Mortality during first admission for alcohol-related liver disease (ARLD) remains high, with concern that some patients are dying during their first (index) emergency hospitalisation. However, the mortality rate during index ARLD admission in England is not well characterised. Nor do we know the relative proportion of fatalities that are genuinely ‘hidden’ to the system as opposed to having had prior contacts with primary or secondary care.

Methods The CPRD dataset contains a nationally representative sample of the English population (approx. 13 million, 23.2%) with linked data from both primary and secondary care. We obtained data for all people with an alcohol or liver-related READ code in their primary care record or an alcohol-specific ICD-10 diagnosis in secondary care (n=496,762). We then selected all patients admitted as an emergency for index ARLD in fiscal year 2017/18 (applying our recently reported diagnostic algorithm for ARLD and screening the preceding 10 years), characterised their prior contacts with services across the decade before admission, their clinical characteristics and in-hospital mortality.

Results Within the CPRD sample population for 2017/18, there were 2,423 patients with an index admission for ARLD (their first in last decade). In-hospital mortality for index admissions in England was 15.1% (n=366), with a mean age of 59 years, 60.7% male and mean Charlson index 18. Of the deaths, 28% had no record of an emergency admission for any cause in last 10 years – individuals who appear hidden to hospital services. However, 47% of those dying had at least one previous admission for an alcohol-specific diagnosis (other than liver disease) with a mean interval of 760 days between their first admission and fatal ARLD index. Of the deaths, 9% had no record of any primary care contact (seemingly unknown to GP services). However, 63.7% of those dying had a previous READ code for an alcohol-related problem in their GP record.

Conclusion In England in 2017/18, fifteen percent of patients admitted for the first time with ARLD died during admission. Of patients who died, almost one in ten had no contact with primary care, and over one in four had no record of a secondary care admission in the preceding 10 years. Patients lacking contact with both primary and secondary care represent a ‘hidden group’, with apparent lack of opportunity for healthcare intervention. However, a high proportion of patients who die are known to both primary and secondary care. There may be missed opportunities or ineffective health-care intervention at both primary and secondary care levels. New, more effective strategies are needed to detect and help people at high risk of presenting acutely for the first time with fatal ARLD.

Characteristics of survivors vs. those who died

- Number of deaths = 477 (13.91%); 141 (29.56%) had no previous GP contact;
- 16 (3.35%) had a GP liver flag only; 189 (39.62%) have an alcohol flag only and 131 (27.46%) both alcohol and liver codes.
- Number of survivors = 2,952 (86.09%); 686 (29.40%) had no previous GP contact; 43 (1.46) with a liver flag only; 1,309 (44.34%) with an alcohol flag only and 732 (24.80%) with both alcohol and liver codes.

Mann-Whitney comparison of the total number of days between the 2017/2018 index, and the date of first GP alcohol, liver and combined alcohol + liver code. Showed no statistical significance between the length in time from GP code and index, within the died vs survived cohorts.

Mortality cohort (n=477)

- 1. Mean age = 59 (SD=–12.6)
- 2. ARLD code in primary = 61.6%
- 3. Short stay (<2 days) = 6.5%
- 4. AKI= 64.8%
- 5. Ascites = 51.2%
- 6. Varices = 22.9

Survived cohort (n=2,952)

- 1. Mean age = 53 (SD=11.9)
- 2. ARLD code in primary = 46.3%
- 3. Short stay (<2 days) =10.1%
- 4. AKI= 14.8%
- 5. Ascites = 29.1%
- 6. Varices = 16.9%