

Iowa Medication Complexity Score (IMECS) is Shown to be a Reliable and Valid Tool

Initial Assessment of the Iowa Medication Complexity Score (IMECS)

Aaron McDonough^{1,2}, Randal McDonough^{1,2}, Michael Deninger², William R. Doucette¹
¹University of Iowa College of Pharmacy, ²Towncrest Pharmacy, Iowa City, Iowa

Objectives:

- To compare the new Iowa Medication Complexity Score (IMECS) to the standard Medication Regimen Complexity Index¹ (MRCI) for a sample of patients of a community pharmacy.
- Calculate the number of medication-related problems (MRPs) for patients classified as having low, medium and high complexity using the IMECS during 9 months of use.

Background and Methods:

Community pharmacists can utilize a stratification approach to classify their patients into strata to receive different services

The Iowa Medication Complexity Score uses an unweighted sum of five factors calculated from a 180-day lookback period:

- number of unique dates of dispensing,
- number of different different dosage forms for medications dispensed,
- number of high-risk medications dispensed,
- number of unique medications dispensed, and
- number of different prescribers of the medications dispensed.

The IMECS was calculated automatically in the pharmacy's clinical documentation system which pulls data from the pharmacy management system.

The MRCI is a weighted combination of three components:

- number of times a day medication is taken,
- number of different dosage forms, and
- number of times special directions are present.

This score was calculated manually using data drawn from the pharmacy dispensing system.

Sensitive to Pharmacist Services and Demonstrates Validity for Identifying Differences in Patient Medication Complexity

Medication-Related Problem	9-Month Rate/100 patients		
	Low Complexity N=617 patients	Medium Complexity N=277 patients	High Complexity N=125 patients
Medication nonadherence	298.1	552.7	696.8
Patient counseling indicated	152.8	201.8	239.2
Therapeutic duplication	123.3	220.6	319.2
Needs additional therapy (includes checked for vaccination)	98.5	88.1	70.4
High risk medication for patient 65+	30.5	66.1	76.8
Potential fall risk	39.9	41.9	41.6
Patient request/report (includes medication list request)	15.6	42.6	55.2
Meets criteria for CMR/eMTM (includes high medication complexity)	5.8	12.3	99.2
Drug-drug interaction	5.2	14.1	26.4
Other issue	6.2	8.3	24.0
Lab data needed	4.7	8.3	29.6
Drug allergy identified/reported	2.3	8.7	25.6
Unnecessary medication	5.0	5.4	13.6
TOTAL	787.9	1,270.9	1,717.6

Data:

Retrospective analyses used pharmacy patient records to calculate both IMECS and MRCI scores for a stratified random sample of patients for 2-month baseline and 9-month treatment period. At baseline, the sample included 25 from the low-risk group, 40 from the medium-risk group, and 60 from the high-risk group.

Also, medication-related problems (MRPs) identified in a service using the IMECS were extracted from pharmacy records and calculated for three categories of complexity: low, medium and high.

Results:

IMECS VS MRCI (N=113) Using paired t-tests, the MRCI showed a non-significant ($p=0.74$) change from baseline to treatment period (25.8 vs. 25.5), while the IMECS showed a significant ($p<0.01$) decrease (38.0 vs. 29.3).

- The IMECS & MRCI correlated significantly.
- The Cronbach alpha for the baseline IMECS was 0.68.
- For the 9-month treatment period, the number of MRPs/100 patients differed in the three complexity categories: high=1,717.6, medium=1,270.9, low=787.9 (see Table 1).

Conclusions/Implications:

This initial assessment shows that the IMECS is reliable, sensitive to pharmacist services and valid for identifying differences in patient medication complexity. As pharmacists move into population health management, having tools such as IMECS will help sort patients to receive appropriate services. Future use of the IMECS at other community pharmacies is encouraged.



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