Title: The EQUIPPED Potentially Inappropriate Medication Dashboard (EPIMD): A Suitable Alternative to In-Person Academic Detailing?

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Objectives: The Enhancing Quality of Prescribing Practices for Older Veterans Discharged from the Emergency Department (EQUIPPED) program is a multifaceted quality improvement (QI) initiative that combines education, clinical decision support (i.e., tailored geriatric pharmacy order sets), and individual audit and feedback (A&F) in an effort to improve appropriate prescribing to older Veterans discharged from the emergency department (ED) [1]. Individual A&F is delivered to participating EQUIPPED ED providers through in-person academic detailing. Although shown to be modestly effective at improving health outcomes [2], academic detailing is resource intensive, requiring the expertise of specially trained clinical specialists [3]. Here we describe development of the EQUIPPED Potentially Inappropriate Medication Dashboard (EPIMD); a passive, yet continuous A&F mechanism recently developed to potentially replace the in-person academic detailing component of the traditional EQUIPPED program.

Methods: The Veterans Affairs (VA) Corporate Data Warehouse, a national repository comprising data from clinical and administrative systems, serves as the underlying data source for the EPIMD. The backend architecture of the EPIMD was adapted from an existing reporting system: the VA Geriatric Scholars Program's PIM Dashboard. Both programs are informed by the American Geriatrics Society Beers Criteria® in identifying PIMs [4]. SQL Server Integration Services was the platform used in building the extract, transform, and load (ETL) data workflow. SQL Server Agent was used to automate and schedule our ETL process for repeated execution. SQL Server Reporting Services was used in producing the user interface and adding interactive functionality (i.e., drill down). The interface design was iteratively developed based on an initial set of core A&F elements decided on by the EQUIPPED team and then further refined after a beta-version was released to two active participating EQUIPPED sites. The production-ready version of the EPIMD was deployed to a secure SharePoint environment for end user consumption. A standardized monthly email delivery solution was integrated into the EPIMD ETL, prompting individual users to access the EPIMD.

Results: The following components were identified as necessary in order for the EPIMD to be a suitable A&F tool: Key Performance Indicators (KPIs), peer to peer benchmarking, individual patient/encounter drill down, educational decision support, and longitudinal performance tracking (see Figure 1). KPIs were included to help the end user determine if their current 30-day PIM rate was less than 5%; EQUIPPED's targeted threshold of optimal prescribing. The included KPIs also summarize prescribing performance by displaying the trending direction of an ED provider's PIM rate in comparison to the previous month and prior six-month average. Peer to peer benchmarking was included in the dashboard through visual representation of the end users 30-day prescribing performance relative to their colleagues at their site, serving as a catalyst for rapid-cycle improvements. Interactive drill down functionality allowed for the end user to identify any PIM they prescribed and the ability to review the encounter that triggered the prescription. Educational decision support elements were included within drill down views by displaying pharmacologic and non-pharmacologic recommended alternative therapies for each of the PIMs reportedly prescribed. Longitudinal performance tracking included visual representation of the monthly percent of PIMs prescribed, with a 1-year rolling look-back period. This ensured that prescribing performance could be reviewed prior to participating in EQUIPPED and during participation in support of continuous quality improvement. The EPIMD ETL data workflow executes nightly in effort to provide the end users with a near-real time experience, with the potential for daily A&F. Standardized monthly email templates include a snapshot of 30-day individual prescribing data informed by the EPIMD.

Discussion: In recent years, the VA has invested in the development of clinical dashboards to support and improve adherence to pharmacology-related clinical practice guidelines. However, in most cases, these dashboards have been designed specifically for academic detailers as the primary end users, enhancing their ability to identify actionable patients prior to interacting with providers [5]. To our knowledge, the EPIMD is the first information display of its kind with built-in A&F that has been developed for VA ED providers as the primary end users. The components found within the EPIMD align with important elements of A&F identified by the Cocharane systematic review group, including being based on credible measures that identify opportunities to improve with specific goals (i.e., PIM rate <5%) and information on specific patients/encounters, allowing providers to consider alternative prescribing options [6]. Further, information is delivered at regular intervals and endorsed by local ED leadership. The Cocharane systematic review group also suggests feedback be provided both verbally and in writing when optimizing effectiveness. Verbal feedback is a clear limitation of the EPIMD as a standalone A&F mechanism and written

feedback provided within the dashboard may go unnoticed if not consistently utilized. Due to this limitation, we chose to integrate an automated email system into the backend architecture of the EPIMD. The email system would serves as a reminder of the dashboard's availability and provides an additional source of recurring written feedback by incorporating summary prescribing performance data from the dashboard into a set of standardized email templates, delivered monthly. The chosen template of language emailed to each ED provider dynamically changes depending upon whether they have achieved a 30-day PIM rate of $< 5\%$. For example, in cases where the target PIM rate threshold is met, a congratulatory email template is automatically distributed.

Conclusions: We have developed a near-real time dashboard reporting system, supported by a robust ETL, capable of serving as a passive, yet continuous A&F resource for participating EQUIPPED sites. In addition, an automated email system has been integrated into the backend architecture of the EPIMD that provides a monthly summary of prescribing performance, praises end users for achieving a 30-day PIM prescribing rate of less than 5 %, and encourages ED providers to access the dashboard frequently. Further investigation is warranted in determining whether the EPIMD is a suitable alternative to active in-person academic detailing. In order to inform the optimal EQUIPPED strategy moving forward, the EPIMD will be leveraged in a formal implementation trial that will entail the randomization of multiple VA sites to either: 1.) traditional EQUIPPED with in-person academic detailing or 2.) EQUIPPED with passive A&F delivered through the EPIMD.

References

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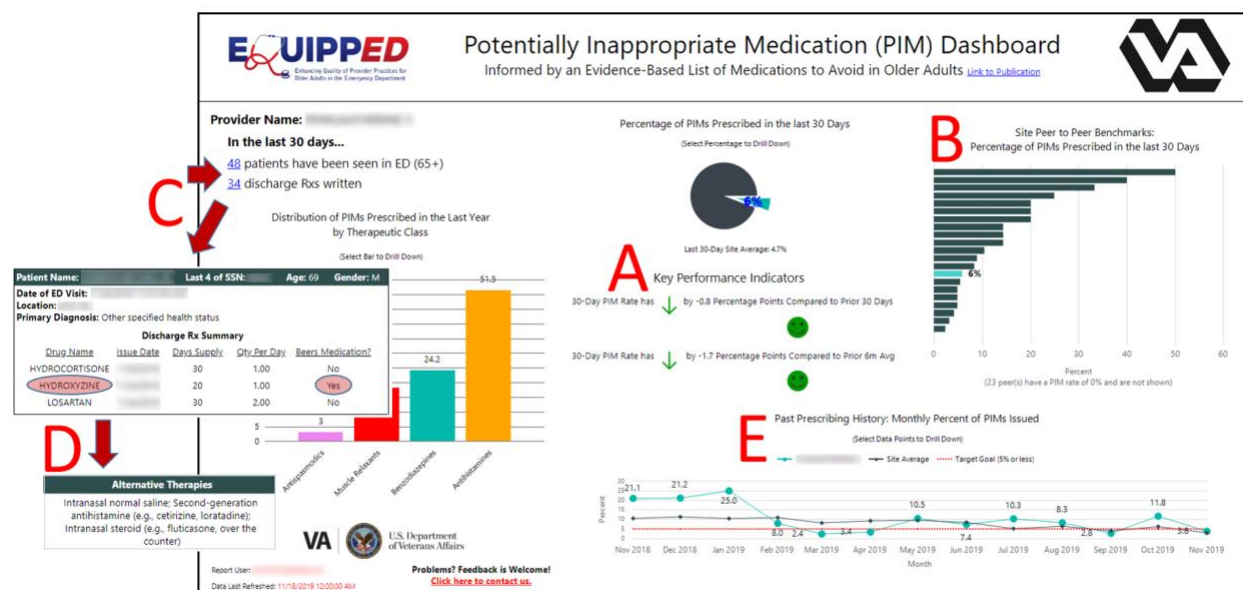
Figure 1. The A&F Components of the EPIMD: (A) KPIs, (B) peer to peer benchmarking, (C) individual patient/encounter drill down, (D) educational decision support, and (E) longitudinal performance tracking.