The Acute Respiratory Infection Quality Dashboard: A Performance Measurement Reporting Tool in an Electronic Health Record

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Abstract: Quality reporting tools, integrated with ambulatory electronic health records, can help clinicians understand performance, manage populations, and improve quality. The Acute Respiratory Infection Quality Dashboard (ARI QD) for LMR users is a secure web report for performance measurement of an acute condition delivered through a central data warehouse and custom-built reporting tool. Pilot evaluation of the ARI QD indicates that clinicians prefer a quality report that combines not only structured data regarding diagnosis and antibiotic prescribing rates entered into EHRs but one that also shows billing data. The ARI QD has the potential to reduce inappropriate antibiotic prescribing for ARIs.

Background: Partners Healthcare System has developed the Longitudinal Medical Record (LMR), an ambulatory EHR used across the Partners network. The LMR captures a variety of structured clinical data and includes such tools as charting, results management, referral management, and order entry. The ARI QD is a new report for the Report Central application, which is an integrated module of LMR that uses a central data warehouse and custom-built reporting tools. Leveraging the custom-built reporting solution of Report Central, the ARI QD provides information on antibiotic prescribing and billing practice patterns for the care of these acute conditions, with drill down capabilities to patients’ medical records within the LMR.

Features: The ARI QD contains detail views of a provider’s antibiotic prescribing and billing practice for ARI among adult patients. Each view displays a provider’s performance against his or her peer and against national benchmark, with reference to statistical significance of the provider’s results.

1. % of ARI visits with antibiotics: provider to peers to national benchmark comparison summary view.
2. % of ARI visits with antibiotics by diagnosis break-down: detailed comparison view of ARI visits with antibiotics broken down by diagnoses.
3. % broad spectrum prescribed in ARI visits with antibiotics: summary view of the proportion of ARI visits by narrow spectrum and by broad spectrum categories.
4. % ARI visits by level of service: summary view of E&M billing codes for ARI visits (e.g., level 1 through 5).
5. Patient visit detail: additional detail is available for, including date of service, antibiotic prescribed and date prescription entered/refilled, ICD-9 and E&M billing codes, and antibiotic spectrum category.

An LMR user can “drill down” to any patient’s medical record directly from the ARI QD report to take action(s), review patient detail and export the report to Excel for additional follow-up or analysis.

Design and Methodology: The ARI QD is delivered as another report type of Report Central, a secure and integrated Web report delivery tool, built using ASP.NET technology. The ARI QD report is constructed and viewed using Crystal Reports XI™, with data queried from the Quality Data Warehouse, which aggregates data from various sources at Partners. Crystal Reports XI™ software works well for designing static reports with limited drill-down capabilities. Extracting billing data from multiple sources is critical for quality reporting on acute conditions since these are typically single events and captured mostly through encounter forms.

Findings from Pilot Implementation: Twenty primary care providers evaluated the ARI QD during a ten-week pilot implementation. Pilot users evaluated the quality reporting tool on ease of use of the application and the usefulness of receiving feedback about antibiotic prescribing for ARIs. Usage data indicates that pilot users accessed the ARI QD to run reports to see how he or she performed on antibiotic prescription rates compared to his or her practice peers and against national benchmarks. Pilot data also indicated that clinicians found the ARI QD with information on diagnoses and levels of service billing data comparisons integral to understanding practice patterns for ARI. In addition, pilot users found it convenient to be able to pull ARI QD reports directly from the EHR system with relevant billing data, so that clinicians could validate the ARI QD reports with what was entered into LMR.

Conclusion: The ARI Quality Dashboard is a potentially useful feedback report for performance measurement of antibiotics prescribing and billing levels. Delivered as part of Report Central, it allowed providers to access the report and LMR patient records through one integrated application. Pilot evaluation results indicate that clinicians find antibiotic prescribing reports using both medications and billing data for ARIs useful and insightful. The ARI QD has the potential to reduce inappropriate antibiotic prescribing for ARIs.

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