescriptions from the past 7 years.*

Criteria for hepatitis B management notification:

Data field	Value	Notes
Age	≥ 18 years	
ANY of:		
Diagnosis	Hepatitis B	• Diagnosis must entered using coded drop-down lists within clinical software. Freetext/Doctor notes are not extracted by POLAR.
Pathology request	Hepatitis B DNA	• Indicates hepatitis B infection.
	Hepatitis B management serology	
	Hepatitis D	
Pathology result	Hepatitis B surface antibody positive	• Many laboratories return hepatitis B serology results in a manner that cannot be extracted by POLAR. A positive result recorded in a pdf will not be recognised.
Excluding:		
Pathology request	Hepatitis B DNA ordered within past 18 months	• Indicates hepatitis B management testing has been offered

Hepatitis C management

Logic: *Adults who have a hepatitis C diagnosis indicated but have no evidence of treatment.*

Clinical reference: *ashm Decision making in hepatitis C:* https://www.ashm.org.au/resources/decision-making-in-hepatitis-c/

Limitations: *The tool does not identify people who may have been previously cured of hepatitis C but have been reinfected and therefore require re-treatment. The POLAR data system collects pathology results and prescriptions from the past 7 years.*

Criteria for hepatitis C management notification:

Data field	Value	Notes
Age	≥ 18 years	
ANY of:		
Diagnosis	Hepatitis C	• Diagnosis must entered using coded drop-down lists within clinical software. Freetext/Doctor notes are not extracted by POLAR.
Pathology request	Hepatitis C nucleic acid	• Indicates hepatitis C infection.
Pathology result	Hepatitis C antibody positive	• Many laboratories return hepatitis C serology results in a manner that cannot be extracted by POLAR. A positive result recorded in a pdf will not be recognised.
Excluding:		
Prescriptions	Hepatitis C treatment drugs	• Ever prescribed. • Indicates treatment has previously been offered.