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Overdiagnosis is a major driver of the thyroid cancer epidemic: up to 50–90% of thyroid cancers in women in high-income countries estimated to be overdiagnoses

Lyon, France, 18 August 2016 – A new report by the International Agency for Research on Cancer (IARC) in collaboration with the Aviano National Cancer Institute in Italy shows that the growing epidemic of thyroid cancer reported in recent decades in several high-income countries is largely due to overdiagnosis (i.e. the diagnosis of tumours that are very unlikely to cause symptoms or death during a person's lifetime).

The article, published today in *The New England Journal of Medicine*,¹ used high-quality cancer registry data from IARC's reference publication [Cancer Incidence in Five Continents](#) to estimate the number of overdiagnosed cases of thyroid cancer in 12 countries (Australia, Denmark, England, Finland, France, Italy, Japan, Norway, Republic of Korea, Scotland, Sweden, and the USA).

"Countries such as the USA, Italy, and France have been most severely affected by overdiagnosis of thyroid cancer since the 1980s, after the introduction of ultrasonography, but the most recent and striking example is the Republic of Korea," says Dr Salvatore Vaccarella, the IARC staff scientist who led the study. "A few years after ultrasonography of the thyroid gland started being widely offered in the framework of a population-based multi-cancer screening, thyroid cancer has become the most commonly diagnosed cancer in women in the Republic of Korea, with approximately 90% of cases in 2003–2007 estimated to be due to overdiagnosis."

The estimated fraction of overdiagnosed cases in women during the same period ranges between 70% and 80% in Australia, France, Italy, and the USA, while it is approximately 50% in Japan, the Nordic countries, and England and Scotland. In men, patterns of changing incidence were similar but less pronounced, with far fewer cases reported. The proportion of cases of thyroid cancer in men that were estimated to be overdiagnoses is approximately 70% in France, Italy, and the Republic of Korea, 45% in Australia and the USA, and less than 25% in all other countries examined.

In total, it is estimated that more than 470 000 women and 90 000 men may have been overdiagnosed with thyroid cancer during two recent decades in the 12 countries studied.

¹ Vaccarella S, Franceschi S, Bray F, Wild CP, Plummer M, Dal Maso L (2016). Worldwide thyroid cancer epidemic? The increasing impact of overdiagnosis. *N Engl J Med*. Available from: <http://dx.doi.org/10.1056/NEJMp1604412>.

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The increasing medical surveillance and the introduction of new diagnostic techniques, such as neck ultrasonography (since the 1980s) and, more recently, computed tomography (CT) scanning and magnetic resonance imaging (MRI), have led to the detection of a large number of indolent, non-lethal diseases that exist in abundance in the thyroid gland of healthy people of any age. Most of these tumours are very unlikely to cause symptoms or death.

“The majority of the overdiagnosed thyroid cancer cases undergo total thyroidectomy and frequently other harmful treatments, like neck lymph node dissection and radiotherapy, without proven benefits in terms of improved survival,” says Dr Silvia Franceschi, one of the authors of the article.

Based on these data, the evidence in the IARC report cautions against systematic screening of the thyroid gland and workup of small nodules, while careful monitoring may be a preferable option for patients affected by low-risk tumours.

“More than half a million people are estimated to have been overdiagnosed with thyroid cancer in the 12 countries studied,” says IARC Director Dr Christopher Wild. “The drastic increase in overdiagnosis and overtreatment of thyroid cancer is already a serious public health concern in many high-income countries, with worrying signs of the same trend in low- and middle-income countries. It is therefore critical to have more research evidence in order to evaluate the best approach to address the epidemic of thyroid cancer and to avoid unnecessary harm to patients.”

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The International Agency for Research on Cancer (IARC) is part of the World Health Organization. Its mission is to coordinate and conduct research on the causes of human cancer, the mechanisms of carcinogenesis, and to develop scientific strategies for cancer control. The Agency is involved in both epidemiological and laboratory research and disseminates scientific information through publications, meetings, courses, and fellowships. If you wish your name to be removed from our press release e-mailing list, please write to com@iarc.fr.