



Advancing High Performance Health

AMGA Foundation

Adult Immunization
Best Practices
Learning Collaborative
Case Study

*UMass Memorial
Medical Group*



Organizational Profile

UMass Memorial Health Care (UMMHC), a non-profit 501(c)(3), is one of the largest and most respected healthcare systems in New England. As clinical partner to the UMass Medical School, UMMHC has access to the latest technology, research, and clinical trials.

The massive UMMHC system encompasses:

- Four member hospitals on seven campuses, including the nationally recognized UMass Memorial Medical Center
- Six affiliated hospitals
- The Children's Medical Center, the only children's hospital in Central Massachusetts
- Five urgent care centers
- 1,700 physicians on its active medical staff, including more than 500 primary care providers (PCPs)
- 3,000 registered nurses
- 12,000 total employees
- 1,125 beds in its hospitals
- Three rehabilitation facilities
- 25 nursing homes

UMMHC's network of employed physicians—both PCPs and specialists—are part of a managed care network (MCN) that includes physicians in the UMass Memorial Medical Group and community-based physicians (employed and independent) in 22 communities in Central and Western Massachusetts.

UMass Memorial Medical Group has 2,200 employees, including 1,100 specialists and PCPs who serve as both practicing physicians and members of the UMass Medical School faculty. Of the 500 PCPs in the UMMHC network, 180 are employed as full-time PCPs at UMass Memorial Medical Group (hereinafter UMass). The medical group also employs 25 advanced practice providers (APPs).

UMass serves one million patients in Central New England and handles three million visits each year. Group members work in 80 community- and facility-based intervention sites, including the three Worcester campuses of UMass Memorial Medical Center.

UMass was formed in 1998 and today is the largest healthcare delivery system in Central and Western Massachusetts, with over \$450 million in revenue annually.

Executive Summary

Like many providers in today's healthcare landscape, UMass wanted to maximize the number of adults receiving annual immunizations for common preventable maladies. Adult immunizations are proven to prevent life-threatening disease and costly hospitalizations.

UMass joined the AMGA Adult Immunization (AI) Best Practice Learning Collaborative (AI Collaborative) as a way to learn and share best practices to drive immunization rates. Increasing the rate of adult immunizations could improve quality while lowering costs. Because of contracts with several payers, UMass needed a way to track quality measures to see any upside under value-based reimbursement. The work of the AI Collaborative was aligned with the work that UMass was already doing. The population health division as a whole at UMMHC was working on something similar—including HEDIS metrics—and had just initiated ACO/GPRO metrics for immunization, so the AI Collaborative was a good fit.

As one of seven care provider groups from around the country participating in the AI Collaborative, the UMass AI Collaborative targeted pneumococcal and influenza immunizations, with an emphasis on high-risk populations, as defined by the Centers for Disease Control and Prevention (CDC).

Leadership for the UMass AI Collaborative study came from an existing Population Health/Clinical Integration (PH/CI) group at UMMHC responsible for all system-level population health initiatives, including those related to commercial risk contracts, a Medicare ACO, and Medicaid payment reform programs.

The PH/CI group, led by Senior Medical Director Dr. Thomas Scornavacca, consisted of non-physician colleagues who provided data, analytics, and performance reporting support; practice and quality improvement facilitation; patient outreach; clinical documentation support; care management; and integrated information technology enhancement.

At UMass, this PH/CI group is tasked with the development of quality improvement clinical pathways. Dr. Scornavacca and his group also oversee a pod structure which encompasses

employed and independent physicians in the UMass Memorial managed care network and physicians in the UMass Memorial ACO.

The leadership team of the UMass AI Collaborative study (AI Team) included the following staff pulled from Dr. Scornavacca's PH/CI group:

- **Thomas Scornavacca, D.O.**, Senior Medical Director, UMass Memorial Population Health, Office of Clinical Integration
- **Francis Wanjau**, Manager, Practice Improvement, who oversees all practice improvement facilitator work as a resource to the practices
- **Pat Ramos**, Supervisor, Outreach & Coding, who oversees a team of outreach coordinators in-house to call patients on behalf of practices for target measure gaps
- **Tracey Wilkie**, Director, Population Health Reporting & Analytics, who oversees all performance reporting and analytics to drive strategy and quantify success

As a first step, the UMass AI Team reviewed current practices at UMass regarding adult immunization and identified opportunities for improvement in process flow. They developed an action plan to improve delivery of immunizations across all populations, with special attention to high-risk patients.

At the end of the AI Collaborative intervention period, UMass had improved both pneumococcal and influenza immunization rates in all categories.

Program Goals and Measures of Success

Collaborative Goals

Before establishing goals, baseline data for each group was reviewed by Optum Analytics and immunization rates were calculated. After reviewing national goals and available national data, and with input from the Collaborative advisors, goals were set for the AI Collaborative.

The minimum goal was based on the CDC National Health Interview Survey (NHIS) estimates of national immunization rates for 2012-2014 time periods (the most recent available at the time). Pneumococcal immunization rates in the NHIS were 59.9% for adults aged ≥ 65 years. For adults aged 19-64 who

were determined to be at high risk for developing invasive pneumococcal disease, NHIS rates were 20.0%.¹ For influenza, NHIS immunization rates for adults aged ≥ 19 years were reported to be 43.2%.²

Healthy People 2020 goals from the federal Office of Disease Prevention and Health Promotion (HP2020)³ were selected as challenge goals or goals on the high end. HP2020 goals are: Adults aged ≥ 65 years Pneumococcal 90%, High-Risk Pneumococcal 60%, and Influenza 70%.

A "stretch" goal was established between each group's baseline and HP2020. The stretch goal was set at 50% of the gap between baseline and HP2020. Where one stretch goal is reported for all groups, it is based on the median.

UMass Goals

Internal goals were centered on the following priorities:

- Improving rates of adult immunizations across UMass patient population by the end of CY2015
- Learning how to adapt and target reporting to improve specific measures
- Determining which opportunities the UMass system has in place to influence performance at practice sites, specifically with regard to:
 - o Patient outreach
 - o Patient education
 - o Provider education

UMass reviewed current processes and analyzed external resources to identify opportunities for improvement to its internal systems already in place. UMass established additional goals for its AI Collaborative study:

- Educating the providers and staff on the CDC and ACIP recommendations for adult pneumococcal and influenza immunizations, with particular emphasis on high-risk populations
- In select practices, providing additional resources for patient outreach and education using PH/CI outreach coordinators
- Building in training on how staff could input and collect data on immunizations received outside UMass.

One of the goals above was that providers and staff would receive education regarding the adult immunization recommendations from the CDC and ACIP, including the definition of high-risk patients. Although there was considerable variability among UMass providers with regard to the definition of high-risk patients, variability was allowed in up to 20% of the patients thus categorized, as long as the majority (or 80%) received the vaccine as indicated.

Data Documentation and Standardization

At the initiation of the AI Collaborative, Optum One analyzed the potential immunization EMR documentation sources for the groups in this collaborative and determined that immunizations were captured in:

- Rx Tables
- Rx Patient Reports
- Immunization Tables
- Health Maintenance Tables
- CPT/G codes
- ICD-9 codes

Significant variation in documentation patterns can be seen across groups, resulting from variations in EMR provider and configuration, immunization documentation protocols, and adherence to documentation protocols. For the groups in the AI Collaborative, pneumococcal and influenza vaccinations were most commonly documented in Immunization Tables, Health Maintenance Tables, and CPT/G codes. The least commonly used sources for documentation among the groups were Rx Tables and Rx Patient Reports.

For the AI Collaborative groups that demonstrated documentation between multiple sources, such as UMass, the Optum team provided this data so that groups could determine a standardized documentation best practice internally.

UMass likewise used Optum One to measure potential areas of immunization documentation sources. Optum One generated data to show which documentation sources were most commonly used and those least utilized. Information was delivered to UMass to help determine and implement standardized documentation practices.

The UMass AI Collaborative team leveraged the Optum One data to choose point-of-care metrics that had the broadest populations and could remain agnostic of payer/project:

- Developed and implemented a population health flow sheet for all metrics
- Worked with UMass IT to ensure items were discrete data points
- Ensured mapping with LOINC/MEDCIN codes properly picked up by the clinical decision support tool
- Created educational materials as part of a population health toolbox used by UMass as value-add to primary care practices

Population Identification

The UMass AI Collaborative study involved 135 primary care locations and 350 full- and part-time PCPs in Central and Western Massachusetts. *(Since the Collaborative, the number of PCPs in the MCN has grown to include more than 500 employed and independent PCPs.)*

All eligible patients received the same point-of-care reminders for needed immunizations. The interventions were not limited to targeted AI Collaborative groups. Reported results, however, are specific to the target groups for purposes of the AI Collaborative.

This population encompassed all the primary care services within the entire network, including private PCPs with independent practices, PCPs in health centers, and PCPs employed by UMMHC, as well as community practices.

Intervention

The first UMass intervention that impacted the work of the AI Collaborative began in 2012, the year UMass as an entity decided it was time to work on healthcare reform, improve quality, and think about issues from a population health perspective.

Before that, UMass was specialty focused, concentrating on high-tech specialized care.

What UMass needed was a credible means to help its primary care base understand the premise behind how population health works and yet maintains a patient-centric flavor.

Considering the size of their healthcare system and the inertia involved, there were difficulties inherent in changing direction. It was like turning the Titanic.

Over time they built a team focused on population health, with deliverables to PCPs to help them understand the new way of looking at population health and quality metrics, as well as a way to visualize performance reporting that was actionable. The questions were: What could UMass provide to the doctors that they would use, not dismantle, and take action to improve patient care? What would be a credible, quality-driven initiative that would help them care for patients? Physician engagement is the most important piece in any population health initiative.

UMass built reporting platforms and a physician engagement network and infrastructure, so they would not have to start from scratch for every idea or project. It had to be designed with the idea that PCPs would be the end users. The population health gurus could strategize, data crunch, and use analytic and logic, but to the end user—the PCP—it had to be patient-centric and present data as clean, actionable, up-to-date, and as close to real time as possible.

UMass participation in the AI Collaborative was a natural progression of this work that was underway.

Several interventions were designed to improve rates of adult immunizations across UMass' patient population by the end of CY2015. The team sought to determine opportunities with the infrastructure UMass had been building to influence performance at practice sites, specifically with regard to patient outreach, patient education, and provider education.

Highlights included:

- As an ACO (effective January 2015), UMass was using the NQF measure standard associated with that program for entire adult population.
- Data on immunizations was collected during primary care office visits and entered into the EHR, claims, state registries, etc.
- Adult immunization interventions were incorporated into the existing population health management and quality improvement infrastructure, including:
 - o Patient Care Registries identifying evidence-based gaps in care for the entire primary care panel (patient- and practice-centered)

- o Outreach coordinators to schedule patients for services when practice resources are insufficient
- o Practice Improvement Facilitators (PIFs) who work with physicians and practice staff on workflow redesign and education
- o Transparent performance reporting and customized population health analytics, integrating claims and clinical data
- o Physician leadership structure including medical director and primary care “pods,” each with a physician leader

The interventions for the AI Collaborative involved adding to or improving communications within the existing Population Health/Clinical Integration infrastructure that UMass had been developing for three years prior to the AI Collaborative.

Communication with the population of PCPs involved point-of-care reminders built for the physicians and embedded in the electronic health record (EHR). The physicians and staff had previously received training on how to use the dashboard, to determine which gaps should be met during patient visits. However, information on immunizations had not previously been included on the dashboard.

Specifically for flu and pneumonia vaccines, as part of the AI Collaborative interventions, the gaps were provided on the dashboard for all ages and populations, not just for adults and high-risk patients. Reporting, however, for purposes of the AI Collaborative was focused on the targeted groups and age ranges.

The PH/CI team trained staff to enter vaccines into the EHR system—including information received from other physician offices, hospitals, or pharmacies—to convert the information into discrete data in the flow sheet.

The PH/CI team also used gap reports on a monthly basis—to do outreach to lists of patients who had not been seen at all—and those gap reports included all preventive care they should receive, at a minimum, including immunizations.

Also, UMass deployed what they consider their “boots on the ground” in the practices: Practice Improvement Facilitators (PIFs). PIFs were utilized to teach providers how to deliver the messages and to provide training and tools, including the downloading and regular use of tools (e.g., CQS, a clinical decision tool).

For the AI Collaborative, the PH/CI outreach coordinators, in select practices, scheduled appointments via phone. The outreach coordinators at the practice level are often used as a resource for patient outreach, and they were used selectively in the AI Collaborative study to drive targeted immunizations.

As part of the AI Collaborative, there were initiatives developed by health centers where the staff voluntarily organized “wellness clinics” (e.g., a Saturday where people could walk in unannounced and get immunizations, as well as blood pressure checks, mammograms, etc.).

UMMHC hospitals already had initiatives in place and were offering flu and pneumonia vaccines to all patients admitted.

Outcomes and Results

- Leveraged current physician engagement infrastructure for education and reporting
- Aligned all population health work to be agnostic of payers and programs
- Implemented clinical decision support at point of care
- Results from Optum One measurements:
 - o Pneumococcal immunization rates for patients 65 years and older increased from 60.6% at pre-intervention period to 80.2%
 - o Pneumococcal immunization rates for high-risk patients 19–65 years increased from 26% at pre-intervention period to 31.6%
 - o Influenza immunization rates for entire test group increased from 40.5% from July 2014 to April 2015 to 43.4% from July 2015 to April 2016, exceeding the Collaborative average intervention period vaccination rate for the 2015–2016 flu season (37.3%)

Optum One measurements allowed UMass to expand practices from the AI Collaborative focused on adult immunizations to other initiatives.

Lessons Learned and Ongoing Activities

Most of the AI Collaborative interventions used by UMass in this study involved “piggy-backing” onto the existing infrastructure at UMass. That existing infrastructure for physician engagement has enabled the medical group to be agile strategically, develop leadership roles throughout the network, and provide common ground for a widespread network of employed, academic, and independent providers to work toward a system of truly well-coordinated care.

Leveraging an infrastructure that was built in an agnostic way to achieve all population health goals—and using that infrastructure successfully to achieve the AI Collaborative goals—only confirmed the importance of building the infrastructure in the first place.

The key to success is a strong core structure of PCPs engaged in care pathways bi-directionally. Pivotal changes can be accomplished once that core is in place, but first an organization must build its infrastructure. The PCPs need a support team. Small groups need the support of a larger organization.

This is more about building a culture and a data system for the purpose of delivering high-quality services

The links between patient experience, patient-reported outcomes, and patient engagement are a vital piece to the population health puzzle. In order to provide actionable accurate data to providers and healthcare systems, the alignment of quality metrics is essential to reduce the complexity of work at the point of care. Furthermore, the adoption of unified metrics at the payer level across the nation should be the primary focus of the new healthcare environment, inclusive of patient experience, patient engagement, and patient reported outcomes.

The PH/CI group at UMass and the data-driven, physician-led, patient-centered infrastructure it has built helped guide this work to maintain the patient at the center of care without losing the physician voice.

Physicians at the point of care must be provided with data that is patient-centered and actionable. Data has to be accurate and real-time. Results of interventions must be transparent.

Focus and concentration on any given topic or initiative will wax and wane. The battle is to consistently remind the front-line healthcare providers to refocus their energies on topics as priorities develop or change.

Provider engagement for the AI Collaborative was consistent; it did not increase or diminish at any point during the study. With physicians being bombarded with so many regulations, demands, new information, etc., regular communication and reinforcement is essential.

Communication avenues must become regular and expected. For example, take patient care registries for gaps in care that the staff use for pre-visit planning (including immunizations). The PH/CI team has made it an integral part of the point-of-care delivery system, so much so that if the registry is not delivered regularly on Fridays at 12, staff will now take the initiative to request it—which demonstrates that staff has developed a dependency on the registry.

True of all Collaboratives is that benchmarking against peers is the main driver of participation and offers the most meaning. Organizations are prompted to ask themselves: “Compared to similar systems, how are we doing in comparison? How can we learn from those who are doing things differently, or even outperforming us in certain areas? How are they doing it? Likewise, what can they learn from us?”

In the course of the AI Collaborative, it became apparent to the UMass AI Team that providers and administrators can use different approaches and be equally successful. So, in a sense, there are no “best” practices. Different approaches work for different communities and different providers. The lesson is not to concentrate on one particular way, but rather to view provider input, engagement, and acknowledging workflow as key.

What might UMass have done differently? Perhaps the AI Team could have considered:

- Initiating education and outreach prior to developing performance reporting and clinical decision support tools
- Developing ideas for effective provider engagement prior to roll-out simply because moving large initiatives onto provider groups does have more inertia than expected
- Tracking relative increases in immunization rates for practices that had additional resources (like PIFs assisting

with patient outreach) or practices that incorporated special events (like wellness clinics), asking the question: “Do target practices given more resources outpace the performance of the entire network?”

Ongoing Activities

UMass is currently seeking to more closely align its healthcare system with the community—to include leveraging community resources to help with marketing and awareness around healthcare issues. UMass could thus solidify its relationships and connections and bring outside resources in order to support internal or community-wide initiatives that would ultimately benefit patients.

In August 2016, UMMHC sponsored a community resource summit inviting over 60 guests representing issues that impact patients—issues such as food, money, and housing. An important lesson learned from peers in the AI Collaborative was that UMass had to leverage the care it was providing to patients in the community in a much more extended continuum of care. UMass had to go outside the walls of the clinical system and develop relationships with grassroots community service groups like the Asian Coalition, the food bank, etc.

Also, in the PH/CI infrastructure, there are now more than 73 distinct measures that are “in focus,” including outcome measures (diabetes, cardiovascular disease), prevention (cancer screening), and patient experience (PROMs, engagement, etc.). All performance reporting/registries are grouped together and are essentially “seamless.” Keep in mind that, to the end user, each of these initiatives is not an initiative. Instead it should be experienced as ongoing and simply a part of the focus, as a whole, on improving population health.

For the providers, in particular, it should be seen as one more way to improve patient care, one patient at a time.

UMass now has more than 500 PCPs in the MCN—full-time and part-time, employed and independent—and is growing rapidly. UMass is “moving the masses,” indeed, but the individual provider is still patient-centric and patient-driven. The PCPs are beginning to understand that in concentrating on each of these goals—patient by patient by patient—it is cumulative and matters in the overall scope as well as in the individual patient’s case.

Ideally, systems can be designed so that providers can be given small goals related to their patients. That is the concept that is laced throughout what UMass does. The provider is a practicing physician, and that is the priority for most of them. Above all, they do not want to lose that connection with their patients—providing care to the people who rely upon them.

Future Steps

UMass is in the process of building/implementing Epic as its EHR. One of the goals with Epic's implementation is to take what was learned in the AI Collaborative and build changes into the workflows of the new system with point-of-care reminders and best practice alerts. UMass hopes to discover and take advantage of prebuilt design components from other Epic users. Epic roll-out is anticipated for October 2017.

References

1. Williams WW, Lu, PJ, O'Halloran, A, Bridges, CB, Pilishvili, T, Hales, CM, & Markowitz, LE. (2014) Centers for Disease Control and Prevention (CDC). *MMWR MorbMortal Wkly Rep.* 2014;63(5):95-102 <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6305a4.htm>.
2. Williams, WW, Lu, PJ, O'Halloran, A, Kim, DK, Grohskopf, LA, Pilishvili, T, Skoff, TH, Nelson, NP, Harpaz, R, Markowitz, LE, Rodriguez-Lainz, A, & Bridges, CB. (2016) Surveillance of Vaccination Coverage Among Adult Populations — United States, 2014; *Surveillance Summaries / February 5, 2016 / 65(1):1–36* <http://www.cdc.gov/mmwr/volumes/65/ss/ss6501a1.htm>.
3. Office of Disease Prevention and Health Promotion (ODPHP). Healthy People 2020. <https://www.healthypeople.gov/>.

Acronym Legend

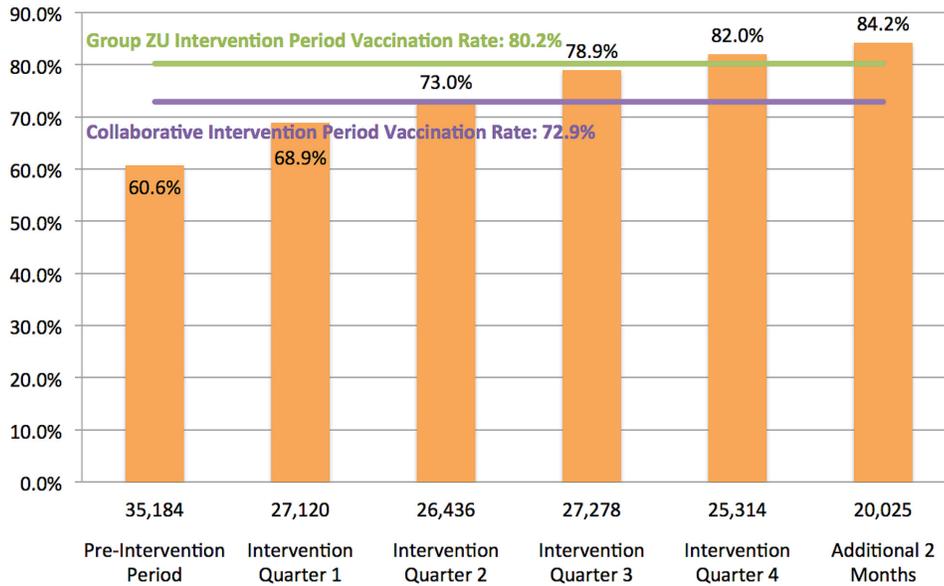
- ACIP:** Advisory Committee on Immunization Practices
ACO: Accountable Care Organization
AI Collaborative: AMGA's Adult Immunization Best Practices Collaborative
AI Team: UMass Adult Immunization Best Practices Collaborative Team (drawn from PH/CI team)
APP: Advanced Practice Provider
CDC: Centers for Disease Control and Prevention
CMS: Centers for Medicare & Medicaid Services
CQS: Continuous Quality System in Allscripts
EHR: Electronic Health Record
GPRO: Group Practice Reporting Option (GPRO) Web Interface for ACO reporting to CMS
HEDIS: Healthcare Effectiveness Data and Information Set from NCQA
HP2020: Healthy People 2020
LOINC: Logical Observations Identifiers, Names, Codes
MEDCIN: A system of standardized medical terminology
NCQA: National Committee for Quality Assurance
NHIS: National Health Interview Survey
PCPs: Primary Care Providers
PH/CI Team: Population Health/Clinical Integration Team at UMass
PIFs: Practice Improvement Facilitators employed as part of UMass PH/CI Team
PROMs: Patient-reported Outcomes Measures
UMass: UMass Memorial Medical Group
UMMHC: UMass Memorial Health Care (umbrella organization)

Intervention Period Definitions

- Pre-Intervention: 03/01/2013 - 02/28/2015
- Quarter 1: 03/01/2015 - 05/31/2015
- Quarter 2: 06/01/2015 - 08/31/2015
- Quarter 3: 09/01/2015 - 11/30/2015
- Quarter 4: 12/01/2015 - 02/28/2016
- Additional 2 Months: 03/01/2016 - 04/30/2016
- Intervention Period: 03/01/2015 - 04/30/2016

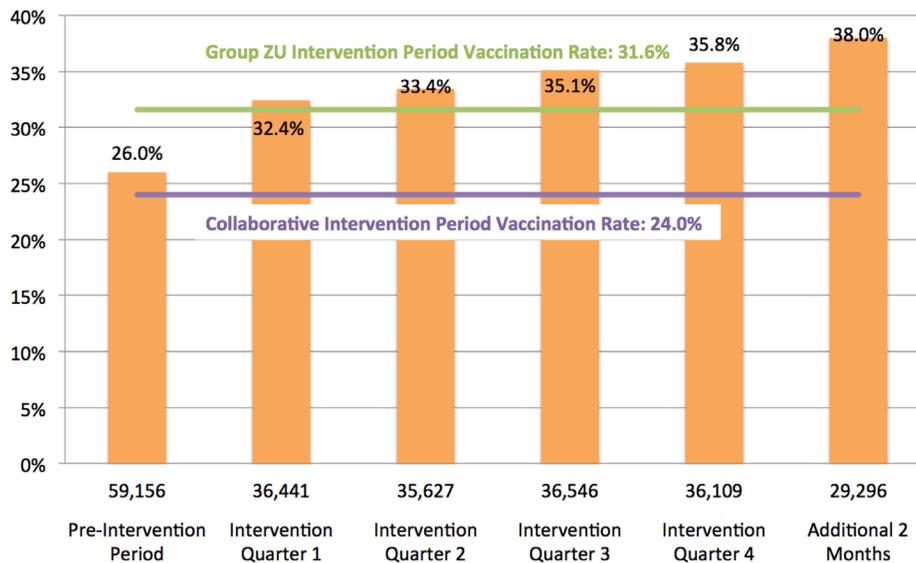
Figure 1: UMass AI Collaborative Results: Pneumococcal Vaccines

**Group ZU: Pneumococcal Vaccine Rates
(Any PV, Age 65+) Multiple Periods**



Net Change in % Patient Vaccination Rate (Pre-Intervention to Intervention): 20%

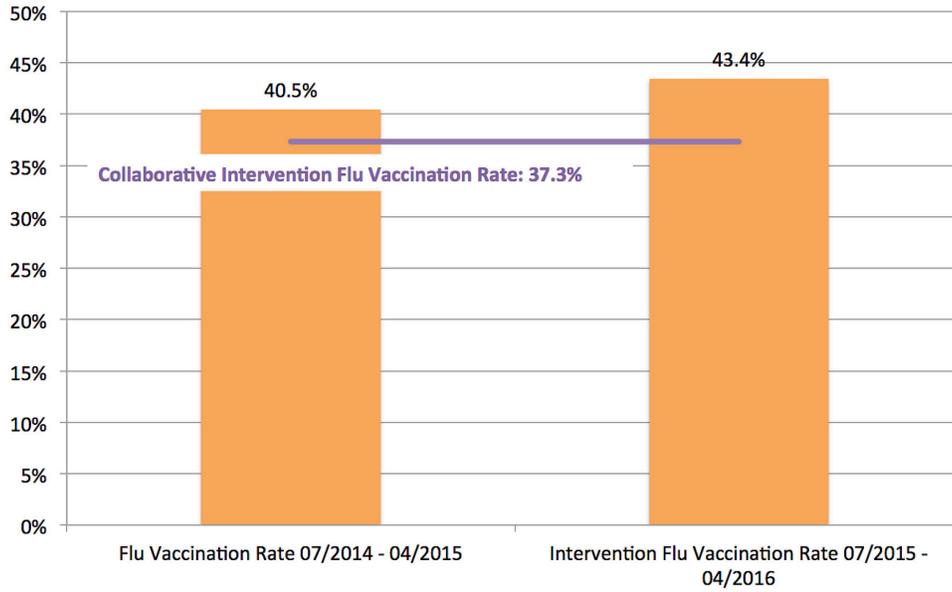
**Group ZU: Pneumococcal Vaccine Rates
(Any PV, Age 19-64, High Risk) Multiple Periods**



Net Change in % Patient Vaccination Rate (Pre-Intervention to Intervention): 5.6%

Figure 2: UMass AI Collaborative Results: Influenza Vaccines

**Group ZU: Influenza Vaccine Rates
Multiple Periods**



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