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Exploring How to Better Measure and Improve the Quality of Medication Reconciliation

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A robust body of research has documented the morbidity, mortality, and cost associated with adverse drug events caused by suboptimal medication reconciliation (med rec).¹ The Joint Commission has required med rec as a National Patient Safety Goal since 2005 for hospitals and ambulatory care organizations.^{2,3} In an article, “Measuring to Improve Medication Reconciliation in a Large Subspecialty Outpatient Practice” in this issue of *The Joint Commission Journal on Quality and Patient Safety*, Kern et al. report on the past several years of experiences of National Jewish Health (NJH) in addressing the Joint Commission's med rec requirements..⁴

Kern et al. found that a series of interventions developed and coordinated by an intermultidisciplinary team, which targeted physicians, nurses, and medical assistants, increased the occurrence of attestation of med rec from 9% of clinic visits in the preintervention period to 91% of clinic visits in the postintervention period ($p < 0.0001$). They also report on the basis of an exit survey given to a sample of patients increases in the percentage of visits for which a medication list was printed at the end of the visit (19% to 94%, $p < 0.0001$) and the percentage of patients who reported receiving a medication list at the end of the visit (52% to 67%, $p < 0.0001$). Documentation of providing a paper handout to educate patients showed an initial increase but then decreased to baseline levels in the postintervention period, which the investigators attributed to “poor buy-in and a highly redundant process.”^{4(p. 000)} Perhaps more importantly, and in recognition of concerns that requirements can incentivize attestation of med rec rather than actual med rec,⁴ the investigators also tracked two computable measures for assessing med rec quality. They found small decreases in the percentage of medication regimens with missing dose or frequency information (18% to 16%, $p < 0.0001$) and with duplicate albuterol inhalers (4% to 2.6%, $p < 0.0001$). The latter measure was customized to the NJH patient population, which has a high prevalence of pulmonary disease.

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NJH is to be applauded for this approach to addressing the Joint Commission's requirements. Beyond just complying with the letter of the requirements, they supplemented them with meaningful clinical measures, including the inhaler measure targeted to their own patient population. If all provider organizations responded similarly to every requirement and quality measure, our patients would benefit not only in the short term from compliance with the spirit of well-intended measures but also in the long term from the development and refinement of these measures as they became better aligned with optimal care. Other commendable components of the interventions described by Kern et al. include involving an interdisciplinary team, mapping existing work flows, identifying barriers to change, piloting initial changes with refinements made prior to spread, allowing clinic-specific customization while being mindful of overall goals, and using maintenance of certification and professional education credits to reward provider participation.

Just as Kern et al. sought to use their own experience and prior research to seek to address and even go beyond current Joint Commission requirements, it is incumbent on all of us to learn from this study. We recognize the limitations of current measures—and have previously discussed how requiring or incentivizing providers to document that med rec was performed can have unanticipated adverse consequences, especially if future providers erroneously believe a medication regimen to be accurate on the basis of such documentation.⁶ With these limitations in mind, and from the perspective of clinicians interested in improving quality assessment and quality improvement of med rec, we offer the following thoughts about how this study may advance the field.

First, regarding the two measures of the quality of the medication lists that Kern et al. deployed—(1) the percent of patients with one or more prescription medications in the medication list lacking dose or frequency information, and (2) the percent of patients with listed duplicate or equivalent albuterol inhalers—we believe there to be potential for the latter but not the former. Indeed, just as we have noted that incentivizing providers to attest that med rec has been completed without measuring the quality of med rec can cause future complications,⁴ we can foresee adverse consequences associated with reporting on the frequency of missing dose/frequency information. If this information has not been reliably ascertained, we believe that it would be better not to include it. In contrast, we foresee only rare circumstances in which medications within certain narrow and specific medication classes (for example, statins, proton-pump inhibitors) should be duplicated. Such medication classes might be best identified with accepted expert panel methodology.⁷ Although Kern et al. restricted checking for such duplication to albuterol inhalers, the use of a structured hierarchical medication vocabulary would allow for automated checking for duplication within several such classes. In fact, many electronic health records offer clinical decision support that checks for existing duplicates within a medication class any time a new medication is ordered.⁸ We believe this duplicate checking to be a feasible method for automated assessment of med rec quality and would support its consideration for more widespread application.

To be sure, there are more rigorous ways of assessing the quality of a medication regimen, although most of them would involve manual review and thus cannot be automated. Indeed, one of us [J.L.S.] has advanced such a measure to reliably track the effect of the quality of

med rec on medication orders placed at hospital admission and discharge.⁹ The measure—Number of Unintentional Medication Discrepancies per Patient—which is endorsed by the National Quality Forum—uses a pharmacist-obtained gold-standard medication regimen on a limited (and thus practically achievable) random sample of patients.¹⁰ Future study of med rec measures might follow the same blueprint by reviewing a representative sample of medication regimens. This method could be used in research to validate proxy measures, or at the beginning of a quality improvement effort to prove a measure's benefit.

Regarding tracking of medication list printing or patient surveys as a proxy for sharing medication regimens with patients and the difficulty of assessing patient education via attestation, as discussed by Kern et al., we believe that these methods are consistent with The Joint Commission's med rec requirements. Yet, we also recognize that these methods track only a subset of the components of the provider-patient interaction necessary for effective communication, which would include, for example, ensuring that patients understand the reason to take the specific medications, how to follow their medication regimen, as well as the medications' potential side effects is also critical. Furthermore, we appreciate the need to identify metrics that can be easily captured. Nonetheless, we would suggest that engaging a representative sample of patients to assess comprehension of their medication regimens might also be considered as a future method to more rigorously assess this facet of med rec quality.

In sum, the article by Kern et al. advances the assessment of outpatient med rec quality in several ways and sheds light on the development of future measures. Given the growing importance of med rec in an aging population that is continually prescribed more medications, as well as the complexity of implementing effective interventions to improve med rec, organizational leaders would be wise to go beyond minimal compliance with current Joint Commission med rec requirements. Forward-thinking leaders will recognize how developing and tracking complementary measures assessing med rec quality benefits both patients and providers. Researchers and quality measurement and improvement leaders will continually need to question and refine existing measures that assess med rec, as well as to advance the development of new measures that assess med rec in a more sophisticated yet feasible way. This will allow clinicians and provider organizations to be appropriately "credited" for the excellent work they do in med rec and will better harness the resources of our health care system to provide patients with excellent med rec, thereby avoiding untold numbers of preventable adverse drug events.

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