

## Improving Medication Adherence and e-Prescribing in Puerto Rico

From 2015 to 2017, the TMF Quality Innovation Network Quality Improvement Organization (QIN-QIO) conducted a Special Innovation Project (SIP) to improve medication adherence in six Puerto Rico municipalities (San Juan, Carolina, Bayamón, Guaynabo, Trujillo Alto and Cataño), positively impacting 112,000 Medicare beneficiaries' lives. This project employs patient, physician and pharmacist education campaigns and technical assistance on e-prescribing for physicians to improve medication adherence rates for three chronic conditions: diabetes, hypertension and cholesterol.

### Project Overview

#### Intervention

Adherence to medications is particularly critical for the management of chronic conditions such as diabetes and cardiovascular disease. The goal of this project was to improve medication adherence education for patients, physicians and pharmacies, along with promoting physician e-prescribing, to affect both patient adherence and increase Medicare Star Ratings for Medicare Advantage (MA) Health Maintenance Organization (HMO) plans in Puerto Rico. The two key project interventions to achieve these goals included:

1. Patient, physician and pharmacist education campaigns for 50 pharmacies on medication adherence, led by the TMF QIN-QIO's community relations consultant based in Puerto Rico
2. Technical assistance on e-prescribing for 250 physicians to improve prescribing efficiency in the six identified municipalities through the TMF QIN-QIO's subcontract with Ponce Research Institute (PRI) as the former Health Information Technology Regional Extension Center

#### Quarterly Stakeholder Meetings

The TMF QIN-QIO team held seven quarterly stakeholder meetings throughout the life of the project in Bayamón, Puerto Rico. Local community pharmacies, large group practices, electronic health record (EHR) vendors, statewide associations and MA HMOs represented regularly at these events. Discussion points included review of outcomes data on pharmacies and low e-prescribing physicians and TMF QIN-QIO patient resources that help with some of these adherence and adverse outcome issues. These resources included *Know Your Formulary*, *Diabetes Zone Tool*, *How Do My Medicines Work?*, *Hypoglycemia and Hyperglycemia* and many others in culturally appropriate Spanish for Puerto Rico.

#### Pharmacy Visits

The team successfully recruited 60 pharmacies (10 more than the goal of 50) and conducted rotational visits to individual pharmacies every quarter throughout the project to provide updated pharmacy-level data on medication adherence rate (by patient, by prescriber and by MA HMO plan) and technical assistance on the medication adherence tools. The TMF QIN-QIO's on-site community relations consultant, who is a local resident

of Puerto Rico, made over 350 face-to-face pharmacy visits that have included the distribution of pharmacy data and clinical and patient tools in culturally appropriate Spanish for the island.

**Physician Visits**

The TMF QIN-QIO team identified (via Part D data and e-prescribing data from EHR vendors) the low e-prescribing physicians who were prescribing the three targeted medications. The goal was to identify, recruit and retain at least 250 of these physicians, and PRI, the local subcontractor providing technical assistance to physicians, was able to maintain 281 physicians throughout the contract period. PRI also made rotational visits and provided HIT technical assistance to ensure e-prescribing was functional for these providers.

**Tools**

TMF QIN-QIO identified, developed and delivered patient education tools via large print requests to multiple pharmacies in the six-municipality area. The team has produced or adapted other partner tools for clinicians and patients on the topic of medication adherence and chronic disease in culturally appropriate Spanish for the island, including topics such as controlling blood pressure, how to check blood sugar and prescribing guidelines. As of project end, the TMF QIN-QIO has distributed 45,400 medication adherence patient and clinical tools to the 60 pharmacies in six municipal areas.

**Partnerships with Pharmacy Associations**

Partnering with the three Puerto Rico pharmacy associations (Asociación Farmacias de Comunidad de Puerto Rico, CooPharma and Farmacias Aliadas) was a key facet of the project, as each of these associations has members among the 60 identified pharmacies in the targeted areas. As some of the associations do not have analytic staff, the provision of medication adherence data was a valuable asset in the organizational collaboration.

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## Recruitment

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In terms of a recruitment approach, the TMF QIN-QIO team aggregated Medicare Part D data by targeted area, pharmacies and MA HMO plans with the lowest medication adherence rates and highest beneficiary counts to identify pharmacies in most need of improvement. At project end, the recruitment goals for both participating physicians and pharmacies were surpassed (see Table 1).

**Table 1. Project Recruitment**

Recruitment in Targeted Area	End of Year 2	Current as of July 31, 2017
<b>Number of targeted physicians recruited</b>	250	281 (112% of goal)
<b>Number of pharmacies recruited</b>	50	60 (120% of goal)

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## Assessment

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For the analytic approach, the team monitored medication adherence rates for the six targeted municipalities using Medicare Part D claims for both managed care and fee-for-service beneficiaries. Community-level (via pharmacy-level reports) and physician-level rates were monitored on a quarterly basis. The medication adherence measures used in the project are defined as follows:

- **Medication Adherence for Diabetes Medication:** Defined as the percent of Medicare Part D beneficiaries who adhere to their prescribed drug therapy across classes of diabetes medications
  - This percentage is calculated as the number of enrolled beneficiaries with a proportion of days covered (PDC) at 80 percent or higher across the classes of diabetes medications during the

- measurement period (numerator) divided by the number of enrolled beneficiaries with at least two fills of medication(s) across any of the drug classes during the measurement period (denominator).
- **Medication Adherence for Hypertension:** Defined as the percent of Medicare Part D beneficiaries who adhere to their prescribed drug therapy for renin-angiotensin system (RAS) antagonists (angiotensin-converting enzyme inhibitors, angiotensin II receptor blockers or direct renin inhibitor medications)
    - This percentage is calculated as the number of enrolled beneficiaries with a PDC at 80 percent or higher for RAS antagonist medications during the measurement period (numerator) divided by the number of enrolled beneficiaries with at least two fills of either the same medication or medications in the drug class during the measurement period (denominator).
  - **Medication Adherence for Cholesterol:** Defined as the percent of Medicare Part D beneficiaries who adhere to their prescribed drug therapy for statin cholesterol medications
    - This percentage is calculated as the number of enrolled beneficiaries with a PDC at 80 percent or higher for statin cholesterol medication(s) during the measurement period (numerator) divided by the number of enrolled beneficiaries with at least two fills of either the same medication or medication in the drug class during the measurement period (denominator).

## Outcomes

The project goals for adherence were a 10 percent relative improvement rate (RIR) for “Recruited Physician Relative Improvement Medication Adherence” for diabetes, hypertension and cholesterol and a 5 percent RIR in “Community-wide Relative Improvement Medication Adherence” for diabetes, hypertension and cholesterol both by the end of the project (end of Year 2).

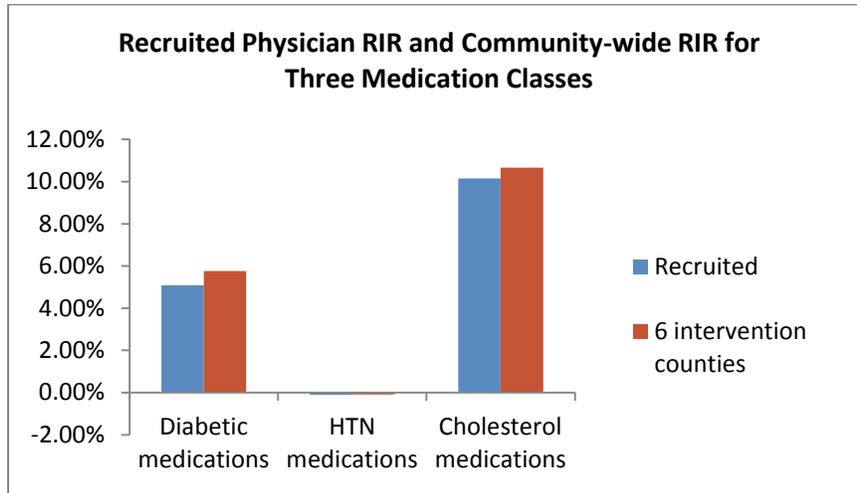
To accurately assess the adherence outcomes, the team had to account for the effect of initial inclusion of end-stage renal disease (ESRD) patients in the project population. Since medication adherence was measured based on the Medicare 2014 Part C and D Star Rating Technical Notes published by the Centers for Medicare & Medicaid Services (CMS), which originally included ESRD patients, the analyses were rerun. The final outcomes (excluding ESRD patients) are included in Table 2.

**Table 2. Project Outcome Measures**

Outcome measure excluding ESRD beneficiaries	Baseline (Jan. 1, 2014 – Dec. 31, 2014)	2015 Rate (Jan. 1, 2015 – Dec. 31, 2015)	2015 RIR (Jan. 1, 2015 – Dec. 31, 2015)	2016 Rate (Jan. 1, 2016 – Dec. 31, 2016)	2016 RIR (Jan. 1, 2016 – Dec. 31, 2016)	RIR Goal
<i>Recruited-physician</i> Relative Improvement Medication Adherence for <i>Diabetes</i>	71.63%	75.09%	<b>4.84%</b>	75.27%	<b>5.08%</b>	10%
<i>Recruited-physician</i> Relative Improvement Medication Adherence for <i>Hypertension</i>	76.56%	79.58%	<b>3.95%</b>	76.47%	<b>-0.11%</b>	10%
<i>Recruited-physician</i> Relative Improvement Medication Adherence for <i>Cholesterol</i>	62.60%	66.74%	<b>6.61%</b>	68.95%	<b>10.14%</b>	10%
<i>Community-wide</i> Relative Improvement Medication Adherence <i>Diabetes</i>	70.62%	74.10%	<b>4.92%</b>	74.69%	<b>5.76%</b>	5%
<i>Community-wide</i> Relative Improvement Medication Adherence <i>Hypertension</i>	76.52%	79.40%	<b>3.77%</b>	76.45%	<b>-0.09%</b>	5%
<i>Community-wide</i> Relative Improvement Medication Adherence <i>Cholesterol</i>	62.27%	66.60%	<b>6.95%</b>	68.91%	<b>10.66%</b>	5%

The team met the above stated goals for three of the six outcome measures (cholesterol medications in the recruited physician cohort, diabetes medications in the community and cholesterol medications in the community). Diabetes medications and cholesterol medications showed similar levels of improvement in both comparison groups. Hypertension medication showed little improvement in both comparison groups as shown in Figure 1.

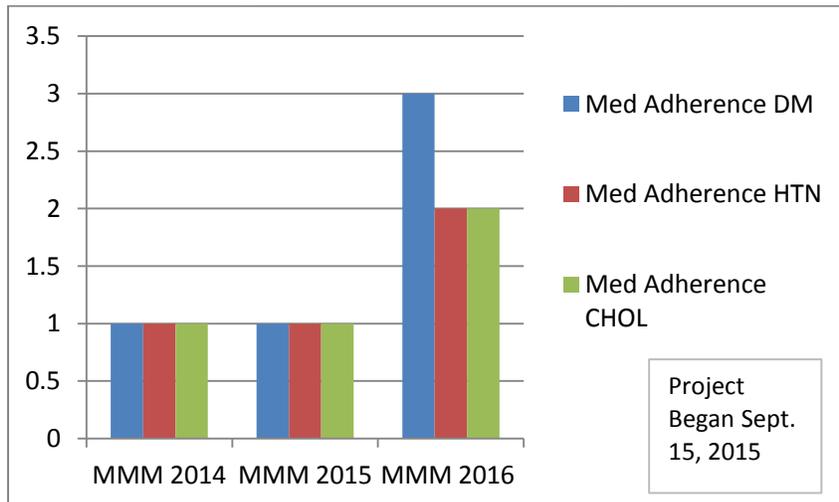
**Figure 1. Relative Improvement in Medication Adherence**



**Comparison of CMS Star Ratings for MA HMO Medication Adherence Scores**

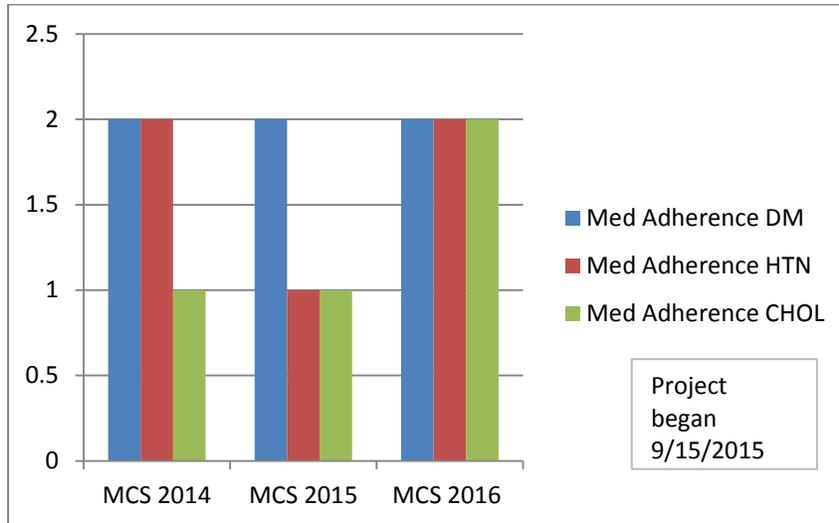
The team compared MA Five-Star Ratings over a three-year period for three MA HMOs in Puerto Rico (MCS, MMM Healthcare and Triple-S Management Corporation) that participated in the project, as these ratings evaluate the same drug classes (diabetes, hypertension and hyperlipidemia) that project focused on for improvement.<sup>1</sup> As shown in Figures 2–4, Star Ratings (1 star = poor, 5 stars = excellent) in all three chronic conditions improved during the 2016 project year.

**Figure 2. MMM MA HMO Star Ratings**

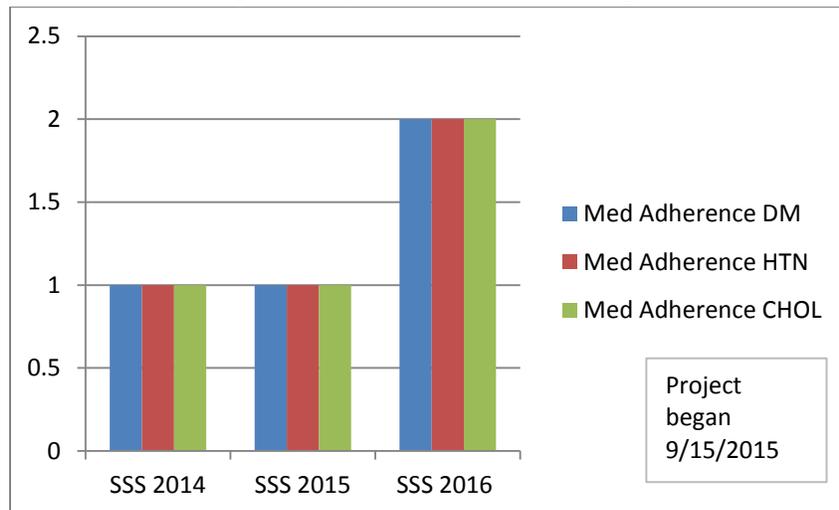


<sup>1</sup> Centers for Medicare & Medicaid Services. “Part C and D Performance Data.” <https://www.cms.gov/Medicare/Prescription-Drug-Coverage/PrescriptionDrugCovGenIn/PerformanceData.html>

**Figure 3. MCS MA HMO Star Ratings**



**Figure 4. Triple-S MA HMO Star Ratings**



In addition to the effect on medication adherence and Star Ratings of partnering MA HMO plans, the project affected a significant number of (unique) Medicare beneficiaries within both physician and community cohorts among all three chronic condition medication groups (see Table 3).

**Table 3. Physician and Community Beneficiary Cohorts**

Physician and Community Cohorts	Unique Medicare Beneficiary Count
Recruited low e-prescribing physicians prescribing diabetes medications	10,532
Recruited low e-prescribing physicians prescribing hypertension medications	28,388
Recruited low e-prescribing physicians prescribing cholesterol medications	23,585
Community-wide (for six municipalities associated with targeted pharmacies) prescribing diabetes medications	32,753
Community-wide (for six municipalities associated with targeted pharmacies) prescribing hypertension medications	85,978
Community-wide (for six municipalities associated with targeted pharmacies) prescribing cholesterol medications	71,731

## Discussion

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### Successes

In examining the project outcomes, this project had many successes affecting beneficiary lives in Puerto Rico. Both physician-recruited and community-wide medication adherence for cholesterol was significantly improved (greater than 10 percent RIR for both). Also, both physician-recruited and community-wide medication adherence improved for diabetes (RIR of 5.08 percent and 5.76 percent, respectively).

Moreover, MA Star Ratings on medication adherence for cholesterol, diabetes and hypertension improved from 2014 to 2016 for the three collaborating MA HMO plans (MCS, MMM Healthcare and Triple-S Management Corporation). The MA HMOs were active partners both in the quarterly and individual meetings and shared the mechanics of their incentive programs and successes and opportunities on their medication adherence projects. Communicating between the MA HMOs and their contracted pharmacies at quarterly stakeholder meetings helped drive up medication adherence rates in the communities.

In addition to MA HMO plan collaboration, the Puerto Rico community relations consultant's more than 350 face-to-face pharmacy visits were key to engaging and driving the community-based pharmacies to both participate and make improvements for their patients on the three identified medication groups for cholesterol, diabetes and hypertension.

### Lessons Learned

A number of unpredicted confounding factors are thought to have affected the outcomes of this medication adherence project in Puerto Rico.

#### *Economic Crisis*

The economic crisis in Puerto Rico continues to cause many physicians to leave for the U.S. mainland due to recent MA HMO physician rate reductions (one physician a day on average leaves the island) and significant economic issues (bankruptcy was declared for Puerto Rico in 2016). This has the downstream effect on patients of having a much smaller pool of primary care physicians to contact for prescription fills.

To compound the effect of a decreasing physician pool, the number of patients 65 years and older has increased 14.6 percent from the 2010 to the 2015 U.S. Census (546,885 to 626,962). Moreover, as of result of the economic crisis, smaller, privately-owned pharmacies continue to close, reducing the opportunity for prescriptions to be refilled at familiar locations by our affected communities and patients.

#### *Cultural Practices*

The team observed that patients in Puerto Rico often purchase medications without prescriptions if they 1) don't think a given medication will be covered on their insurance, 2) are uninsured and/or 3) cannot afford/did not pay insurance premiums. Consequently, these "ghost" prescriptions cannot be tracked and are not counted in the CMS Part D data.

With this observation, it is possible that the lack of improvement seen in hypertension medication adherence may have been affected by incomplete prescription claim data due to ghost hypertension medication prescriptions and/or refills. Though this practice of acquiring medication in Puerto Rico cannot be linked directly to hypertension medications, this is a cultural trend observed across multiple medication classes.