

Overdiagnosis: too much of a good thing?

In the fairy tale of 'Goldilocks and the Three Bears' there is a happy medium, an equipoise, between having too much and having too little. The author repeatedly describes the dialectical rule of three, with the third option 'just right' juxtaposed between two extremes. Medicine is no different – there can be too much or too little, but the amount 'just right' is hard to define, let alone achieve. This is because no two doctors, patients, presentations, investigations, diagnoses or treatments are the same.

Uncertainty in medicine

Doctors live and breathe uncertainty all the time, particularly in primary care where access to investigations is rarely contemporaneous and the passage of time is used both as a diagnostic tool and therapeutic regimen. This grey area represents real life: patients not included in randomized controlled trials, clinical dilemmas outwith the evidence based and a land uncharted by most guidelines.

Overdiagnosis is the diagnosis of a disease in asymptomatic individuals who die of an unrelated cause (Welch et al, 2007). It was defined in the *BMJ* in 2002, and refers to the overinvestigation, overtreatment and inappropriate screening of healthy individuals (Moynihan et al, 2002). With disease-mongering by drug companies, use of secondary end-points in research trials and reductions in arbitrary diagnostic thresholds, the well are increasingly in an unmedicalized minority. This is not merely a philosophical construct – in the US alone, it is estimated that such overdiagnosis accounts for over \$200 billion (£128 billion) in waste as a result of unnecessary treatments (Berwick and Hackbarth, 2012).

Overdiagnosis is also driven by a fear of litigation, as of course there are risks of underdiagnosis, such as missing a cancer. But do we warn our patients of the potential harms of overdiagnosis, including complications from investigations, side

effects from medications and anxiety from false-positive results? Are we ultimately consuming resources that could be better spent treating the ill? Doctors and patients may feel that it is better to err on the side of overdiagnosis, just in case something, anything is missed, as more medicine is surely better?

Many 'diseases' are defined socially rather than pathologically; for example, use of medical treatments for infantile colic can be reduced through information about its symptoms and nature (Hudson et al, 2012) and others are actually risk factors for future disease, e.g. hypertension. But 21st century medicine has put many resources into the aggressive pursuit of aberrations, abnormalities and atypical findings.

One example is 'riskfactorology', an obsession with risk factors such as glycated haemoglobin, low-density lipoprotein and glomerular filtration rate without actually questioning whether altering these risk factors meaningfully reduces morbidity or mortality (Dixon et al, 2011). In primary care, the Quality and Outcomes Framework, linked to financial incentives, is driving this and understandably may be prioritized during consultations. In secondary care, there is no such incentive, but guidelines mean that specialists can find themselves focused on risk factors and biomarkers. As a result of this focus and unnecessary treatment of people who will not benefit, both generalists and specialists are failing to fulfil that part of the Hippocratic oath which states 'First, do no harm'.

Misplaced care

Other drivers to misplaced care must be examined. For example many key figures on guideline panels and high impact papers have significant and perverse conflicts of interest (Neuman et al, 2011). This is especially important because lowering thresholds for intervention will result in more testing, diagnosis and treatment,

and profits for the drug and device companies. Furthermore, medical charities, which champion and raise the profile of certain diseases, may receive funding from the very companies who benefit from diagnosis, appropriate or otherwise (Lenzer, 2003). Both groups often call for more funding, more research and more treatment for their chosen condition, but the potential for conflict of interest may not be clear.

Commercial screening companies offer full body magnetic resonance imaging studies after raising anxiety, putting profit before patients, with no mention of the lack of evidence supporting such an approach, let alone potential harms such as discovering incidentalomas (Al-Shahi Salman et al, 2007). Even governmental organizations such as NHS Choices are guilty of encouraging the healthy general public to attend non-evidence-based screening such as NHS health checks, which have not been approved by the UK National Screening Committee. While screening for many conditions increases diagnosis rates, this may not lead to a corresponding decrease in mortality (Welch and Black, 2010). Within the confines of a finite resource, such as the NHS, such programmes are held at the expense of addressing the real driver of disease, which is social inequality (Marmot, 2013).

Can we prevent overdiagnosis?

Campaigns such as 'Too Much Medicine' by the *BMJ* and 'Choosing Wisely' from the American Board of Internal Medicine are an attempt to raise awareness, stimulate debate and redress the balance by engaging with health-care professionals, patients and others. But the concept of overdiagnosis is still in its infancy, with a few vocal champions, many sceptics and little recognition among the general public or lay press. So, what can be done to bring about lasting and meaningful change?

An international and cross-specialty working group was recently held at the

Preventing Overdiagnosis 2014 conference and several themes emerged. First, it is clear that the momentum must come from the grass roots who need better evidence-based resources, which can empower doctors, particularly generalists, and their patients, with shared decision-making tools. Where guidelines are tainted with conflicts of interest or are unintelligible, they must be challenged and not simply accepted. Those in positions of authority, such as politicians or celebrities, must be contested if they champion non-evidence-based medicine. If there is evidence of doctors offering non-evidence-based interventions, which effectively put profits before patients, they need to be held to account and reported to their governing body.

There needs to be more research not only on the consequences of overdiagnosis, but using real patients to answer clinical questions, for people absent from clinical trials as a result of frailty, comorbidity or polypharmacy who, unsurprisingly, are not absent from the consulting room. Doctors need to talk to each other more, learning from each other's management of uncertainty and in turn, strengthening links between primary and secondary care.

Rather than pitting generalists against specialists or doggedly delivering medicine in silos, medicine must be holistic with the patient as the centre. Doctors responsible for teaching the next generation must lead by example by first and foremost listening to patients, finding out why they have presented now and what they are hoping to take away from the consultation. Patients, politicians and policy makers must realize that even the best doctors are not perfect

and it will not be possible to get it right all the time. Mistakes must be used to support and assist the practice of medicine, and not as a means to punish, as practicing in a climate of fear does not serve patients well.

Conclusions

Goldilocks intuitively knew when her porridge was too hot or too cold, but determining the right amount of medicine is not simply in the eye of the beholder. Doctors must strive to practice, research and communicate 'just right' medicine, with support of their patients and paymasters and without undue conflicts of interest or fear. **BJHM**

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KEY POINTS

- Overdiagnosis refers to the diagnosis of a disease in asymptomatic individuals who die of an unrelated cause.
- It is driven by fear of litigation, disease-mongering, diagnosis creep, non-evidence-based screening and vested interests.
- It results in unnecessary investigations, increasing incidence of incidentalomas and harms from unwarranted treatments.
- To tackle this problem, guidelines must be challenged, conflicts of interest declared and medicine no longer practised in separate silos.

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