Australian data on economic and quality of life burden of disease – limitations and opportunities

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Domain 1: The human and economic burden

Both the clinical and economic burden of fatty liver disease continue to increase. The prevalence of the disease has grown dramatically in recent decades, becoming an increasingly important contributor to morbidity and mortality. The economic burden is vast; data from several high-income countries show the scale of direct health care costs in both out-patient19 and in-patient settings and the wider societal costs. While data from a broader range of contexts, including resource-limited settings, will strengthen our understanding, what we know today about the human and economic consequences of this disease present a compelling case for action.
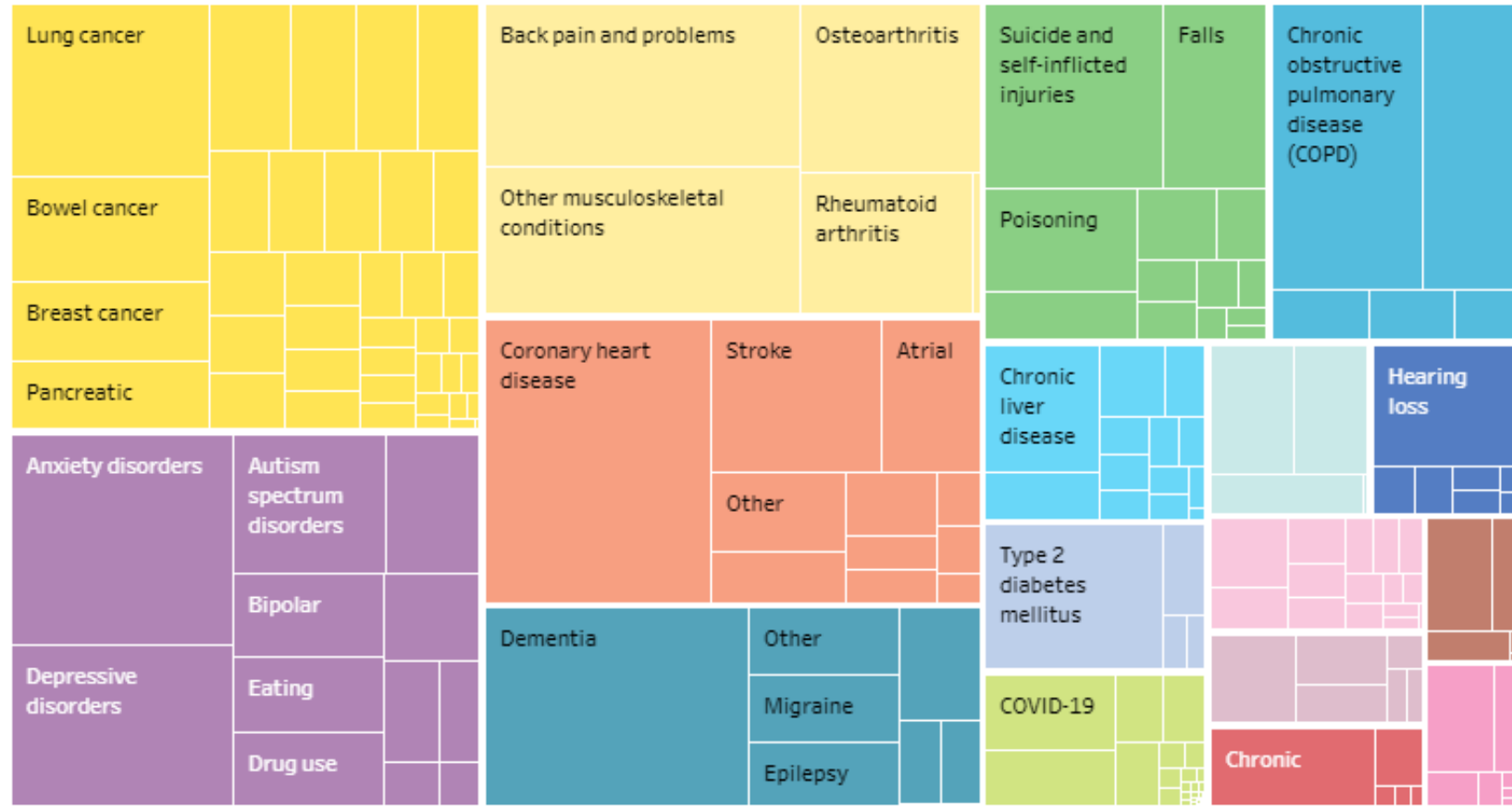
A prior consensus statement from the liver health community noted the increased costs associated with fatty liver disease while also accepting that "incomplete data hinder concerted action at the national and global levels". In this study, panellists proposed 2 priorities intending to deepen understanding and action with respect to the human and economic burden. The highest-ranked priority within this domain reflects the need to promote standardization and harmonization of data collection and reporting on the human and economic burden (priority 1.2) to allow for meaningful comparisons. The panelists also agreed with prioritizing the development of investment cases for fatty liver disease (priority 1.1). Such investment cases will provide an empirical investigation of the human and economic burden associated with fatty liver disease, alongside estimations of expenses associated with reducing the human and economic burden. These can be key tools for engaging policymakers around not only the importance of action but the health and economic benefits of this.

1.1 Develop national and international investment cases to inform evidence-based action and advocacy on fatty liver disease

- **Rising Prevalence:** The prevalence of fatty liver disease has increased dramatically in recent decades, significantly impacting morbidity and mortality.

- **Economic Impact:** High-income countries report vast economic burdens, with substantial direct health care costs in both outpatient and inpatient settings.

- **Global Understanding Needed:** While data from resource-limited settings are still emerging, current knowledge presents a strong case for urgent action.

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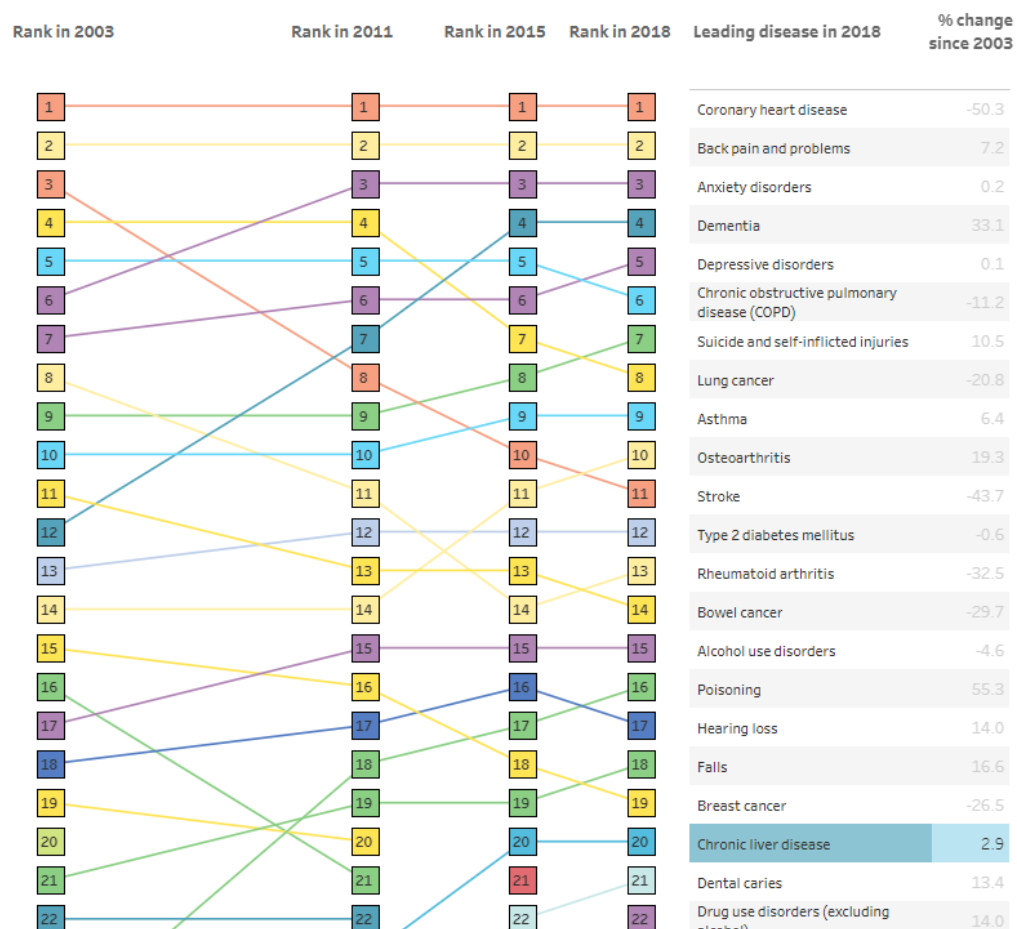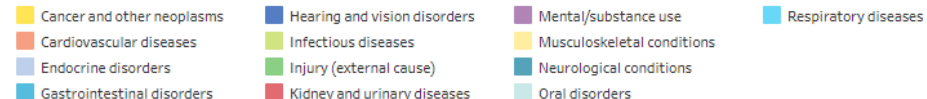# Australian Burden of Disease Study 2023
DALY in Persons by disease group

Australian Burden of Disease Study 2018- CLD DALYs

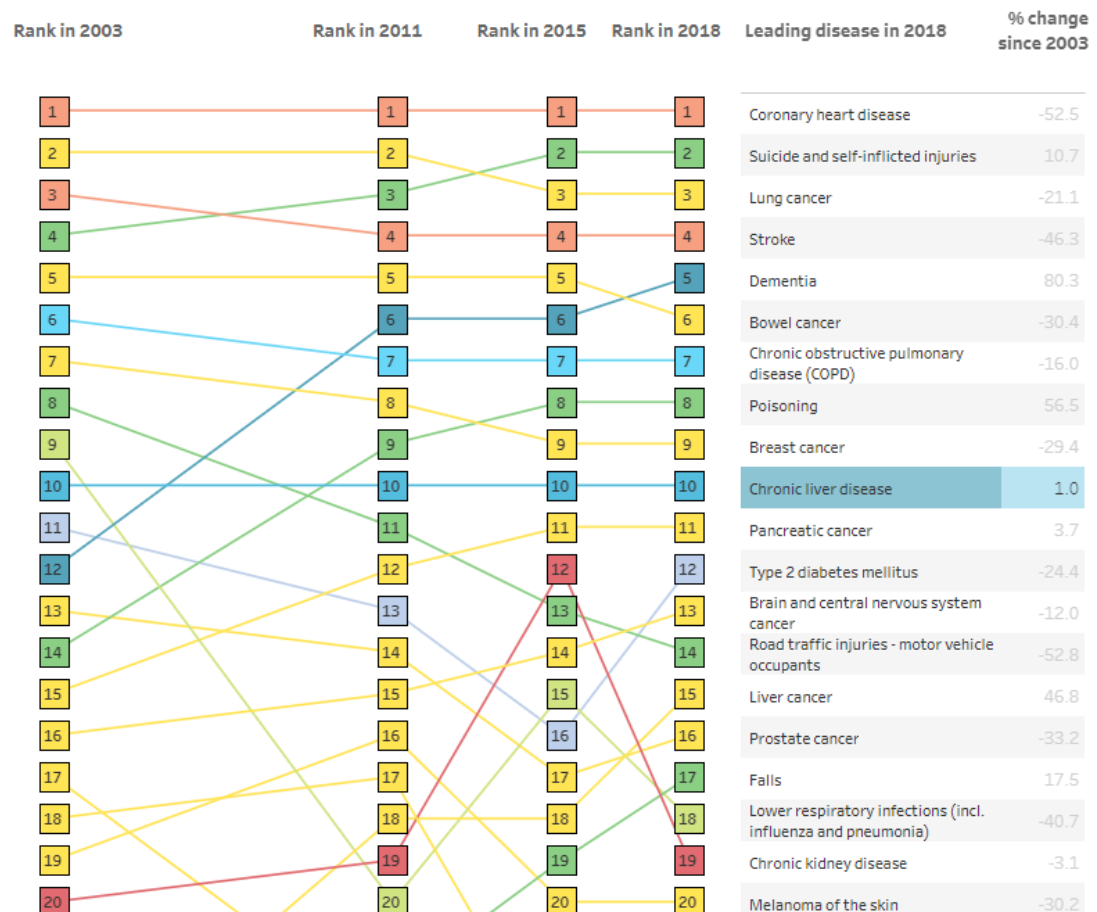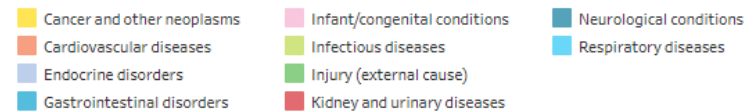**Ranking by age-standardised DALY rate: Persons**

Disease groups

- Cancer and other neoplasms
- Cardiovascular diseases
- Endocrine disorders
- Gastrointestinal disorders
- Hearing and vision disorders
- Infectious diseases
- Injury (external cause)
- Kidney and urinary diseases
- Mental/substance use
- Musculoskeletal conditions
- Neurological conditions
- Oral disorders
- Respiratory diseases

Rank in 2003	Rank in 2011	Rank in 2015	Rank in 2018	Leading disease in 2018	% change since 2003
1	1	1	1	Coronary heart disease	-50.3
2	2	2	2	Back pain and problems	7.2
3	3	3	3	Anxiety disorders	0.2
4	4	4	4	Dementia	33.1
5	5	5	5	Depressive disorders	0.1
6	6	6	6	Chronic obstructive pulmonary disease (COPD)	-11.2
7	7	7	7	Suicide and self-inflicted injuries	10.5
8	8	8	8	Lung cancer	-20.8
9	9	9	9	Asthma	6.4
10	10	10	10	Osteoarthritis	19.3
11	11	11	11	Stroke	-43.7
12	12	12	12	Type 2 diabetes mellitus	-0.6
13	13	13	13	Rheumatoid arthritis	-32.5
14	14	14	14	Bowel cancer	-29.7
15	15	15	15	Alcohol use disorders	-4.6
16	16	16	16	Poisoning	55.3
17	17	17	17	Hearing loss	14.0
18	18	18	18	Falls	16.6
19	19	19	19	Breast cancer	-26.5
20	20	20	20	Chronic liver disease	2.9
21	21	21	21	Dental caries	13.4
22	22	22	22	Drug use disorders (excluding alcohol)	14.0

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Australian Burden of Disease Study 2018- CLD YLL

Is MASLD representing current burden or are we not accurately measuring burden?

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Australian Burden of Disease Study 2018- Remoteness areas

Comparison of age-standardised DALY rate by disease: Persons, 2018

Rate difference compared to national average (AUS)

- Lower than national ...
- <10% greater
- 10-19% greater
- 20-29% greater
- 30-39% greater
- 40-49% greater
- 50%+ greater
- No difference

Hover over boxes for more information and scroll for more diseases/injuries.

Disease group	Disease/Injury	Australia	Major cities	Inner regional	Outer regional	Remote and very remote
Gastrointestinal disorders	Chronic liver disease	2.1	2.0	2.2	2.6	4.2
	Inflammatory bowel disease (IBD)	0.9	0.9	0.9	0.9	0.9
	Functional gastrointestinal disorders (FGID)	0.8	0.8	0.8	0.8	0.8
	Gastro Oesophageal Reflux Disease (GORD)	0.5	0.5	0.5	0.5	0.5
	Intestinal obstruction (without hernia)	0.3	0.2	0.3	0.3	0.3
	Other gastrointestinal diseases	0.2	0.2	0.3	0.3	0.3
	Gastroduodenal disorders	0.2	0.2	0.3	0.3	0.3
	Gallbladder and bile duct disease	0.2	0.2	0.2	0.2	0.3
	Pancreatitis	0.2	0.2	0.2	0.2	0.6
	Vascular disorders of intestine	0.2	0.2	0.2	0.2	0.2
	Diverticulitis	0.1	0.1	0.2	0.2	0.1
	Abdominal wall hernia	0.1	0.1	0.1	0.1	0.1
	Appendicitis	0.0	0.0	0.0	0.0	0.0

x2

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Australian Burden of Disease Study 2018: Socioeconomic groups

Age-standardised DALY rate by disease and socioeconomic group: Persons, 2018

Rate difference compared to national average (AUS)
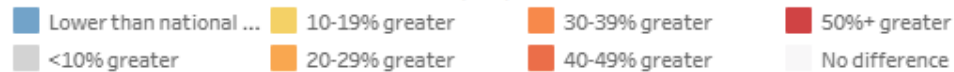
- Lower than national ...
- <10% greater
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- 40-49% greater
- 50%+ greater
- No difference

Hover over boxes for more information and scroll for more diseases/injuries.

Disease group	Disease/Injury	Australia	1 (lowest)	2	3	4	5 (highest)
Gastrointestinal disorders	Chronic liver disease	2.1	3.3	2.5	2.0	1.6	1.3
	Inflammatory bowel disease (IBD)	0.9	0.9	0.9	0.9	0.9	0.9
	Functional gastrointestinal disorders (FGID)	0.8	0.8	0.8	0.8	0.8	0.8
	Gastro Oesophageal Reflux Disease (GORD)	0.5	0.5	0.5	0.5	0.5	0.5
	Intestinal obstruction (without hernia)	0.3	0.3	0.3	0.3	0.2	0.2
	Other gastrointestinal diseases	0.2	0.3	0.3	0.2	0.2	0.2
	Gastroduodenal disorders	0.2	0.3	0.3	0.2	0.2	0.2
	Gallbladder and bile duct disease	0.2	0.3	0.3	0.2	0.2	0.1
	Pancreatitis	0.2	0.3	0.2	0.2	0.2	0.1
	Vascular disorders of intestine	0.2	0.3	0.2	0.2	0.2	0.1
	Diverticulitis	0.1	0.2	0.1	0.1	0.1	0.1
	Abdominal wall hernia	0.1	0.1	0.1	0.1	0.1	0.1
	Appendicitis	0.0	0.0	0.0	0.0	0.0	0.0

x2.5

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CLD poses increased burden to high-risk groups:

- *Remoteness*

- *SES*

Are we accurately capturing MASLD- the most *common* CLD?

1.2 Promote standardization of data collection and reporting on the human and economic burden of fatty liver disease to enable comparisons across different groups, populations, and settings

- **Data Gaps:** Incomplete data hinder coordinated action on fatty liver disease at national and global levels.

- **Standardization Priority:** Promoting standardization and harmonization of data collection is essential for meaningful global comparisons of the disease's impact.

- **Investment Cases:** Developing investment cases for fatty liver disease will highlight both the human and economic burdens, helping engage policymakers in actionable solutions.

Data sources

Deaths data to estimate fatal burden (YLL) were sourced from the Australian Institute of Health and Welfare's (AIHW) National Mortality Database.

Database comprises information about the causes of death and other characteristics about the person, such as sex, age at death and area of usual residence.

Morbidity data to estimate non-fatal burden (YLD) were drawn from a wide variety of existing sources of epidemiological measures (such as incidence, prevalence and mortality) from disease registers, administrative data, surveys and epidemiological studies.

Figure 2.1: Overview of disability-adjusted life year estimation process
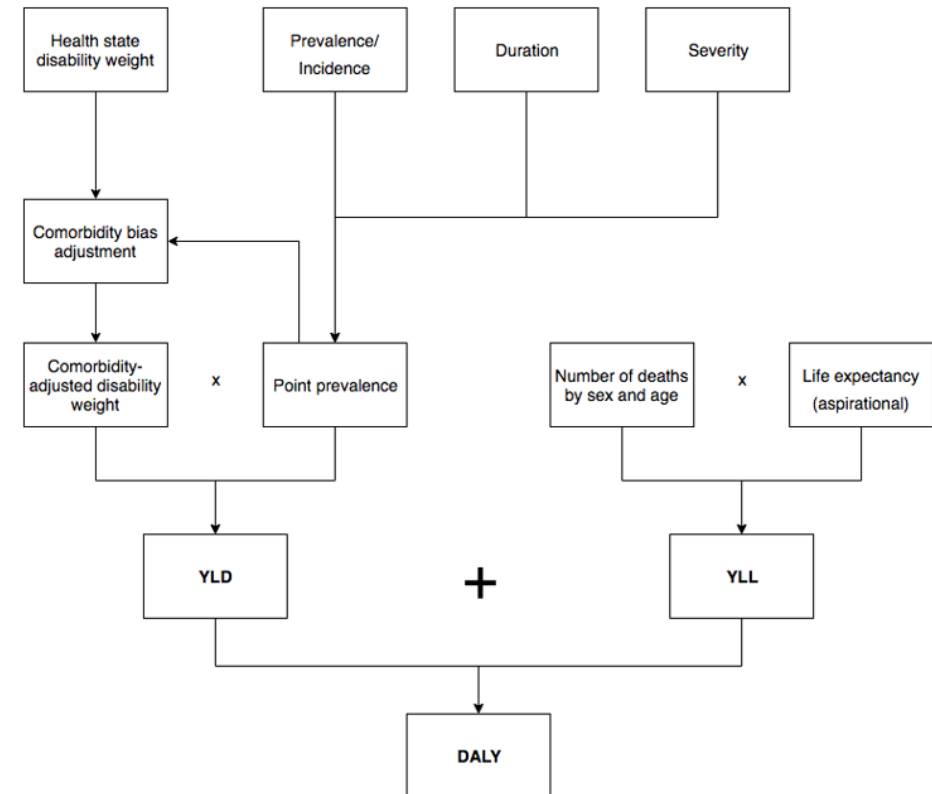
Multimorbidity

- Assessment of the burden of having multiple conditions
- 1 in 5 Australians (4.9 million)
- Flow on effect?

Table 1: Long-term health condition groups and prevalence among people of all ages

| Condition group	Inclusions[a]	Prevalence (%)[b][c]
Cancer	Bowel or colorectal cancer, brain cancer, breast cancer, cancer of female genital organs, cancer of male genital organs, cancer of other digestive organs, cancer of other respiratory and intrathoracic organs, Hodgkin's disease, leukaemia, non-Hodgkin's lymphoma, oesophageal or stomach cancer, skin cancer, lung cancer, cancer site unknown, other malignant tumours, in situ neoplasms, benign neoplasms & neoplasms of uncertain nature	2.3
Cardiovascular diseases	Heart failure, ischaemic heart diseases (including angina, heart attack and other ischaemic heart diseases), stroke, other heart diseases, other heart stroke and vascular diseases (including other cerebrovascular diseases, oedema and diseases of arteries, arterioles and capillaries), other diseases of circulatory system (including rheumatic heart disease)	5.5
Chronic respiratory	Asbestosis, asthma, chronic obstructive pulmonary disease (chronic airflow limitation, chronic bronchitis, emphysema)	12.3
Endocrine disorders	Type 1 diabetes, Type 2 diabetes and diabetes type unknown	5.3
Gastrointestinal	Diseases of the liver, diseases of the oesophagus (including gastro oesophageal reflux disease), inflammatory bowel disease (enteritis and colitis)	1.7
Genitourinary	Chronic kidney disease (including Glomerular diseases, Renal failure or Kidney disease, Renal tubulo-interstitial diseases), non-inflammatory female pelvic conditions (including endometriosis)	2.7
Hearing and vision disorders[d]	Deafness or hearing loss (complete, partial, deaf mutism and other deafness or hearing loss nec.), other hearing and vestibular disorders (including, otosclerosis, Meniere's disease, tinnitus, other diseases of the middle ear and	21.3

ICD-11

ICD-11 for Mortality and Morbidity Statistics 2024

Type for starting the search

ICD-11 for Mortality and Morbidity Statistics
- ▷ 01 Certain infectious or parasitic diseases
- ▷ 02 Neoplasms
- ▷ 03 Diseases of the blood or blood-forming organs
- ▷ 04 Diseases of the immune system
- ▷ 05 Endocrine, nutritional or metabolic diseases
- ▷ 06 Mental, behavioural or neurodevelopmental disorders
- ▷ 07 Sleep-wake disorders
- ▷ 08 Diseases of the nervous system
- ▷ 09 Diseases of the visual system
- ▷ 10 Diseases of the ear or mastoid process
- ▷ 11 Diseases of the circulatory system
- ▷ 12 Diseases of the respiratory system
- ▽ 13 Diseases of the digestive system
  - ▷ Diseases or disorders of orofacial complex
  - ▷ Diseases of oesophagus
  - ▷ Diseases of the stomach or the duodenum
  - ▷ Diseases of small intestine
  - ▷ Diseases of appendix
  - ▷ Diseases of large intestine
  - ▷ Diseases of anal canal
  - ▽ Diseases of liver
    - ▷ **DB90** Infectious liver disease
    - ▷ **DB91** Acute or subacute hepatic failure
    - ▷ **DB92** Non-alcoholic fatty liver disease
    - ▷ **DB93** Hepatic fibrosis or cirrhosis
    - ▷ **DB94** Alcoholic liver disease
    - ▷ **DB95** Drug-induced or toxic liver disease
    - ▷ **DB96** Autoimmune liver disease
    - ▷ **DB97** Certain specified inflammatory liver diseases
    - ▷ **DB98** Vascular disorders of the liver
    - ▷ **DB99** Certain specified diseases of liver
    - ▷ Neoplasms of the liver
    - ▷ **LB20.0** Structural developmental anomalies of liver
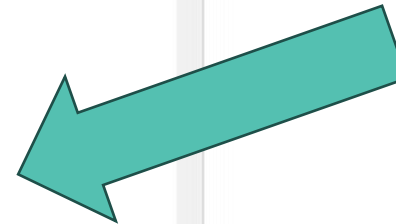
GBD Sources of Data

Population-based studies: The GBD relies on large-scale population surveys, clinical studies, and national health data registries that report the prevalence of fatty liver disease.

Hospital and health system records: Clinical records and health system databases provide case counts and hospital admissions related to NAFLD or other liver diseases.

Laboratory and imaging data: In some cases, data from medical imaging (e.g., ultrasound, MRI) and liver function tests (ALT, AST levels) may be used to estimate disease prevalence, though such data is not always directly available for all countries.

Given limited Australian data it's expected prevalence and burden are greatly underestimated

BRIEF COMMUNICATION

The burden of non-alcoholic fatty liver disease in Australia: an analysis of Global Burden of Disease study from 1990 to 2019

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Abstract

Non-alcoholic fatty liver disease (NAFLD) is the most prevalent liver disease. Global Burden of Disease (GBD) data from 1990 to 2019 reported a rise in prevalence (9–13%) in Australia, which also ranked third highest for NAFLD prevalence compared to 14 similar countries. As a result of underdiagnosis, NAFLD burden is underestimated by GBD.

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National Health Survey

- Uses: Medications data from the Pharmaceutical Benefits Scheme.
- Chronic disease classification:

Digestive system subgroup

Includes diseases of the oesophagus, gallstones, irritable bowel syndrome, other diseases of the intestines, diseases of the liver, enteritis and colitis, and other diseases of the digestive system

- No direct/ indirect measures of liver health

New survey expected in 2025 – no consideration of liver health

Economic Implications

Liver disease was estimated to costs Australia **$5.4 billion annually in 2013**

Liver cancer is the fastest growing cause of cancer-related deaths in Australia, costing Australians a staggering **$4.8 billion in 2019-20 alone.**
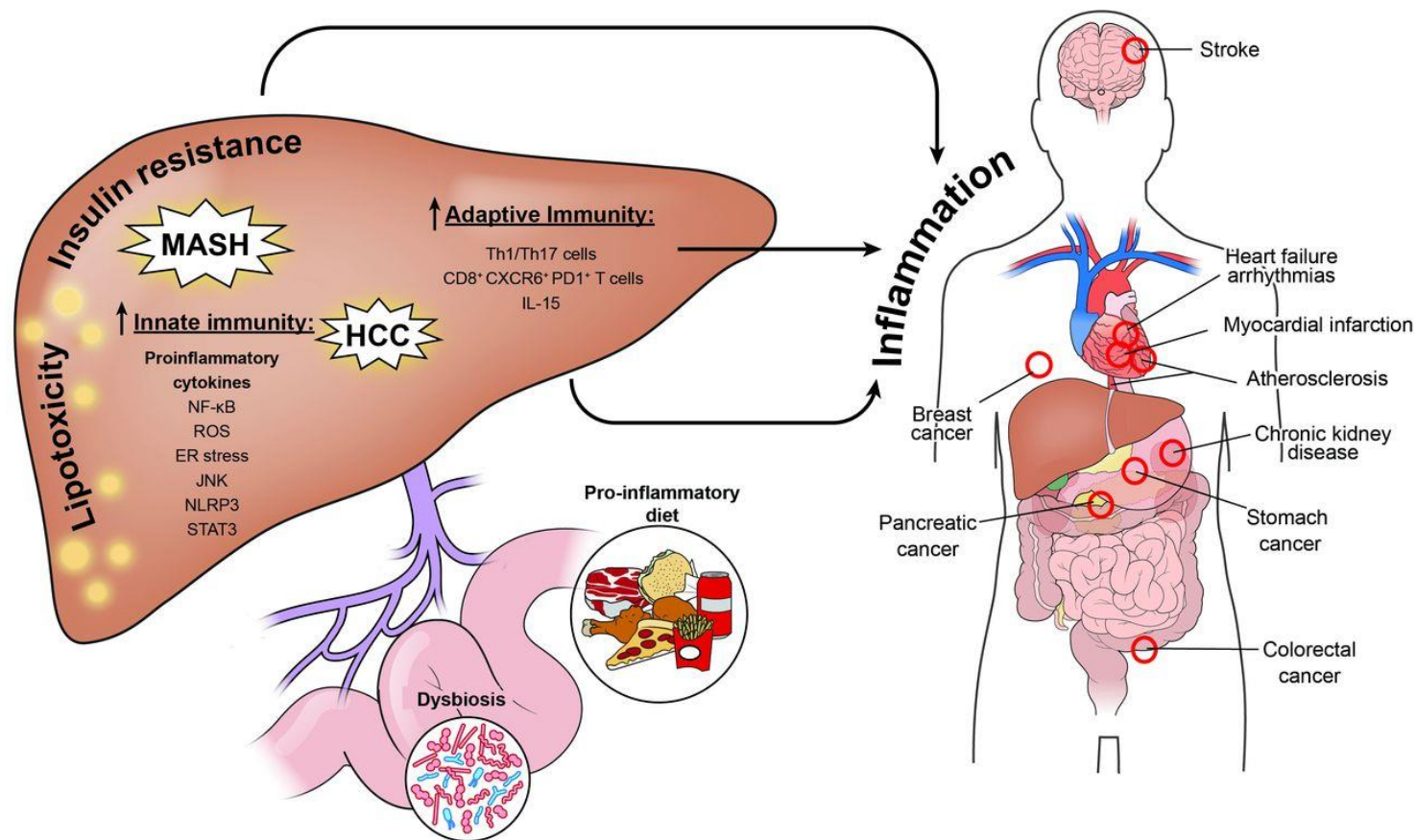
CVD costs the Australian health system $12.7 billion every year.

$3.4 billion annually representing 2.3% of total disease expenditure on diabetes ($2.3 billion was T2DM).

What are the indirect costs?

Current state and scope for action

MASLD is captured within the CLD category / digestive disease

Grouping misclassification?

No direct or surrogate measures

Without screening and diagnosis – ?underdiagnosis

Remoteness and socioeconomic status – disproportionately impacted

International data collection minimal, but improving

Australian national data overlooks MASLD and not capturing current definition?