

GHB-related emergency department presentations, hospitalisations, and police seizures in NSW

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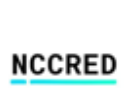
6 NSW Health Pathology, Forensic and Analytical Science Service

Acknowledgement of Country

I acknowledge that I am on Ngunnawal lands, and recognise the strength and resilience of those people who maintain a continuing connection to the lands and waters in this region – a right and responsibility that was never ceded.

I also acknowledge the Traditional Owners and caretakers of the nations throughout Australia, and pay my respects to elders past and present, and the Aboriginal and Torres Strait Islander people here today.

GHB Cultures, Experiences and Practices Study Group



NSW Health



ST VINCENT'S
HOSPITAL
SYDNEY

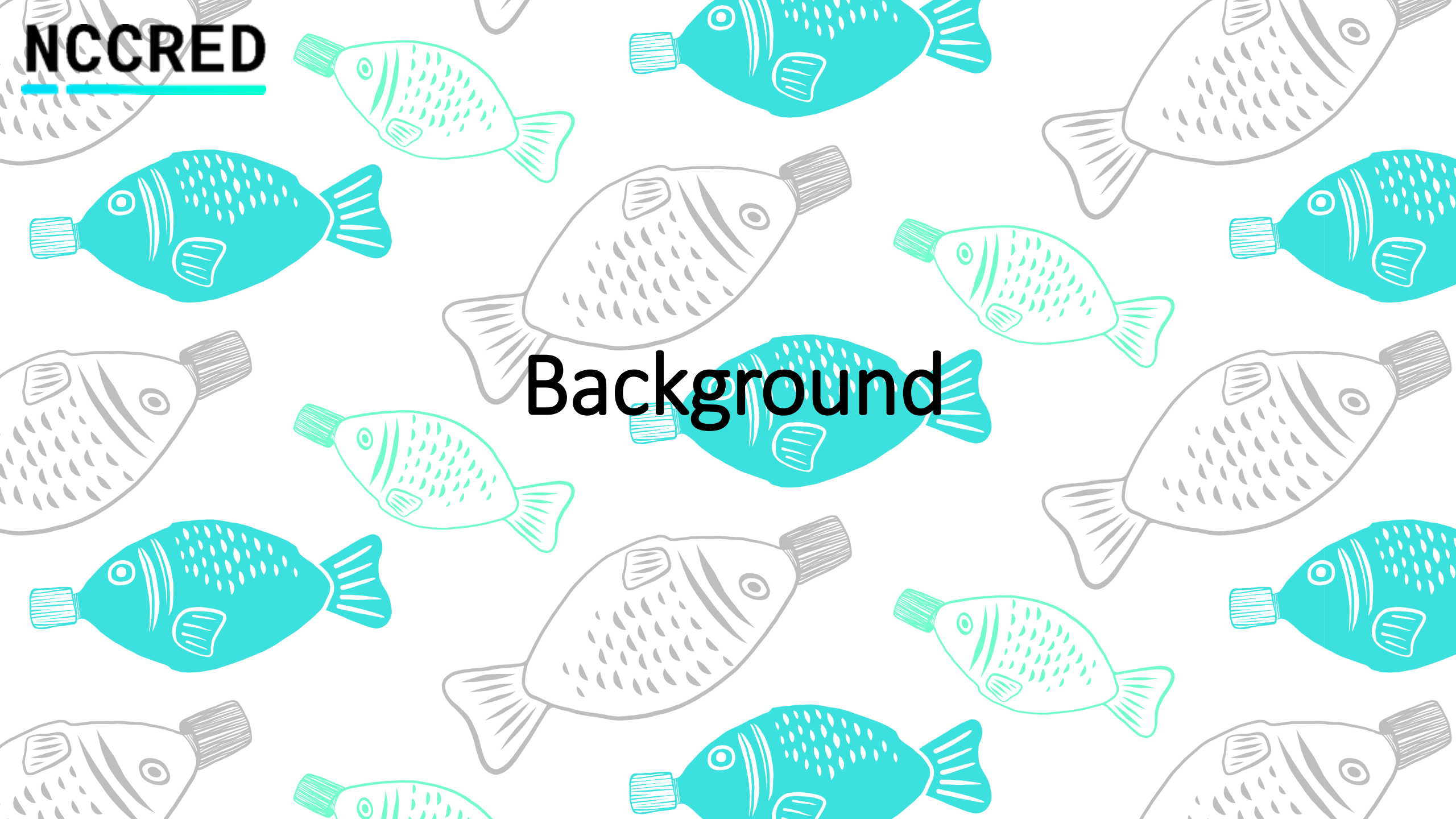


Sydney
Local Health District

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NSW ED, hospitalisation and police seizure data

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Background

Effects

- A naturally occurring neurochemical, gamma-hydroxybutyrate (GHB) is both a precursor and metabolite of GABA¹
- GHB and precursors gamma-butyrolactone (GBL) and 1,4-butanediol (1,4-BD) can cause desired stimulant effects such as euphoria and disinhibition²
- At higher doses GHB becomes a potent central nervous system depressant¹
- Due to the nature of unregulated drug markets, people may not be aware which compound they are taking (GHB, GBL, 1,4-BD)

Effects

- Our recent survey of people who consume GHB (n=186)¹ found:
 - 23.1% (n=43) were unsure which formulation they were taking
 - 8.6% (n=16) indicated their purchase did not meet their expectation
- 1,4-BD is metabolized by alcohol dehydrogenase²
 - When 1,4-BD is consumed with alcohol, alcohol dehydrogenase can become saturated by the ETOH
 - Delays the metabolism of 1,4-BD to GHB = delayed onset of GHB and potential for toxicity occurring after the alcohol is metabolized

Prevalence

- In the most recent Australian household surveys (2022-23) no changes were reported to 2019 data - approximately 1% (≥ 14 years) had consumed GHB¹
- Rates amongst LGBTQ people have been documented as 20-54 times greater^{2,3}
- In Australia, GHB has been associated with sex based sociality, and predominantly amongst men who have sex with men⁴

Prevalence

- However, recent reports demonstrate a changing demographic:
 - In a case series of EDNA participants (April 2020 – July 2022) across three WA ED's, GHB was detected in 45 presentations – and 53% of these were in women¹
 - In South Western Sydney LHD (March 2019 – March 2021) 84 admissions for a GHB-related disorder identified more than half of those admitted to be women, and 56% required withdrawal support²

Prevalence and harms



Emergency Medicine Australasia (2024)



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ORIGINAL RESEARCH

Trends in reported GHB-related presentations to Sydney emergency departments between 2012 and 2021

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- ED admissions across four Sydney ED's
- GHB-related admissions increased by 114% between 2015 – 2021
- Acuity of presentations increased
- Women represented 38% presentations in 2021

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The background of the entire slide is a repeating pattern of stylized fish. The fish are depicted in two colors: a vibrant teal and a light grey. They are arranged in a scattered, overlapping manner across the white background. Each fish is a simple, cartoonish illustration with a rounded body, a small eye, a single fin on top, and a larger tail fin. The teal fish have a solid color, while the grey fish are outlined in grey with grey scales.

NSW data

Methods

- Three NSW administrative datasets (2015-2024)

1. Rapid Emergency Department Data for Surveillance (REDDS) dataset

- ED presentations at 88 hospitals
- Eligible cases: ≥ 16 years, arrival date 01 July 2015 – 31 January 2024
- Unplanned presentations, keyword searches (*GHB*, *gamma-hydroxybut*, *GBL*, *hydroxybut*, *gamma-hydroxybutyrate*)
- Variables included: ED location, year of presentation, age, biological sex, mode of arrival, triage category, time of day / day of week of presentation, mode of separation

Methods

2. NSW Combined Admitted Patient Epidemiology Data (CAPED) dataset

- All inpatient separations (discharges, transfers, deaths) from NSW Hospitals
- Eligible cases: ≥ 16 years, episode date 01 July 2015 – 30 June 2023 (latest available)
- ICD-10 codes for diagnostic fields associated with disorders/poisonings due to use of GHB, sedatives hypnotics, gamma hydroxybutyrate
- Variables included: presentations related to GHB, year, diagnosis code, age, biological sex, ICU, length of stay ICU, intubation, hours on ventilation, length of stay, mode of separation

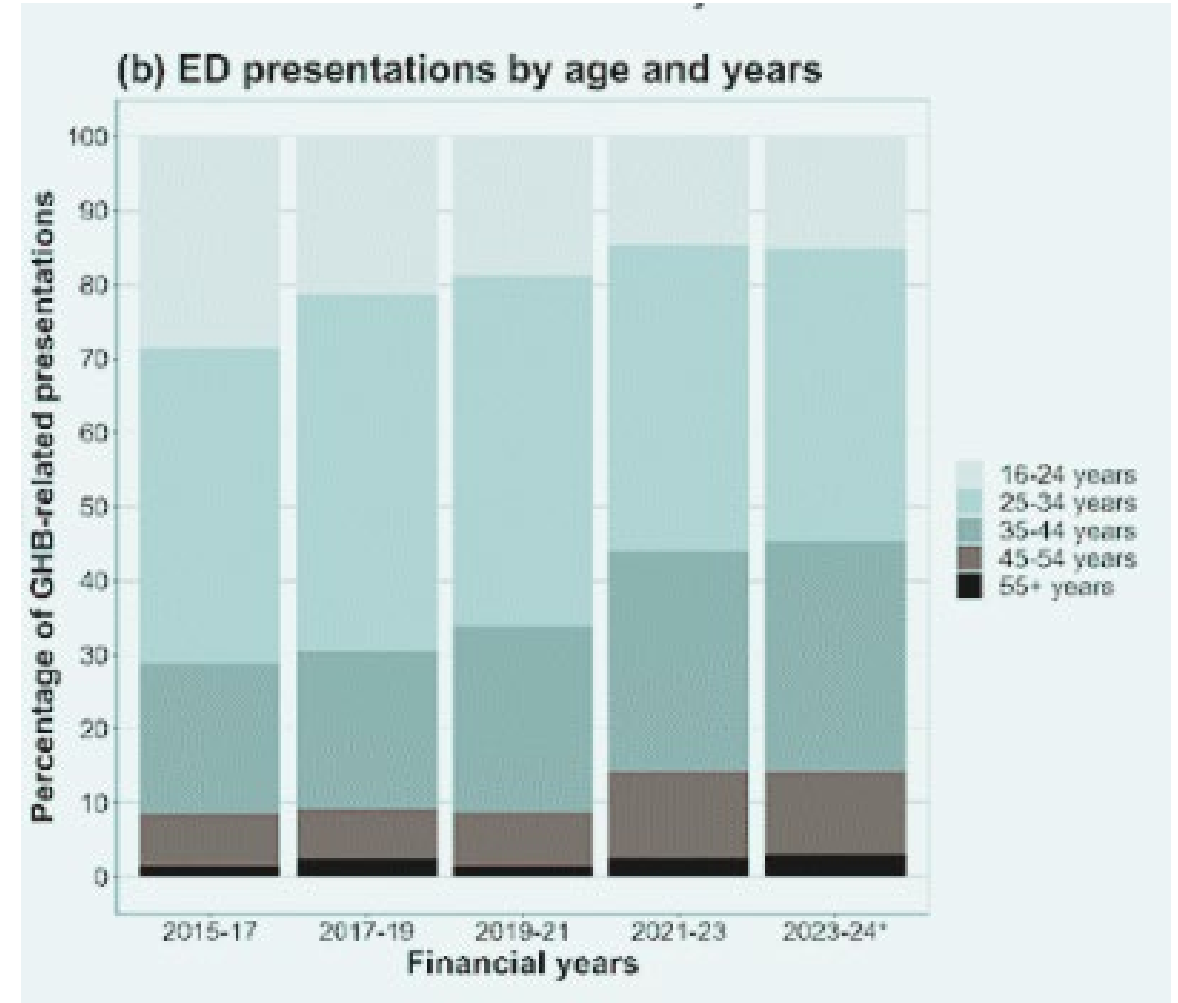
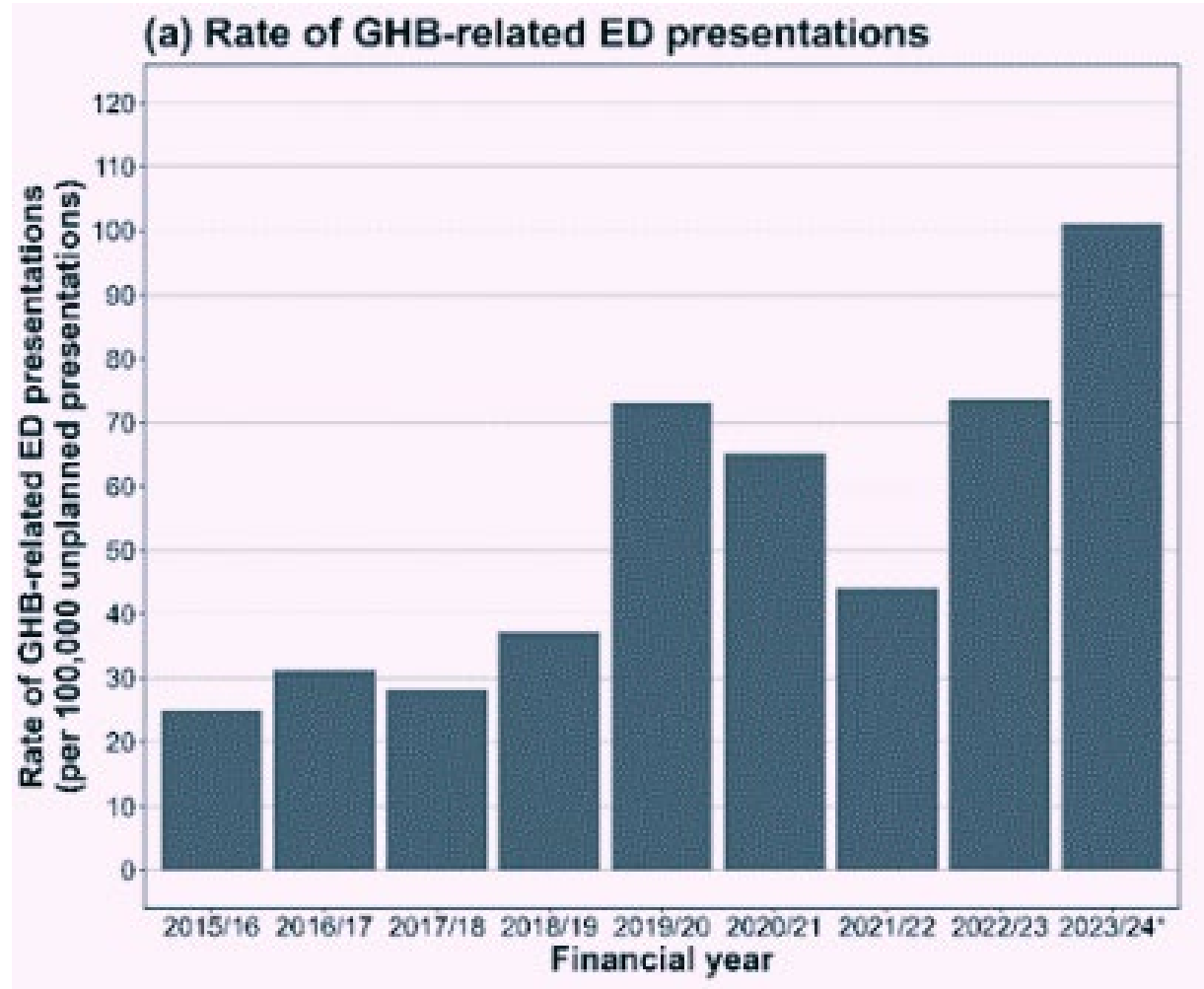
3. Police seizure of GHB and related substances

- NSW Health Pathology Forensic and Analytical Science Service (FASS) Illicit Drug Analysis Unit (IDAU)
- GCMS + combination of presumptive color tests, FTIR and/or Raman spec also used for identification
- Samples containing GHB, GBL, or 1,4-BD for records where sample received 01 July 2015 – 31 March 2024

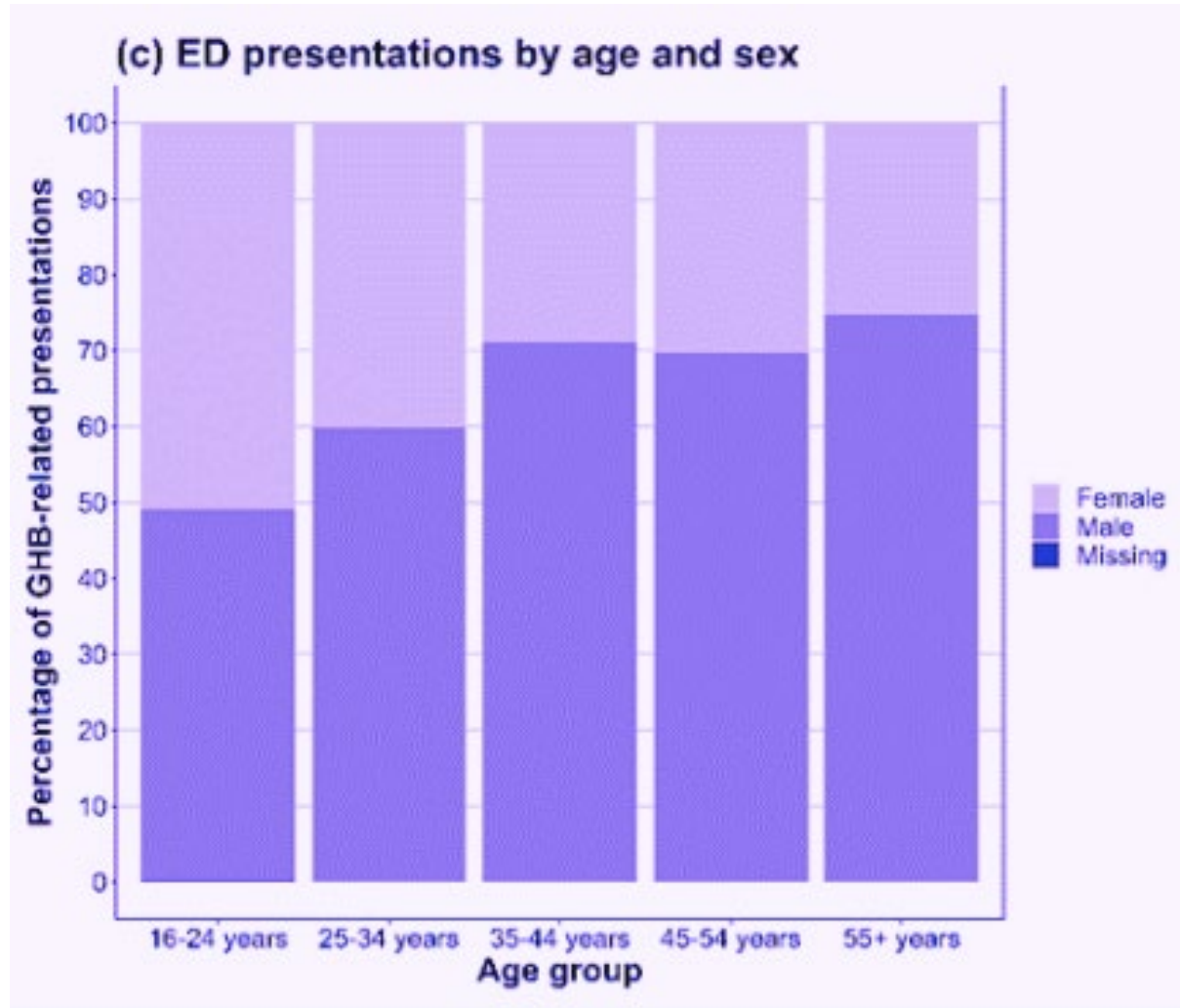
Results – ED data

- 9,612 presentations related to GHB
- 101 per 100,000 unplanned presentations (July 2023 – January 2024)
 - Prior peak was 73.7 / 100,000 (2022-2023)
 - Up from 24.9 / 100,000 (2015-2016)
- 62% male
 - 51% of 16-24 year olds were women
 - 25% of 55+ year olds were women
- 44% aged 25-34 over the study period

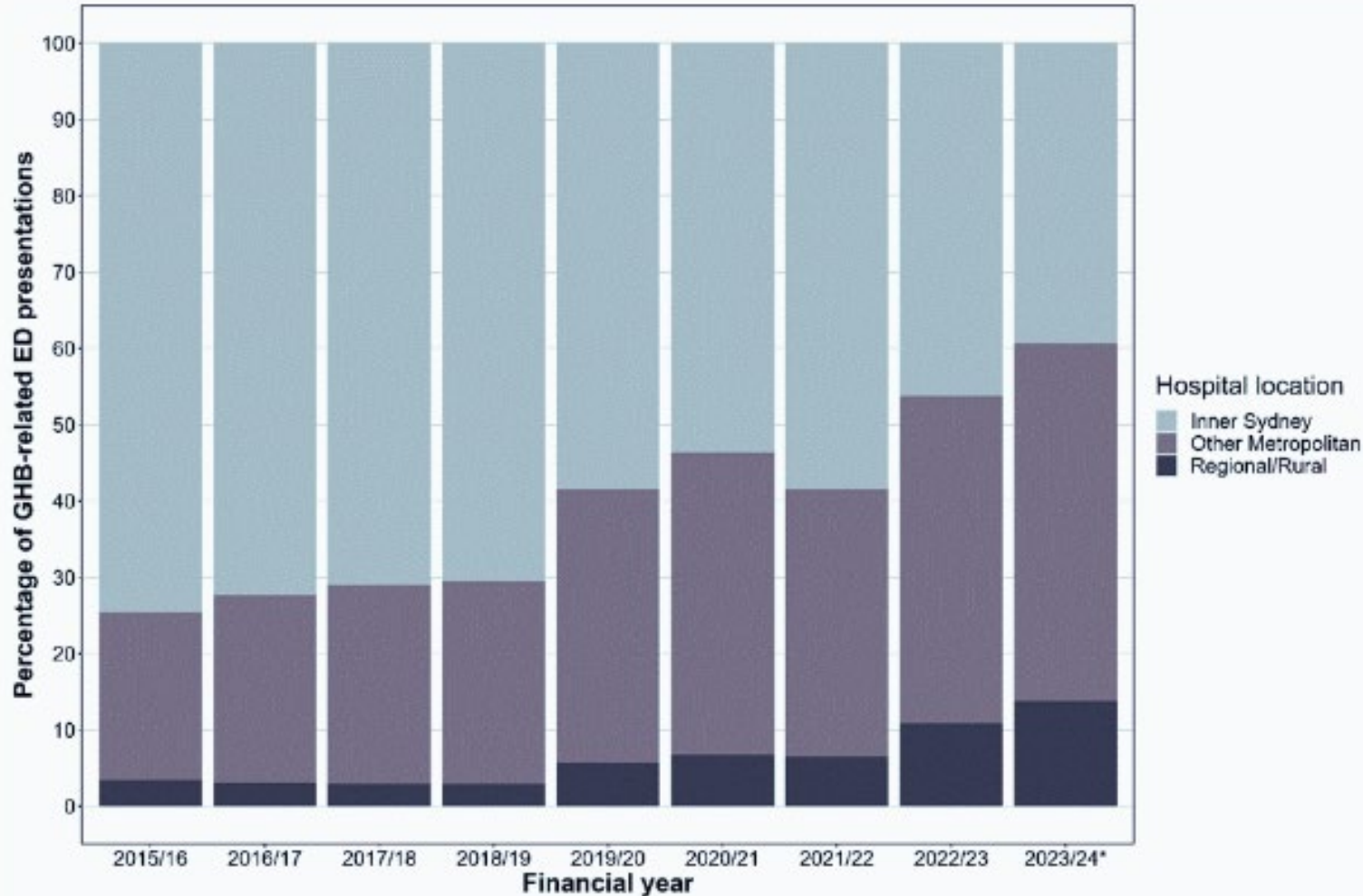
Results – ED data



Results – ED data



Results – ED data



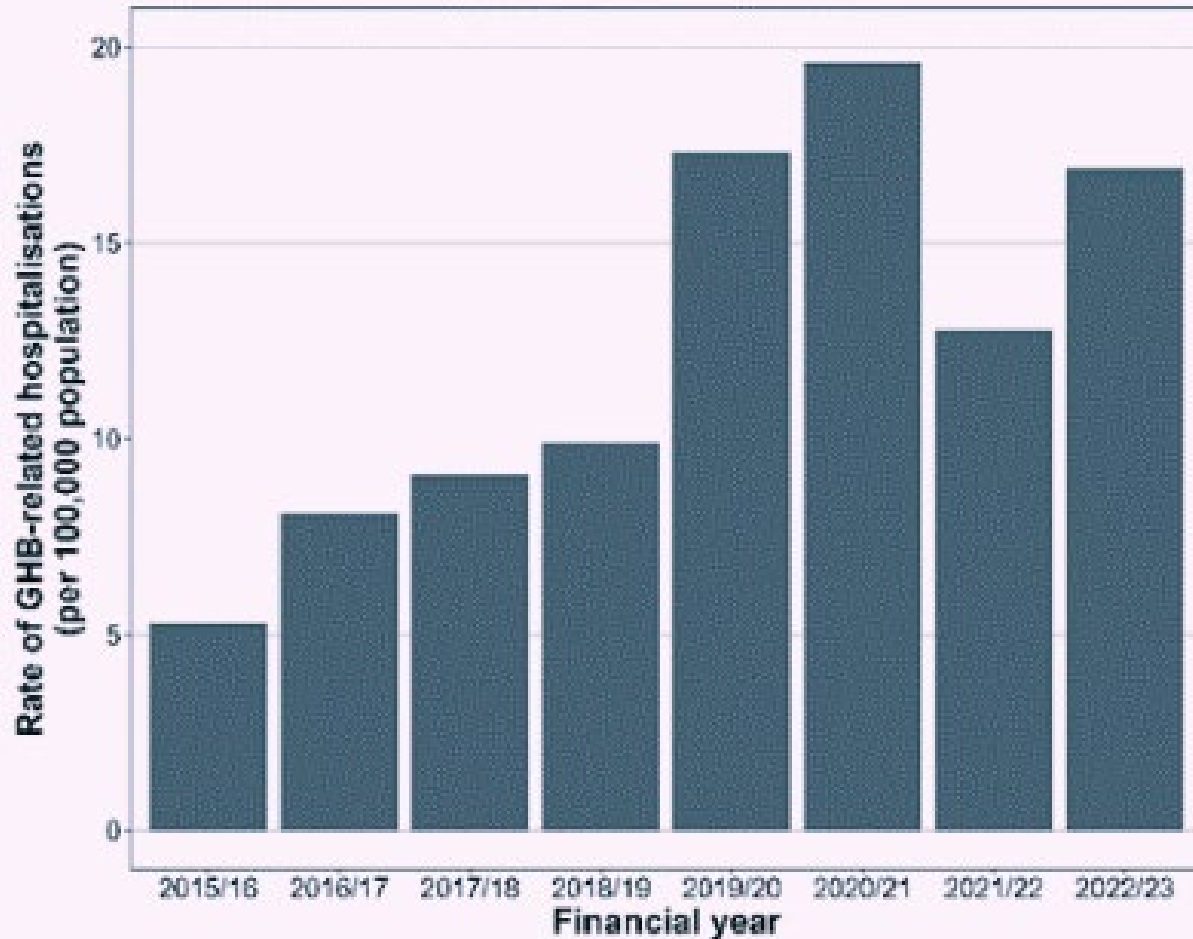
- Over the study period, **presentations to regional / remote EDs increased**
 - 3.4% [n=16/471] in 2015-16
 - 13.8% [n=192/1387] in 2023-2024
- 79% of ED presentations arrived by **ambulance**
- 56.1% were triaged Category 1 or 2** (this was stable over the study period)
- 61% were not admitted following ED
 - 15% left at own risk
 - 17% admitted to non-critical care
 - 6% were admitted to critical care or died in ED
 - 1% missing data

Results – hospitalisation data

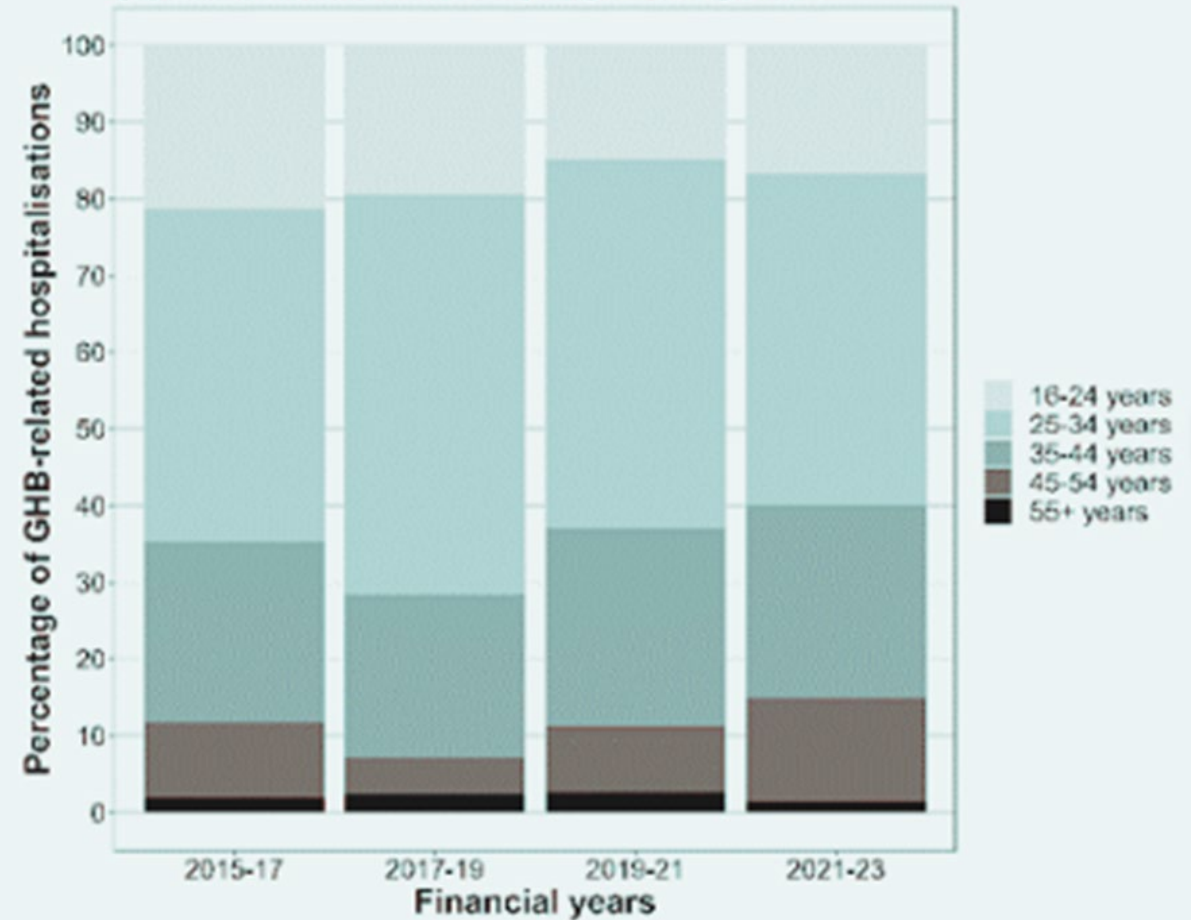
- 6,420 hospital admissions related to GHB
- 16.9 GHB-related hospitalisations per 100,000 population in the most recent period (2022 - 2023)
 - Peak was 19.6 / 100,000 population (2020-2021)
- 57% male
 - 54% of 16-24 year olds were women
 - 28% of 55+ year olds were women
- 47% aged 25-34 over the study period

Results – hospitalisation data

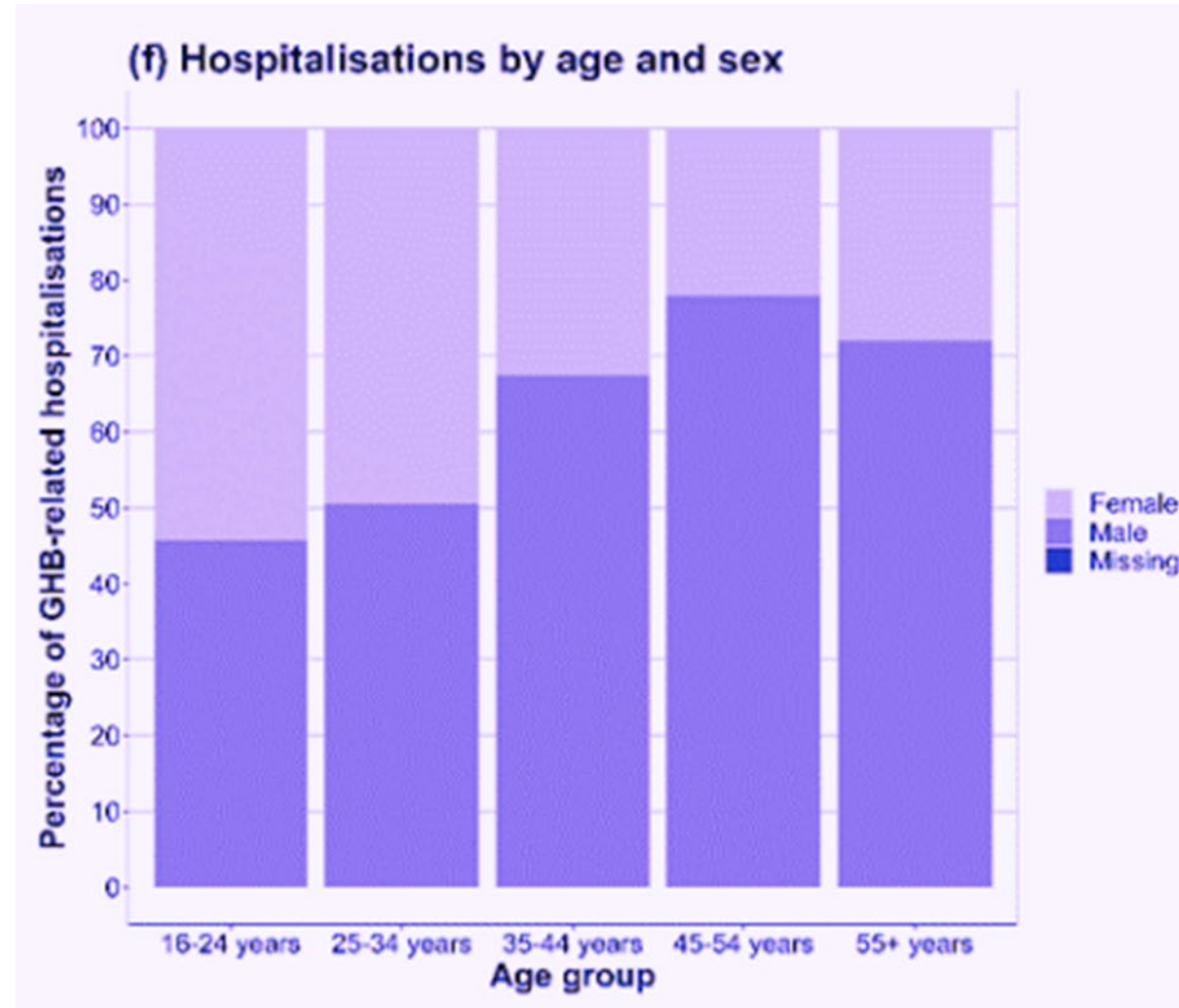
(d) Rate of GHB-related hospitalisations



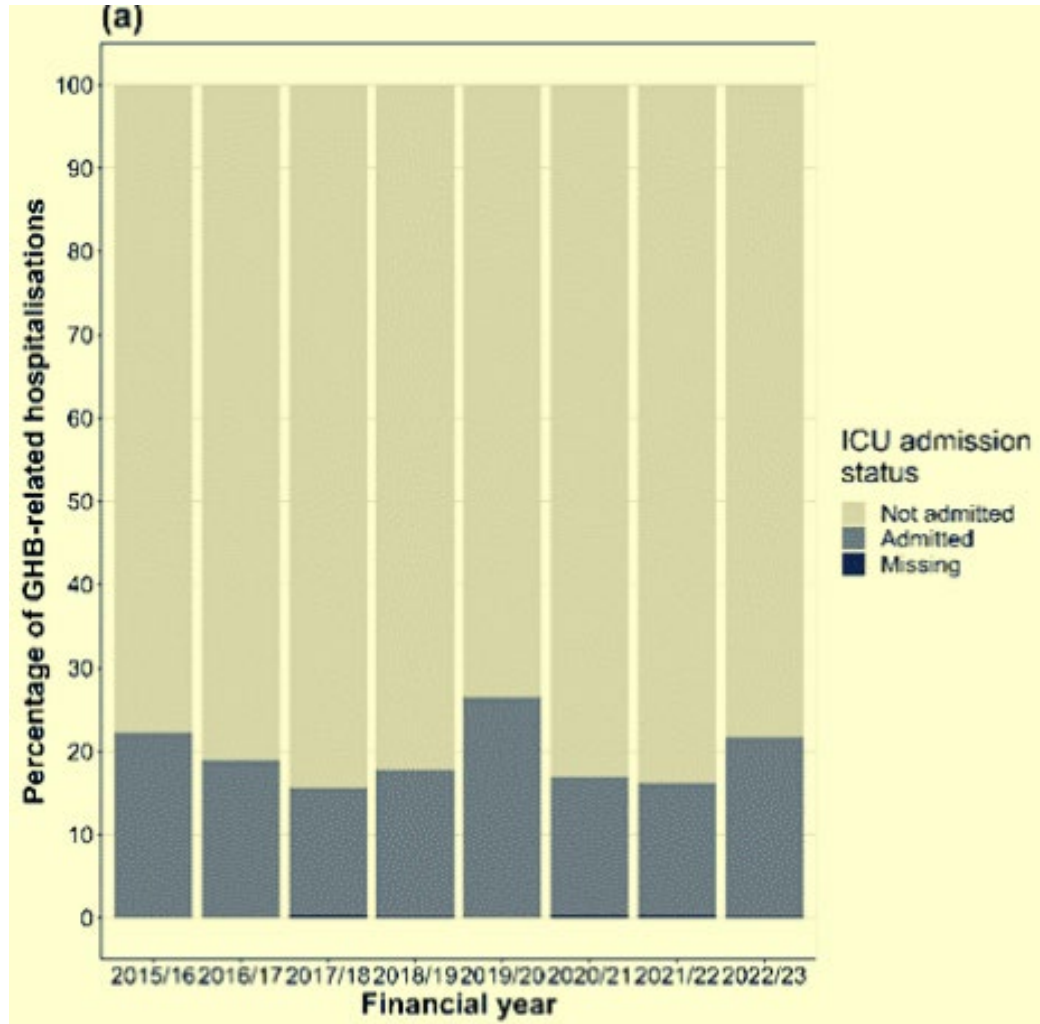
(e) Hospitalisations by age and years



Results – hospitalisation data

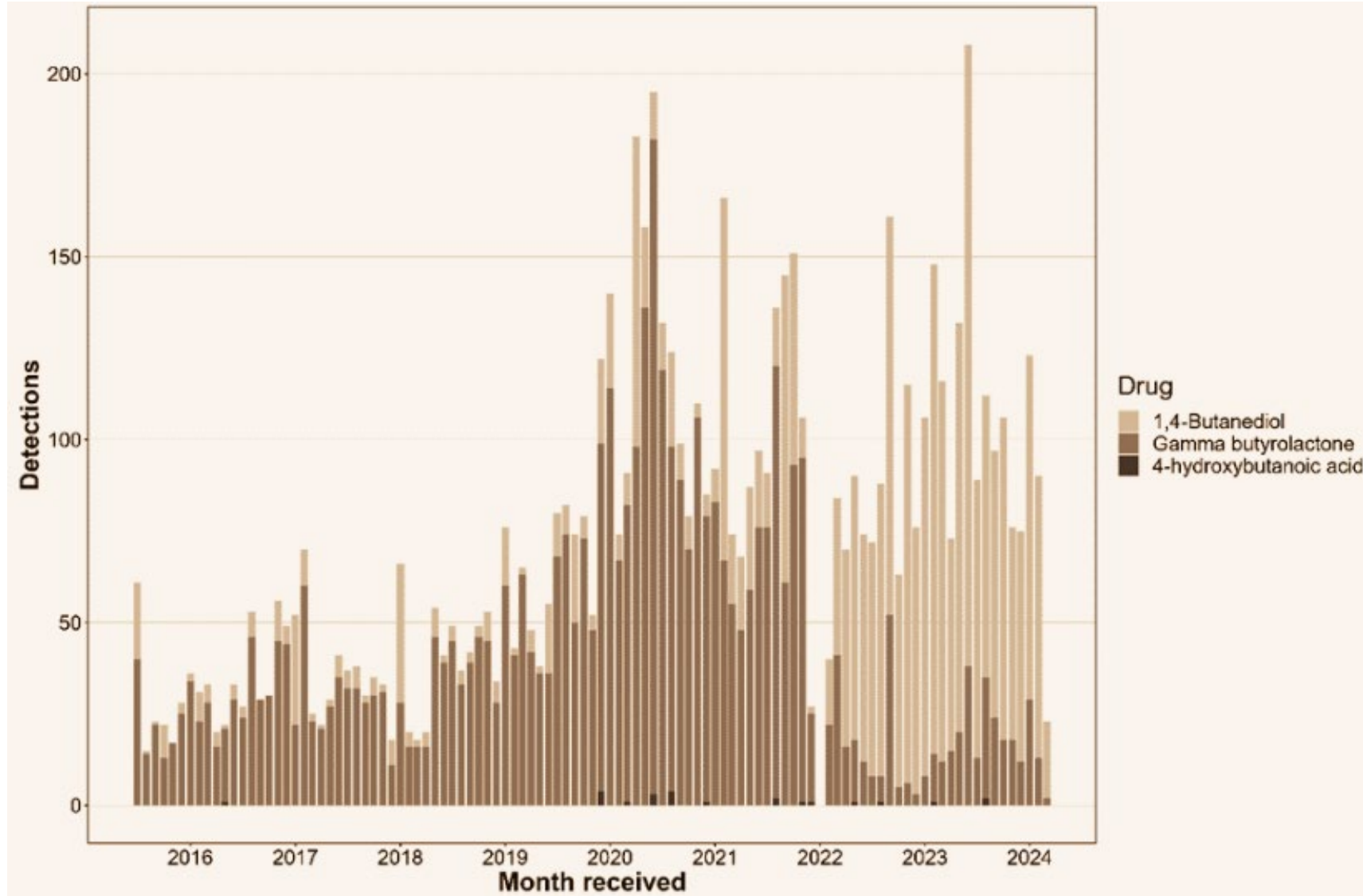


Results – hospitalisation data



- Over the study period, **ICU admission was required for 19.6%** (n=1,258) cases
 - Peaked at 26.5% (n=298/1,126) in 2019-20
 - Most recently 21.6% (n=241/1,117) in 2022-23
- Median time in ICU = **19 hours** (IQR 11-34)
- 18.4% were intubated** (n=1,179)
- Median time ventilated once hospitalised = **10 hours** (IQR 5-17)
- 12.9% (n=828)** hospitalisations were assigned a **withdrawal** code
 - Most recently 17.3% (n=193/1,117) in 2022-2023
- Median length of stay = 1 day (IQR 1-4)
- Majority discharged by hospital (79%) or left at own risk (15%)

Results – Police data



- 0.3% of samples were GHB
- Prior to 2022 most were GBL
- 2022 onwards predominantly 1,4-BD

Limitations

- Datasets not designed to interrogate one particular outcome – therefore data may be missing or misclassified
- Reliance on keyword search may result in undercounts
- Repeat presentations cannot be examined (datasets do not include linked data)
- Short half-life of GHB and propensity of people to self-manage toxicity in the community = harms likely under-estimated
- Analytical data collected by police may be biased toward what is / is not selected for testing, and how it comes to be available for testing

Discussion

- This report triangulates 3 sets of administrative data
- Increase prevalence and acuity of harms associated with GHB through the study period
- Women now account for more than half of cases in the younger age groups
 - Women are overlooked in the literature pertaining to GHB use, research tends to focus on MSM, or in more limited circumstances gender and sexuality diverse communities
- Increasing ED presentations and hospitalisations in regional/rural areas
- More than half of ED presentations were triaged highest level of need; One in five hospitalisations required intensive care
- Public health messaging, harm reduction education needs to evolve to address changing demographics
- Clinical resources to support airway management decisions and withdrawal



NCCRED Symposium

- The NCCRED Symposium is on 22 November, in person and online

Register here:

