Background There is widespread acknowledgement that we need to go beyond the single disease framework when trying to understand health inequalities across the life course. In Scotland, evidence based on primary care records showed that more than half of the people aged 65 years and older had at least two chronic diseases. Multimorbidity, defined as the cooccurrence of two or more chronic diseases, was also shown to be more prevalent in women and those with lower socioeconomic status (SES). The vast majority of multimorbidity research (and the indicators used) is situated within a cross-sectional framework, and a typical goal is to identify disease clusters at a single point in time.

We aim to investigate the social patterning of multimorbidity trajectories in Scotland using both cross-sectional and longitudinal approaches.

Methods We use the Scottish Longitudinal Study (SLS) which links 1991, 2001 and 2011 censuses, vital events and other administrative or publicly available data sets for a 5% representative sample of the Scottish population. Our subsample focuses on 120,000 SLS individuals aged 40 years and over at the time of the Scottish census 2001, linked to their Scottish census 2011, hospitalisation and death records. Our sample is followed for up to 10 years (next census), censoring for death or emigration. Multimorbidity is identified using hospitalisation data and the list of comorbidities of the Charlson Index using Quan et al. algorithm (2005). Educational level in 2001 and the Scottish Index of Multiple Deprivation (SIMD) are used as SES proxies. Poisson and Cox regressions are used to explore SES inequalities in multimorbidity index at baseline and over time.

Results As expected, we find that multimorbidity is socially patterned: Individuals with lower education and who live in more deprived areas experienced faster levels of multimorbidity accumulation. In a separate analysis, we use single-channel sequence analysis to characterise multimorbidity trajectories and sequences of disease onset and relate this to social inequalities.

Conclusion This study highlights the need to go beyond a cross-sectional approach in researching multimorbidity differences. It shows the influence of the timing of and sequencing of disease onset in shaping social health inequalities in later life and it also provides a characterisation of multimorbidity progression through the application of longitudinal methods used in life course studies. With new data linkages, capturing detailed disease onset, and timing linked with social factors, research of the social patterning of multimorbidity progression can be advanced and fed into prevention strategies.