BACKGROUND

- Medication synchronization, also referred to as the Appointment Based Model (ABM), aligns a patient’s monthly chronic medications to a pre-determined pickup date at the pharmacy.
- It was estimated that in the United States in 2014, 10% of independent pharmacies, 6% of stand-alone chain pharmacies, and 11% of other retail pharmacies (primarily mass merchant or grocery store) offered medication synchronization and these numbers continue to increase.
- Research has demonstrated that community pharmacy-delivered medication synchronization is associated with improved medication adherence. 3, 5
- A recent cost benefit analysis model indicated medication synchronization offers payers a positive return on investment, however further research is needed to explore the impact of medication synchronization on costs and outcomes. 6

OBJECTIVES

The primary objective of this study is to evaluate the association between the ABM and per-member-per-month (PMPM) total healthcare costs in a nationwide sample of Medicare beneficiaries.

Secondary objectives are to evaluate the association between:
1) Synchronization and outpatient, inpatient, and emergency department (ED) utilization
2) Synchronization and time to first hospitalization and/or ED visit following enrollment in an ABM program
3) Synchronization and medication adherence

METHODS: STUDY DESIGN

- This retrospective cohort study will analyze claims data using research identifiable files (RIFs) with data from up to 999,999 pharmacies not offering the ABM
- It was estimated that in the United States in 2014, 10% of independent pharmacies, 6% of stand-alone chain pharmacies, and 11% of other retail pharmacies (primarily mass merchant or grocery store) offered medication synchronization and these numbers continue to increase.
- Research has demonstrated that community pharmacy-delivered medication synchronization is associated with improved medication adherence. 3, 5
- A recent cost benefit analysis model indicated medication synchronization offers payers a positive return on investment, however further research is needed to explore the impact of medication synchronization on costs and outcomes. 6

METHODS: CONCEPTUAL FRAMEWORK

- The conceptual framework for this research is Andersen’s Phase-3 Model of Health Services Utilization 7 which associates three factors responsible for access to and use of health services. (Figure 2.)
- From the below factors, Determinants of Health Behavior will be used for propensity score matching of beneficiaries receiving medication synchronization through an ABM to a control cohort, with Health Behavior defining the cohort, and Health Outcomes being the primary and secondary outcomes.

Figure 2: Study Framework: Andersen’s Model and Proposed Study Variables

<table>
<thead>
<tr>
<th>Determinants of Health Behavior</th>
<th>Health Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal Health Practices</td>
<td>Perceived Health Status</td>
</tr>
<tr>
<td>Use of Health Services</td>
<td>Evaluated Health Status</td>
</tr>
<tr>
<td>Medication synchronization</td>
<td>PMPM healthcare cost</td>
</tr>
<tr>
<td>Medication adherence at six months</td>
<td>Outpatient visits</td>
</tr>
<tr>
<td></td>
<td>ED visits</td>
</tr>
<tr>
<td></td>
<td>Hospitalizations</td>
</tr>
<tr>
<td></td>
<td>Medication adherence at the cohort level</td>
</tr>
<tr>
<td></td>
<td>Consumer Satisfaction</td>
</tr>
</tbody>
</table>

Table 1: Research Identifiable Files Requested

<table>
<thead>
<tr>
<th>Master Beneficiary Summary File</th>
<th>File Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base Segment/Aged/Handicapped</td>
<td>2013 - 2015</td>
</tr>
<tr>
<td>Chronic Conditions</td>
<td></td>
</tr>
<tr>
<td>Other Chronic and Potentially Disabling Conditions</td>
<td></td>
</tr>
<tr>
<td>Cost and Utilization</td>
<td>2013 - 2015</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Utilization Data</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Inpatient Claims</td>
<td>Outpatient Claims</td>
</tr>
<tr>
<td>Carrier Claims</td>
<td>Home Health Claims</td>
</tr>
<tr>
<td>Skilled Nursing Facility Claims</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Part D Data</th>
<th>Part D Event Data with Drug Characteristics</th>
<th>Plan Characteristics</th>
<th>Formulary Characteristics</th>
<th>Prescriber Characteristics</th>
</tr>
</thead>
</table>

ABM PHARMACY IDENTIFICATION

- A national sample (n=2657) of community pharmacies was obtained (March 2015) from the ABP Foundation Align my Refills pharmacy locator webpage.
- From this list, National Provider Identifiers (NPI) were obtained for each of the pharmacies through the National Plan and Provider Enumeration System (NPPES) online registry.
- Student pharmacists made calls to individual pharmacies and corporate headquarters.
- To confirm the pharmacy was offering medication synchronization services
- To ascertain when these services began
- To determine if the pharmacy was delivering these services with the components of the ABM
- To verify the NPI was correct for each pharmacy

STUDY TIMELINE: IN PROGRESS

- Final paper submitted: 2014 and 2016 data have been updated to reflect enrollment
- Clinical pharmacy student volunteers helped with pharmacy information
- Paperwork will be sent to CMS Privacy Board once pharmacy variable requested (synchronization indicator) is confirmed
- Final Data Use Agreement (DUA) will be signed by CMS
- Investigators will submit DUA and study application to the Purdue University Institutional Review Board and purchase a computer isolated from the internet to house the data.
- After receipt of data:
  - Finalization of a “Data Dictionary”
  - Identification of the synchronization cohort
  - Construction of propensity scores and identification of a matched control cohort
  - Construction of linear mixed effects and multivariate models
  - Completion of data analysis using SAS 9.4
  - Dissemination of results
- Future research, including a prospective randomized control trial, is needed to examine the economic and health outcome effects of medication synchronization in populations that do not self-select enrollment in the service.

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DISCLOSURES

Dr. Snyder has received fees for serving as a consultant for Westfax, Inc. Drs. Lantaff, Zillich, Lourens, Murawski, Thomas III, Ott, and Ms. Jaynes report no financial relationships or potential conflicts of interest.

REFERENCES

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