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Letter to the Editor

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Reply to the Letter to the Editor: There are Considerable Inconsistencies Among Minimum Clinically Important Differences in TKA: A Systematic Review

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To the Editor,

We thank Dr. Riddle and Dr. Dumenci for their insightful response [7] to our systematic reviews about the use of minimum clinically important differences (MCID) for patient-reported outcome measures (PROMs) after hip and knee arthroplasty [3, 4]. Much of their response focuses on inherent problems with the PROMS that have been commonly used in orthopaedic surgery, the limitations of MCIDs, as well as potential alternatives for determining meaningful changes. We agree with these observations and do not think further discussion of these issues is needed as this was not the thrust of our work. Rather, recognizing that MCIDs are commonly used to define clinically important changes, we sought to draw attention to the fact that there is no standardized methodology for determining MCIDs and no single consensus MCID for each commonly used PROM in hip and knee replacement. Below, please find our responses to the specific points that they identified.

The first distinct concern was the seemingly contradictory title, "considerable inconsistencies," despite reporting minimal variation in findings across the available evidence that we surveyed. We did find substantial MCID variability for different calculation methods for most PROMs; however, there was evidence that a majority consensus or clustering had been reached within calculation methods applied (anchor-based versus distribution-based) to new MCID calculations. In TKA outcomes, we documented a 39% (15 of 38) use of anchor-based methods, 32% (12 of 38) use of distribution-based methods, and 29% (11 of 38) use of both in MCID derivations [4]. Variability begins to emerge in the calculations of MCID within the constructs of these methods. Even after an anchor has been chosen, the means by which the MCID is calculated can vary. In Table 3 of our study [4], one can see that Clement et al. [2] utilized anchor-based methods to calculate the MCID for the SF-12 MCS and PCS using both receiver operating characteristic (ROC) curve method and an anchor question resulting in differing MCIDs. This is one example of the inconsistencies that encompass MCID calculations noted under the section titled "Derivation Methods of Anchor-based MCIDs."

The second concern raised was related to the impact of the abbreviated quote by Jaeschke et al. [5] that we used, as abbreviating that quote removed some context when applying MCIDs to varying populations. As the authors of the letter to the editor detailed [7], this is a flaw in the application of MCID as a single decision-making tool. We address the limitations of utilizing MCID; Bernstein et al. [1] noted that the MCID, the patient-acceptable symptom state (PASS), and the substantial clinical benefit (SCB) should not be considered mutually exclusive metrics. Regarding effect size, the interpretation of an MCID requires consideration of the

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meaningfulness of the clinical change, study size, and differences in variability [6]. Our review provides a repository of MCID values that can be used to find comparable study populations in which interquartile ranges, medians, and suggestions are applicable [4]. Our intent was not to endorse the MCID as the sole or best metric of effect size. However, given that it is one of the most widely reported metrics in orthopaedic research, we wanted to provide readers with a summary of these values.

We strongly recommended the use of anchor-based methods when calculating MCID as its derivation accounts for the patient's perspective. We found that a 5-point Likert scale was the most used anchor (16 of 40 studies) (Figure 3 in our study [4]), with MCIDs calculated by the mean change between pre- and postoperative scores in patients who improved. We provided suggestions for median MCID values on the basis that anchored measures are derived from the patient's interpretation of a clinically meaningful difference. In doing so, a 7-point increase after TKA can represent an MCID in numerous populations despite being ordinally scaled.

We welcome alternatives to MCID values, as we fully appreciate how different the reporting and calculation of MCIDs can be, and the problems that those differences can introduce. Dr. Wilson [8] underscores this astutely in her commentary on our paper: "…we need to critically evaluate (and re-evaluate) our chosen metrics to ensure we are maintaining reliability and integrity."

We again thank Dr. Riddle and Dr. Dumenci for their letter to the editor [7] underscoring the limitations of the MCID value. We value feedback on our work and hope our response provides clarity of purpose, reiterates our acknowledgement of the shortcomings of MCID values, and promotes further research of improved measures of effect size, such as the two alternatives proposed by Drs. Riddle and Dumenci [7]: the discrete latent variable framework and the smallest worthwhile effect.

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