sufficient follow-up to explore the size of these separate effects across childhood. We explored whether birth before full term (gestation 39–41 weeks) and social disadvantage represent a double jeopardy by comparing the size of these separate effects on rates of hospital admission from birth to 10 years.

**Methods** We linked routine data from birth registration and hospital admissions for all live, singleton births in England in 2005–2006. Children (n=1,018,136) were followed up from discharge from their birth admission to age 10 years, death or study end (31st March 2015). Negative binomial regression models were used to estimate adjusted rate ratios (aRR) with 95% confidence intervals (CI) for the effect of gestational age (<32, 32–33, 34–36, 37–38, 39–41, 42 weeks) and area deprivation (quintiles) at birth on hospital admissions rates, stratified by age (<1, 1–4, 5–10 years). Population attributable fractions (PAFs) were estimated using the aRR for gestational age and area deprivation. All analysis was conducted in Stata version 14.

**Results** Hospital admission rates increased strongly with prematurity and area deprivation, even after adjustment for other factors. The effect of gestation was most marked in infancy, when even being born at ‘early term’ (gestation 37–38 weeks) had a stronger effect than living in the most deprived areas (aRR=1.37, 95% CI 1.35–1.39 for 37–38 vs. 39–41 weeks; aRR=1.26, 95% CI 1.24–1.28 for the most versus least deprived areas). The effect of gestation persisted though was less marked at age 5–10 years, although even being born ‘late preterm’ (gestation 34–36 weeks) had a stronger effect than living in the most deprived areas (aRR=1.39, 95% CI 1.35–1.43 for 34–36 versus 39–41 weeks; aRR=1.29, 95% CI 1.26–1.31 for the most versus least deprived areas). In infancy, the PAF for birth before full term (<39 weeks) was larger than the PAF for living in the poorest quintile. At age 5–10 years, the PAF for birth before full term was only slightly smaller than the PAF for living in the poorest quintile.

**Conclusion** Gestational age and social deprivation were independent risk factors for hospital admissions throughout childhood. The impact of being born even a few weeks early is of similar magnitude to living in the most deprived areas. Children born early and living in more deprived areas have a double jeopardy.

**OP44 BORN TOO SOON: EVIDENCE FROM ONE MILLION CHILDREN ON HOW PREMATURITY AFFECTS HOSPITAL ADMISSIONS IN CHILDHOOD**

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**Background** Preterm children are at increased risk of morbidity throughout childhood. However, few studies have investigated the long-term health consequences in relation to the full spectrum of gestational age, week-by-week. This study aimed to estimate the effect of gestational age on hospital admissions from birth up to 10 years of age, explore how rates of hospitalisation change throughout childhood.

**Methods** Birth registration and hospital admission records were linked for all live, singleton births occurring in England between in 2005 and 2006. Children (n=1,018,136) were followed up from birth admission hospital discharge to age 10, death or study end (31st March 2015). Generalised estimating equations were used to estimate rate ratios (RR) with 95% confidence intervals (CI). The analysis was repeated looking at infection-related hospital admissions only.

**Results** Compared to children born at 40 weeks, those born <28 weeks had the highest rates of hospital admission throughout childhood (aRR=4.89, 95%CI=4.55–5.26). Even children born at 38 weeks had a higher rate of hospital admission during childhood compared to those born at 40 weeks (aRR=1.19, 95%CI=1.16–1.22). However, the effect of gestational age on hospital admission decreased as the children became older (interaction p<0.0001). The most common cause of hospital admissions throughout childhood was infection and similar results were observed when the analysis was restricted to infection-related hospital admissions only e.g. <28 vs. 40 weeks, aRR=5.57, 95%CI=5.01–5.91. Gestational age had the strongest effect on rates of lower respiratory tract infections, invasive bacterial and viral infection-related admissions.

**Conclusion** Gestational age is a strong predictor of childhood morbidity, particularly infection-based morbidity, with those born the most preterm at the highest risk. Whilst the effect of gestational age on hospital admission rates decreases with age, an excess risk remained at age 7–10 years.
COMPARISON OF SEPSIS RECORDING IN PRIMARY CARE ELECTRONIC HEALTH RECORDS AND LINKED HOSPITAL EPISODES AND MORTALITY DATA: POPULATION-BASED COHORT STUDY IN ENGLAND

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Background Sepsis is a life-threatening condition resulting from systemic infection. Hospital admissions and recorded deaths for sepsis appear to be increasing nationally, heightening the need for epidemiological studies of sepsis based on accurate and complete data recording across linked records. We aimed to compare the recording of fatal and non-fatal sepsis across primary care electronic health records, hospital episodes and death registrations in England.

Methods A cohort study was conducted including patients registered with the Clinical Practice Research Datalink (CPRD). We analysed linked data for 378 general practices and death registrations in England. Among the 21,426 patients with a first episode of sepsis in the CPRD, 4,482 (21%) had a sepsis event in HES in the 30 days before and after the first CPRD diagnosis. We searched the linked ONS death data for patients with sepsis recorded as any cause of death then identified if these patients had sepsis events recorded in the CPRD and HES in the 30 days preceding date of death. We calculated incidence rates and trends in age-standardised incidence in each of the linked records.

Results Among the 21,426 patients with a first episode of sepsis in the CPRD, 4,482 (21%) had a sepsis event in HES in the 30 days before or after. There were 4,872 patients with sepsis listed as any cause of death in the ONS death data; 2,564 (53%) had a sepsis event recorded in the CPRD in the 30 days before the ONS date of death compared to 1,187 (24%) in HES. The incidence of new episodes of sepsis was 18.10 per 1000 patient-years (10.75 – 28.57) in the CPRD and 7.02 (2.83 – 14.45) in HES.

The mortality rate was 4.12 per 1000 patient-years (1.15 – 10.41) in the ONS death data. ONS records had peaks in sepsis mortality in 2006 and 2015 which were not reflected in the CPRD and HES records which had similar trends from low to high incidence and steep rates of increase from 2012 to 2017.

Conclusion There was a lack of agreement across data sources for both fatal and non-fatal sepsis events, indicating that relying on singular sources could lead to biased estimates of incidence. Linked electronic health records from primary care, hospital care, and death certificates should be used where possible to increase the accuracy and completeness of epidemiological findings.

Thursday 10 September

Life Course: Early Life

OP47 ADVERSE CHILDHOOD EXPERIENCES AND ADULT INFLAMMATION IN THE 1958 BRITISH BIRTH COHORT: COMPARING SINGLE ADVERSITY, CUMULATIVE RISK AND LATENT CLASS APPROACHES

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Background Adverse childhood experiences (ACEs) have been related to poorer health across the life course. Previous studies typically relied on cumulative risk scores or individual adversities measured through retrospective self-reports. However, these approaches have important limitations. Cumulative risk scores assume equal weighting of adversities and the single adversity approach ignores the high probability that adversities co-occur. In contrast, latent class analysis (LCA) offers an alternative approach to operationalise ACEs that respects the clustering of adversities and may identify specific patterns of ACEs important for health outcomes. Furthermore, prospective and retrospective reports of ACEs show poor agreement. Therefore, it is important to compare findings based on prospective and retrospective measures in the same individuals. The aim of this study was to compare LCA, single adversity and cumulative risk approaches to operationalising ACEs with inflammation in mid-life, comparing prospectively and retrospectively-reported ACEs data.

Methods Using data on 8,810 members of the 1958 British birth cohort we investigated 12 ACEs – physical, psychological and sexual abuse, physical and emotional neglect, parental mental health problems, witnessing abuse, parental conflict, parental divorce, parental offending, parental substance misuse and parental death. LCA was applied to explore the clustering of prospectively and retrospectively reported ACEs separately. Associations between latent classes, cumulative risk scores and individual adversities with three inflammatory markers (C-Reactive Protein, fibrinogen and von Willebrand Factor) were tested using linear regression.