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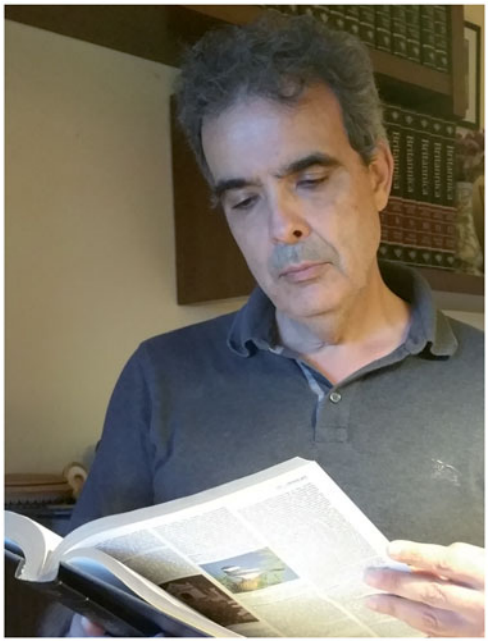
EDITORIAL

Reducing overdiagnosis in primary care is needed



Overdiagnosis has many definitions, but semantically it means *too much diagnosis,* and it is frequently defined as a diagnosis of a condition that is not causing harm and will never cause symptoms or death. Labelling patients with such a diagnosis might have undesirable consequences, inducing anxiety and other problems due to disproportionate and unnecessary treatments and leading to an inappropriate consumption of healthcare resources [1]. The concept of overdiagnosis has gained increased attention in the professional literature and clear examples are the series 'Choosing Wisely' published by JAMA or 'Too much medicine' by the BMJ. In addition, an international conference on this topic has been held yearly since 2013.

Overdiagnosis is especially bothersome in high-income countries, where it has become an authentic epidemic. Different reasons explain this medical excess, but overdiagnosis caused by uncertainty is one of the primary drivers. A general practitioner detects an abnormality, for instance, an abnormal reading of some biological variable, but does not know how to distinguish which situations will lead the abnormality to progress to harmful disease from those that will not. This is because the fear of omission errors by clinicians is much greater than that of errors of excess. Also, a reduced professional self-confidence—mainly explained by an uncertainty aversion or fear of legal problems—increases the extension of testing, and subsequently, overdiagnosis.

Another context that causes overdiagnosis is the fulfilling of some screening programmes, leading to over detection and earlier diagnosis. In her book 'The Patient Paradox—Why Sexed-up Medicine is Bad for Your Health', Dr Margaret McCartney, a general practitioner from Glasgow, offers overwhelming arguments against the usefulness of a number of current screening programmes, such as mammography, cytology, prostate specific antigen screening, and cardiovascular disease, with a vast amount of money currently being spent on these programmes [2]. Screening and preventive treatment is useful in some cases, but the paradox of modern medicine appears when, because of preventive anxiety, tests expose diagnoses in such early stages that these do not correlate with prognosis. With breast cancer screening, for example, evidence suggests that up to one in three of the cancers detected may be overdiagnosed [3]. In a study conducted with a population base of 16 million women over 40 years of age followed for 10 years in the United States, an increase of 10 percentage points in the extent of screening was accompanied by 16% more breast cancer diagnoses, with an increased incidence of tumours with sizes under 2 cm, but no significant change in breast cancer death [4]. Other examples are prostate and thyroid cancer. Almost all men will develop prostate cancer if they live long enough, but only a very small percentage will die from it, indicating that the biological reservoir of non-progressive prostate cancer is very important, and therefore, aggressive therapeutic interventions with consequences that affect the quality of life of people are not justified, providing no benefit because their cancer would not progress. The incidence of thyroid cancer has significantly increased in the last decades, mainly due to the introduction of new diagnostic techniques but most of the increase is due to papillary thyroid cancer—a not too aggressive type—and despite this increase in incidence, mortality has remained stable. Notwithstanding, newly diagnosed thyroid cancer patients will typically receive aggressive treatment, undergoing total thyroidectomy and subsequently requiring lifelong thyroid replacement therapy without observing a reduction in mortality. The United States Preventive Services Task Force has thereby recently recommended against screening [5].

Overdiagnosis can also be the result of broadening disease definitions and lowering of thresholds with the inclusion of often-milder forms of disease, converting often-healthy asymptomatic people into patients. A classic example is the explosion of children with autism spectrum disorder or attention deficit hyperactivity after the

publication of the Diagnostic and Statistical Manual of Mental Disorders, fifth edition, but also other conditions such as the disruptive mood dysregulation disorder—children presenting with a pattern of chronic irritability and frequent tantrums can also be considered as sick—or the premenstrual dysphoric disorder pathologizing normal reproductive functioning in women. The mild neurocognitive disorder now has the label of disease in the latest manual converting the normal cognitive decline of old age into a disorder [6]. Another example is the existence of the so-called pre-diseases, an appalling new fad in medicine. Prediabetes, defined as a condition with blood glucose levels being higher than normal without being pathological, can turn out to be a massive epidemic in the future. Notwithstanding, a diagnosis of prediabetes does not guarantee a future diagnosis of diabetes itself as there is no evidence to prove that the disease will develop if these pre-patients are treated [7].

A fourth type of overdiagnosis can be the result of commercial interests: for instance, as a result of disease mongering paving the way for the introduction of new drugs by the pharmaceutical industry, or converting social problems, such as lack of coping or being alone, into medical problems to legitimize welfare and social benefits. General practice is coping with these four forms of overdiagnosis on a routine basis, leading to overmedicalization and overtreatment, in which possible undesirable effects might outweigh the potential benefits of our clinical performance.

General practitioners are aware of the downsides of overdiagnosis, but the message has not got through to patients in an appropriate way, mainly because of two reasons: firstly, doctors do not know the degree of overdiagnosis. For instance, when it comes to screening they tend to overestimate the actual benefit of tests. A classic example is that which Gigerenzer described in his book *Reckoning with risk*, in which a group of 48 experienced German clinicians were asked to imagine what the probability of cancer of someone testing positive using the faecal occult blood test to screen for colorectal cancer would be, considering that the prevalence of cancer is 0.3%, the sensitivity of the test is 50% and the false positive rate is 3%; half of the doctors gave 50% as the answer, when the result was actually 4.8% [8]. Secondly, patients are not aware that overdiagnosis is a problem and they do not think that flawed diagnostics and medicalization exist. Many of them would interpret a reduction of screening as a reduction of healthcare expenditure rather than being evidence based. Sentences like 'had they not found this small lump in my thyroid gland, I would have avoided the surgery and the long-life replacement therapy' are not usually heard.

Several strategies should be implemented in clinical practice. One strategy would be to clarify the concept of disease, limiting the expansion of this concept and revising our systems of disease classification to remove some current diagnostic criteria. Other strategies should encompass the implementation of 'watchful waiting' or the use of less aggressive treatment options, the reduction of the scope of screening limiting it to only those programmes that have demonstrated a favourable risk–benefit ratio, the investigation of new diagnostic tests that permit the identification of clinically meaningful levels of disease, and the enhancement of research on this topic [9,10]. How to get this message across to our patients effectively should be studied. Resources are limited, and general practitioners, who act as gatekeepers and coordinators for many health systems, are in a position of privilege to communicate and engage patients about the risks of overdiagnosis and have the ethical duty to contribute to reducing this, by discussing the risks of medicalization with patients, discouraging the myth that early diagnosis is an unconditional good, and accepting the uncertainties inherent to clinical practice. The principle of 'first, do no harm' is paramount.

Disclosure statement

No potential conflict of interest was reported by the author.

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