Clinimetrics Corner: The Minimal Clinically Important Change Score (MCID): A Necessary Pretense

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What is a MCID?

Over the last 30 years, a number of patient-report outcome measures have been developed to directly involve and improve the participation of patients in the judgment of the benefit of care received. Standardization of patient-report outcome measures has improved our ability as clinicians to determine methods of care that provide better results when targeted at homogenous populations. Parallel in the advancement of patient-report outcomes measures is the development of the minimal clinically important difference score (MCID).

The term *MCID* was first described by Jaeschke and colleagues in 1989[1]. Their argument was that although statistically significant changes often occurred during use of instruments that measured change after intervention, in some cases the significant change had little clinical significance. Thus, their operational definition of a minimal clinically important difference was ". . . . the smallest difference in score in the domain of interest which *patients* perceive as beneficial and which would mandate, in the absence of troublesome side effects and excessive cost, a change in the patient's *management*." This definition involved two constructs: 1) a minimal amount of patient reported change and 2) something significant enough to change patient management.

There are a number of measures that mimic MCIDs, most notably the MID (minimally important difference), MCD (minimal clinical difference), or the MCSD (minimal clinically significant difference)[2]. Although similar in wording, these terms are actually very different in meaning and typically involve change values beyond the variations of the instrument. Generally, an MCID involves patient perception[3] but there are variations in the literature that lie outside patient report. Results have been tabulated through clinician report, through change in clinical parameter (e.g., disease state)[4], or through effectiveness of clinical intervention (effect size)[5,6]. Some calculations are based on baseline data from a patient, whereas others include only the last calculated finding[7]. MCIDs are calculated though a number of methods (as many as 9 methods)[3], some anchoring purely on external criteria, others involving the instrument used to measure internal values[6,8]. Unfortunately, MCIDs can vary widely depending on the method used[9]. At present, there is no standard as to how to calculate MCIDs, and this has led to or resulted in a number of methodological or interpretation problems[2].

Problems in Defining an MCID

There are a number of problems in defining a MCID, specifically those developed from patient report data. Often, the problem is associated with patients' inability to understand the context of improvement. For example, although patients are asked to report on changes from his or her initial baseline symptoms, he or she often reports a current state of health as a comparison against expectations[10] or against healthy counterparts[2]. Further, these retrospective judgments are subject to recall bias as the patients fail to truly remember the intrinsic nature of their prior condition[11-13]. Reflective of recall bias is the fact that patient report of "change" in their condition is more singularly related to their current health status

ABSTRACT: Minimal clinically important differences (MCID) are patient derived scores that reflect changes in a clinical intervention that are meaningful for the patient. At present, there are a number of different methods to obtain an MCID, as there a number of different factors that can influence the MCID value. This clinimetric corner outlines the hidden challenges associated with identifying a viable MCID and possible suggestions to improve the future development of these single scores.

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than most criteria that query the amount of change from a baseline value[11].

Baseline severity of symptoms can also influence the outcome of the MCID[4,7]. Simply stated, the MCID will vary depending on the variability of the health of the population ahead of time[14]. For example, we as clinicians can expect different MCID findings for the same outcome tool when examined on a population with cervical pain only versus a population of cervical pain and radiculopathy[14]. It's not only patho-anatomic elements that can influence MCID results. Other forms of patient variation that can influence report of change include descriptive factors such as age, socioeconomic status, or education[14].

There are also problems associated with the calculations of MCID. One problem is associated with the regression to a common mean during wide distribution of actual change score values. Instead of a definitive clinically important change score, analyses will result in an "average score" for the group. At the same time, patients may vary significantly from each other and although they may fall within the average score, whether that finding was specifically appropriate for them is questionable[6]. In essence, an MCID is required to function as a measure of responsiveness of a given instrument. However, the responsiveness is often less reflective of the property of the instrument itself and more reflective of the intervention used during the testing[12]. Further, a tool such as a global rating of change (GRoC), which is typically used as the anchor measure, may lack internal reliability and may demonstrate variability in outcome, even if the instrument being used is stable and valid[12].

The Dilemma

The variability in the nature and value of an MCID reflects the potential problems associated with unsophisticated development of MCIDs. As clinicians, what are we to do when faced with MCIDs that differ from our population characteristics or that were created in a questionable manner? Let's return to the two constructs of Jaeschke and colleagues[1] associated with an MCID. The first demands a patient report of outcome. This requires that the anchor measure is from the patient, something that is consistent with the development of present-day MCIDs. Subsequently, the measure of change must be reflective of a self-report measure from a patient versus a clinical finding or a statistical change. The second problem involves findings that are significant enough to change patient treatment. For example, how much patient reported change is beneficial? What is the best way to glean this query? How do we decide if the patient reported change is enough or not enough? This is the most controversial as a single MCID may "make or break" a treatment approach if used in ("make") or out ("break") of proper context. Improper determination of an MCID or development that has been tainted by the problematic concepts stated earlier may unwittingly increase our risks for error as clinicians.

Although no one would deny the benefits in pursuing MCIDs to aid in determining the quality of our interventions, it is worth recognizing that this concept is by no means stable. Beaton and colleagues[13] suggested recognizing the "elusive nature of the MCID," whereas others have claimed that defining the MCID is analogous to "discriminating the degrees of salty water"[8]. At this point, condemning an intervention because a group failed to meet the MCID may be short-sighted, as the weakness may be borne within the MCID versus the actual intervention. Recognizing this dilemma, Norman, Stratford, and Regehr[12] have suggested that we define a new line of inquiry determined a priori, where attributes of patients that are related to the likelihood of responding positively are prognostically stratified into responsive and stable groups. Sound familiar?

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