Introduction

Medication adherence is an important factor for controlling medical utilization and cost, as well as improving outcomes and quality of life. Studies about consequences of non-adherence vary widely in methods, drug classes, populations, and outcomes. How much adherence matters, and how much is enough, varies by patient, condition, and drug. Furthermore, while often overlooked in research, adherence pattern is relevant. For example, taking a daily medication every other day is not clinically equivalent to stopping medication for 3 months. Similar to research on adherence consequences, results reporting the effectiveness of interventions show wide varying results. There are many different causes of medication non-adherence, including personal choices, access issues, and barriers to medication management. Unsurprisingly, the effectiveness of interventions on the root cause. Patient needs and quality of life must be central to the conversation in order to incentivize adherence.

This project is focused on measuring and describing patient medication adherence patterns and ultimately applying the data to inform clinical decisions, design intervention strategies, and improve patient outcomes. Our approach is structured in incremental stages, each designed to produce both immediately applicable results and support for future stages. We are currently finalizing Stage 3, and earlier stages continue to be refined.

Stage 1: Measure and Define Adherence Patterns

Goals:
1. Calculate medication adherence scores appropriate for a rolling time frame in a clinical setting
2. Design a graphic for a quick, intuitive look at adherence "big picture", encompassing both medication-specific adherence and patient-level patterns
3. Define patient-level labels that describe intervention-relevant adherence patterns in a few simple words.

Stage 2: Adherence Statistics and Relationships to Patient Outcomes

Goals:
1. Determine the distributions of prescription patterns and adherence behaviors in an Advocate population
2. Demonstrate meaningful relationships between adherence labels and health outcomes (proof-of-concept analysis)

Data
Medication adherence scores and labels were computed for the Advocate population of commercially insured patients (n=43,306) with at least one maintenance drug fill in the 180 day period from July 5, 2011 to December 31, 2011 (the last 180 days in 2011). This span covered 736,276 fills across 123,998 prescriptions. Drugs were not grouped by class or category. Outcomes data was extracted from claims with dates of service during the study period and the subsequent 180 day period, from January 1, 2012 to June 28, 2012. The included outcomes were number of inpatient admissions, number of ED visits, and total cost of care.

Goals:
1. Incorporate drug- and patient-specific information into adherence statistics on labels and outcomes
2. Collect clinical feedback on developed tools and concepts (beta-testing)
3. Determine the distributions of prescription patterns and adherence behaviors in an Advocate population
4. Establishing patterns of adherence across all prescriptions
5. Adherence calculation
6. Adherence calculation
7. Adherence calculation

Stage 3: Connect Patterns with Patient and Clinician Needs

Goals:
1. Incorporate drug- and patient-specific information into adherence statistics on labels and outcomes
2. Collect clinical feedback on developed tools and concepts (beta-testing)

Stage 4: Design Evidence- and Value-Driven Pilots

Goals:
1. Design adherence intervention pilots tailored to needs of target populations
2. Early Pilot: targeted interventions for highly adherent patients with high-opportunity outliers

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