**Results:** In terms of incidence, in 1980, the overall ASR varied widely across countries, ranging from 18 per 100 000 in Belarus to 309 per 100 000 in Switzerland. Between 1980 and 2002, prostate cancer incidence increased in all 20 countries. The OPC was the smallest in Denmark (+40%) and highest in Italy (+536%). Generally, countries with lower incidence in early years had the highest OPCs. In North-America and Australia incidence peaked around 1994, whereas in most European countries rates rose throughout the study period. The increase was most pronounced among men aged 50–74, and in a few countries, the OPC for men aged ≥75 years was less than zero. Mortality rates decreased in North-America and some western European countries (eg France, England, Italy, Switzerland), remained stable in others (eg Scotland, Sweden, Denmark) and increased in Eastern Europe. In countries where rates fell, the decline was more pronounced among younger, than older, men. In some countries (eg France), mortality began to fall before incidence peaked.

**Conclusions:** International variations in prostate cancer incidence and mortality were observed. The different trend in incidence by age suggests an impact of earlier diagnosis/PSA testing. While the increases in mortality observed in some countries might be a result of improvements in treatment or earlier detection, they could also be affected by changes in death certificate coding or competing causes of death.

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**Thursday, 10 September**

**Parallel session B**

**Life course obesity**

**025 BODY MASS INDEX THROUGH LIFE AND ADULT MORTALITY: RESULTS FROM THE BRITISH 1946 BIRTH COHORT**

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**Background:** Adult body mass index (BMI) has been consistently related to mortality, but little is known about the impact of earlier life BMI on adult mortality.

**Objective:** Investigate the impact of childhood, adolescent and early adult BMI on premature adult mortality and assess whether any associations are explained by adult BMI.

**Design:** Cohort study with prospective information on BMI at ages 2, 4, 6, 7, 11, 15, 20, 26 and 36 years, and mortality follow-up from age 26 to 60 years. BMI was standardised at each age, separately for men and women.

**Setting:** England, Scotland, Wales.

**Participants:** 2525 males and 2136 females.

**Outcome measure:** All-cause mortality (332 deaths).

**Results:** Splines were used to model the non-linear associations between BMI and mortality. In both genders, adult BMI from 20 years onwards showed a consistent U-shaped relationship with adult mortality (overall p-value <0.05 for BMI at ages 20, 26 and 36 years). In females, a similar relationship was observed for adolescent BMI at 15 years (p = 0.02); the hazard ratio (HR) comparing females with low BMI (2 standard deviations (SDs) below mean) vs mean BMI was 2.96 (95% CI 1.26 to 6.97). The corresponding HR for females with BMI 2 SDs above the mean was 1.97 (0.95 to 4.10). In males, increased mortality rates were only seen for low adolescent BMI. BMI in adulthood was generally not associated with adult mortality. The exception was BMI at age 4 years in females, where a U-shaped relationship was observed (p = 0.02); HR for low BMI (2 SDs below mean) at 4 years vs mean BMI was 2.13 (0.97 to 4.70). The HR for females with BMI 2 SDs above the mean was 1.67 (0.85 to 3.28), and for females with BMI 3 SDs above mean it was 3.08 (1.21 to 7.83). This association was not explained by subsequent BMI change, adult BMI, smoking, childhood social class or adult educational level.

**Conclusions:** High and low childhood and adolescent BMI are related to adult premature mortality, especially in women. Interventions to reduce under- and overweight in childhood are required to prevent increasing premature adult mortality in more recent cohorts with greater numbers of overweight children.