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The lack of ontological awareness in evidence-based medicine allows overdiagnosis

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Objectives A problem with the approach of Evidence-based Medicine (EBM) is the current ability to only reduce but not prevent overdiagnosis. Overdiagnosis is broadly defined as 'making people patients unnecessarily, by identifying problems that were never going to cause harm or by medicalising ordinary life experiences through expanded definitions of diseases'. One aspect of overdiagnosis is *overdefinition*, such as lowering the threshold for treatment for a risk factor. A current example is the UK's National Institute for Health and Care Excellence (NICE) updated draft guidance for the diagnosis and management of hypertension in adults. The recommendations in the guidance are not evidence based and will increase overdiagnosis. However, EBM would be insufficient to avoid overdiagnosis even if this NICE guidance followed the principles. The objective of this study is to show why EBM is insufficient to avoid over diagnosis.

Method This study analyse the NICE draft guidance by the principles of following EBM guidance: Users' Guides to the Medical Literature by (Guyatt et al), Guidance for modifying the definition of diseases: A checklist (Doust et al), and EBM manifesto for better healthcare (Heneghan et al). The principles of these analyses are what the consequences would have been *if* the NICE guidance had followed these principles. The principles and consequences are then analysed for their epistemological and ontological properties to determine what kind of scientific theory that leads the current EBM.

Results EBM do not sufficiently assess the ontological aspect of a diagnosis. In the case of the NICE guidance, the ontological status of hypertension is primarily as a risk factor. A risk factor of such is a continuum with no clear boundary between normal (health risk small enough to be accepted) and pathological (health risk unacceptably high). Therefore, the diagnosis of hypertension is subject to the problematic *sorites paradox*. The original puzzle, from 400 BCE, is: how many times can we remove grains from a heap before we no longer have a heap? In this case, when a risk factor is accepted as a disease, how low a risk is low enough *not* to be a disease? EBM does not assess this problem. Instead, the present EBM is dominated by an epistemological approach, which legitimise any risk to become a disease, followed by the consequence of overdiagnosis.

Conclusions Due to lack of ontological awareness and epistemological dominance, the current EBM approach does not sufficiently address overdiagnosis. Increase awareness of ontological aspects is necessary. The NICE guidance for hypertension provides a good basis for a much-needed discussion about what possible ontological solutions could bring us closer to limiting overdiagnosis via EBM.

Oral Presentations

| 1 | USE OF THE MODIFIED EARLY WARNING SCORE (MEWS) TO PREDICT MICU READMISSION |

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Objectives Medical complications that result in patient readmissions to the intensive care unit (ICU) are known to be associated with increased mortality and length of stay. Scoring systems have been used in healthcare systems for decades to objectively assess a patient's current status and implement the appropriate interventions based on the score generated from physiologic variables that comprise each scoring system. The Modified Early Warning Score (MEWS) employs five physiologic parameters (systolic blood pressure, heart rate, respiratory rate, temperature, and level of consciousness) for scoring and has been an essential tool for the identification of deteriorating patients. The early identification of a deteriorating patient is essential to decrease ICU readmission, length of stay, and mortality. The purpose of this study was to determine if there is any association between the MEWS and medical intensive care unit (MICU) readmission within 72 hours of initial discharge.

Method This was a retrospective study that used patient data spanning a 40-day period from September to November 2016. After ethics board approval, we reviewed the electronic health records (EHR) of 50 adult patients admitted to and subsequently discharged from the medical intensive care unit (MICU) of an urban academic medical center located in the Midwestern United States. We manually extracted patient demographic data including patient age, gender, weight, height, and the admitting diagnosis. Clinical variables collected include the value of each parameter of the MEWS as well as the MEWS score calculated from physiologic data entered into the EHR twelve hours, six hours, and one hour prior to MICU readmission. Additionally, Acute Physiologic Assessment and Chronic Health Evaluation II (APACHE II) score was calculated for each patient. The extracted data was recorded in REDCap, a web-based HIPAA compliant research database.

Results

Results The median MEWS score calculated from physiologic data entered into the electronic health record (EHR) twelve and six hours prior to MICU readmission was 3.0 for patients readmitted to the ICU compared with a median MEWS score of 2.0 for their cohorts who were not readmitted. The median MEWS score one hour before MICU readmission for subjects readmitted to the MICU was 4.0 compared to a median MEWS score of 2.0 for their cohorts who were not readmitted to the MICU during that one-hour period. Mann-Whitney U test revealed that there was a significant association ($P = 0.013$) between MICU readmission and the MEWS score calculated one hour before ICU readmission. Additionally, logistic regression analysis showed that this MEWS score predicts MICU readmission (OR 1.8, 95% CI 1.14 to 2.72).