Trends in melanoma tumour thickness in Norway 1980-2019

**Raju Rimal1**, Trude E Robsahm2, Adele Green3,4, Reza Ghiasvand5, Corina S Rueegg5, Assia Bassarova6, Petter Gjersvik7, Elisabete Weiderpass8, Odd O Aalen1, Bjørn Møller9, Marit B Veierød1

1. Oslo Centre for Biostatistics and Epidemiology, Department of Biostatistics, Institute of Basic Medical Sciences, University of Oslo, Oslo, Norway
2. Department of Research, Cancer Registry of Norway, Oslo, Norway
3. Department of Population Health, QIMR Berghofer Medical Research Institute, Brisbane, Australia
4. Cancer Research UK Manchester Institute, University of Manchester, Manchester, United Kingdom
5. Oslo Centre for Biostatistics and Epidemiology, Oslo University Hospital, Oslo, Norway
6. Department of Pathology, Oslo University Hospital–Ullevål, Oslo, Norway
7. Institute of Clinical Medicine, University of Oslo, Oslo, Norway
8. International Agency for Research on Cancer, Lyon, France
9. Department of Registration, Cancer Registry of Norway, Oslo, Norway

# Background

Norway ranks fifth in incidence and second in mortality of cutaneous melanoma worldwide. Tumour thickness at diagnosis is the cornerstone of melanoma classification and the most important prognostic factor for clinically localized primary melanoma. Increased incidence of thin tumours may be a result of increased awareness or changes in pathological practice. Recently digitized tumour thickness data 1980-2007, and data from the Melanoma Registry 2008-, enable investigating of long-term trends in melanoma tumour thickness.

# Aim

Investigate trends in tumour thickness, overall and in important subgroups such as sex, age and anatomic sites, in a nationwide case series 1980-2019.

# Methods

Tumour thickness is categorized in T-categories: T1 (≤1.0 mm), T2 (1.0-2.0 mm), T3 (>2.0-4.0 mm), and T4 (>4.0 mm). Incidence rates is age-standardized using the European standard population. Trend and changes in incidence rate over time are analysed with annual percentage changes (APC) and average annual percentage change.

# Results

We included 47,439 morphologically verified first primary invasive melanoma cases (51.7% women) diagnosed 1980-2019. Median age at diagnosis increased from 58 years in 1980-1999 to 65 in 2008-2019. Women were diagnosed at a thinner stage than men. In men, median (IQR) tumour thickness decreased from 1.4 mm (0.75-3) in 1980-1999 to 1 mm (0.6-2.3) in 2008-2019, and in women from 1 mm (0.6–2) to 0.9 mm (0.5–1.8). T1 melanomas increased most during the period, and a plateau was found between 1993 and 2006 in the incidence of T1: APC (95% CI) was 17.02 (14.58, 19.51) in 1980-1993, 0.75 (-0.4, 1.91) in 1993-2006 and 6.08 (4.88, 7.3) in 2006-2019. No plateau was found for T2, T3 and T4 melanomas. However, although less pronounced, incidence of thicker tumours (>2mm) also increased. APC (95% CI) of T4 melanomas was 3.04 (2.32, 3.76) for 1980-2019.

# Conclusions

There is clear evidence that T1 has the largest increase in incidence. However, an increasing trend also in thicker tumours, suggests that the rise in melanoma incidence is not only due to over diagnosis. Awareness focused on elderly males would be effective for early detection and consequently help to reduce both incidence and mortality of melanoma in Norway.

**Preference:** Oral

**Word Count:** 350 (we need 350)