

Revisiting Conclusions on the Empiric Segmentation of High-risk Patients

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We would like to comment on the article “Empiric Segmentation of High-risk Patients: A Structured Literature Review” by Arnold et al published in the February 2022 issue of *The American Journal of Managed Care*[®] (*AJMC*[®]).¹ The financial burden of health care pushes clinicians, health plans, and policy makers to achieve better outcomes at lower costs. We agree with the authors that health care systems have successful processes to identify patients with high utilization/costs and the highest risk of poor outcomes. The challenge remains to identify patients with high cost and at high risk for whom actionable interventions will sustainably reduce costs and improve outcomes. Although we agree with several points made by the authors, we want to provide feedback on generalizations made regarding interventions for high-risk populations.

A key element for success in identifying a proper subset of patients is the refinement of tools that identify the trigger or inform how to modify processes through which specific conditions generate specific outcomes. We propose that addressing drug prescribing appropriateness is part of the solution. Although there are benefits of drug use, the increasing prevalence of polypharmacy increases the risk of adverse drug events (ADEs). Insight into why, how, and when preventable ADEs arise can inform health care providers about interventions that reduce the occurrence of ADEs. Addressing medication-related problems and polypharmacy represents an overlooked opportunity to identify high-risk patients.

The MedWise Risk Score (MRS) is a proprietary and patented medication risk score comprised of aggregated values for pharmacokinetic and pharmacodynamic factors.^{2,3} Developed using data from community-dwelling older adults—a population at high risk for chronic conditions and polypharmacy—the MRS uses drug information to identify risk factors related to medications.⁴⁻⁷ The MRS has been tested in ambulatory patients who had electronic health record data between 2011 and 2017 and received at least 1 medication, and results showed that the MRS was independently associated with mortality.⁸ We recently published research in a supplement to *AJMC*[®] about the MRS

TAKEAWAY POINTS

- ▶ There is no consensus on the best approach for using segmentation models with high-risk populations.
- ▶ There is only partial applicability of approaches used to empirically segment high-risk patients within the general population, based on clinical conditions requiring similar health care needs.
- ▶ Using drugs as an input variable in segmentation models may allow for individualized interventions in high-risk patients.
- ▶ We have demonstrated that the MedWise Risk Score can be used to improve outcomes for all patients taking medications, regardless of disease risk.

and Medicare patients that validated the association between the MRS and total medical expenditures, emergency department visits, hospital admissions, length of stay, and health outcomes, including ADEs, falls, and mortality.⁹

There is only partial applicability of approaches used to empirically segment high-risk patients within the general population and based on clinical conditions requiring similar health care needs. As reported by Arnold et al, applicability of data-driven segmentation for high-risk patients is influenced by input variables that directly inform the resulting interventions. Several segmentation models use diagnoses based on billing codes. As also indicated by Arnold et al, clinical conditions omitted from billing codes are underestimated when using this data source. Additionally, a delay in medical claims processing may affect real-time data availability; drug claims may reduce these biases. MRS stratification is agnostic of prespecified disease conditions and identifies high-risk patients based on their drug regimen. Using drugs as an input variable in segmentation models may allow individualized interventions in high-risk patients.

Although Arnold et al conclude that there is no consensus on the best approach for using segmentation models in high-risk populations, we have demonstrated that the MRS can be used to improve outcomes for all patients taking medications, regardless of disease risk. Although a patient may have low risk of negative

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outcomes based on prespecified diagnoses, MRS stratification identifies high-risk patients for whom pharmacist interventions may translate to better health outcomes. Therefore, the authors' assumption—that using patient data in high-risk populations has not been widely translated into risk-reducing interventions—merits revisiting. ■

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