

## Mortality in adolescents with and without neurodisability in England: a national cohort study using linked health and education data from ECHILD

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### Objectives

Adolescence is a period of rapid biological and social changes that can affect young people's health and wellbeing, with risk of death second highest after infancy. We aimed to determine whether risk of death differs for adolescents with neurodisability (neurologic conditions which create functional limitations) compared to their peers.

### Methods

We developed a national cohort of 11-year-olds in English state secondary schools between 2009/10-2014/15, with up to 10 years of follow-up using linked health, mortality and education data from the ECHILD database.

Neurodisability was indicated using diagnoses in hospital admission records and reason for special educational needs provision in education records before Year 7. We estimated the cumulative probability of death by 22nd birthday and hazard ratios (HR) for all-cause mortality from Cox Proportional Hazards regression models separately for boys and girls. We repeated all analyses for children and young people (CYP) with learning disability (LD) and autism.

### Results

The cohort comprised 3,061,635 CYP (51% boys), of whom 125,370 (4.1%, 69% boys) had a recorded neurodisability. Overall, 4,435 deaths occurred (34.4% in CYP with neurodisability). By their 22nd birthday, 2.33% of girls and 1.55% boys with neurodisability died, compared to 0.11% of girls and 0.23% of boys without, corresponding to 24 times higher mortality risk for girls (HR: 24, 95% confidence interval [CI]: 22-27) and 8.4 times higher risk for boys (HR: 8.4, 95% CI: 7.8-9.1).

Mortality was 3.5 times higher for autistic girls (HR: 3.5, 95% CI: 2.4-5.3) and 1.6 times higher for autistic boys (HR: 1.6, 95% CI: 1.3-1.9) than their peers. For those with LD,

corresponding HRs were 27 (95% CI: 24-30) for girls and 11 (95% CI: 10-13) for boys.

### Conclusions and Implications

Young people with neurodisability are more likely to die than their peers. Further work will examine disparities according to cause of death (due to injury or other causes), co-existing comorbidities, sex and socioeconomic factors.



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