This whitepaper addresses value-based health care as a driver of Population Health Management (PHM), the integral role of pharmacy-based Population Health Management, and strategies for optimizing patient care capacity to improve health outcomes and lower costs of patient care.

**Market Landscape**

While healthcare costs per capita are higher in the U.S. than anywhere else in the world, the nation’s health outcomes are far from the best.\(^1\) According to the National Academy of Medicine, waste accounts for nearly 30% of the total $3.2T U.S healthcare budget.\(^2\) Meanwhile, costs are increasing at an exorbitant rate, fast approaching 20% of the U.S. GDP.\(^3\) Quality improvement and cost reduction have become a national imperative.\(^4\) The nation’s healthcare industry is under tremendous pressure to reduce waste at all levels and improve quality of care and health outcomes.

Escalating costs are shifting our healthcare economy from traditional fee-for-service to value-based payment models.\(^5\) Rather than simply caring for individual patients actively seeking care, healthcare professionals must be equipped to care proactively for entire populations, and receive compensation for the outcomes they achieve, rather than the services they deliver. Success within this new value-based landscape of Population Health Management (PHM) requires new partner alignment, innovation in data harnessing, and value-based prioritization in the allocation of scarce healthcare resources.\(^6\)

Our future healthcare economy will require healthcare professionals to care proactively for entire populations and be compensated based upon outcomes achieved rather than services delivered.
Population Health Management and Value-Based Healthcare

Fueled by its inclusion in the nation’s Triple Aim—improving the individual experience of patient care, reducing per capita cost of care, and improving the health of populations, use of the term Population Health Management is widespread today. In particular, the 2016 announcement of value-based payment goals by the Centers for Medicare and Medicaid Services (CMS) has been a bellwether, serving to promote adoption of its use by many healthcare entities in describing the clinical, chronic disease outcomes of enrolled patients. Along with setting explicit goals for value-based payment models to replace the cost-driving fee-for-service model within Medicare, CMS is working closely with stakeholders (e.g. private payers, employers, consumers, incorporate alternative, value-based payment models throughout our healthcare system. Accountability—both clinical and financial—will be the hallmark of future value-based healthcare remuneration.

PHM improves both clinical and financial outcomes of a defined population through aggregation of patient health data and risk analysis, and by helping high-risk patients to reduce their risk, keeping the yet-to-be high risk from advancing to high risk, and enabling low-risk patients to maintain their low-risk status.

The goal of Population Health Management is to improve clinical outcomes and reduce financial cost for a population, via targeted engagement by caregivers, coordinated across all settings of care.
Successfully executed, Population Health Management yields optimal health of a given patient population, minimizing the need for expensive tests, costly procedures, emergency department visits, and hospitalizations.\textsuperscript{11}

Population Health Management is the new model driving healthcare delivery transformation and is the framework within which healthcare organizations and providers may adapt to future healthcare demands. Population Health Management will become a required core competency for providers and provider organizations in the post-fee-for-service healthcare ecosystem.\textsuperscript{12} For healthcare professionals, this means staying abreast of individual patient status across their entire panel of patients,\textsuperscript{13} and proactively taking action to yield the best outcomes.

In order to accomplish this, providers will need access to automation and new technologies for continuous surveillance, trend monitoring, and task prompting where proactive intervention is required on the part of the healthcare team. These new tools will be instrumental in ensuring high quality, efficient and economically feasible population management. Their importance in making the transition from volume to value cannot be overstated. Effective workflow integration of these tools will offer vast improvement in many areas including patient communication, engagement, and service delivery. By resourcing Population Health Management with the appropriate technologies and automation to support its core elements, healthcare providers will be able to deliver quality care to very high volumes of patients efficiently and sustainably.
Population Health Management Core Elements and Support

As the vehicle for value-based care delivery, PHM requires new support capabilities related to data integration, communication, analytics, and outcomes reporting.\textsuperscript{14}

Healthcare providers and entities must be able to obtain, aggregate, and utilize data from multiple sources to stratify patient populations based upon clinical and financial risk; identify interventions needed; engage patients; monitor patient progress, coordinate care delivery, and intervene where needed; and measure and analyze outcomes.\textsuperscript{15}
Population Health Management Core Elements

**Population Identification.** In order to improve population health, healthcare providers must be able to identify cohorts within a patient panel for the purpose of monitoring or providing additional services. Examples of population identification include stipulating a cohort based on quality measure specifications, or selecting a group of patients who require medication adherence monitoring and intervention.\(^{16}\)

**Risk Stratification.** Assimilating data from multiple sources in order to reliably predict respective clinical and financial risk of members within a cohort is a requirement for effective risk stratification. Factors to consider include total cost of care, diagnoses, and hospitalization data, among others. Patients may also be stratified by demographics, health status, and behavioral risk. Risk stratification can be used to inform individual member engagement methods and frequency. In addition, risk categories should be reevaluated often; of those patients who generate the highest costs within a given year, only 30% will appear within the highest cost tier the following year.\(^{17}\)

**Intervention Identification.** Utilizing risk algorithms to stratify patient populations allows providers to achieve a continuous cycle of prioritization, monitoring, and patient-specific intervention to prevent patient risk progression. Efficient identification of interventions and prioritization of delivery to patients who need them most is essential to optimizing care capacity. System-generated alerts can provide actionable patient data to prompt providers to deliver patient-specific interventions in a timely fashion.\(^{18}\)

**Patient Engagement.**
Methods and frequency of patient engagement vary based upon patient need and preference. Encounters or exchanges between patients and providers may occur by phone, e-mail, text, wireless devices, mobile apps, and other methods. While some face-to-face visits will remain necessary, remote contact methods will increasingly become mainstream.\(^{19}\) Evidence-based
national clinical protocols and standards of care with specially designed applications can generate messaging to patients to meet both chronic and preventive care needs. Registries may also be used to send reminders to providers regarding patient care gaps. Systems must facilitate a broad range of member-specific touch modalities and accommodate adjustments based on change in patient risk. Studies show that patient engagement can help improve health outcomes and avoid preventable deaths.

**Care Management.** To successfully implement Population Health Management, providers must deliver the needed chronic care, as well as preventive care, to their patients, both during and between encounters with the healthcare system. This requires providers to maintain regular contact with patients and support their efforts to manage their own health. High touch care must be employed to manage high-risk patients to prevent them from becoming less healthy and developing complications. The use of evidence-based protocols to treat patients consistently and cost-effectively is an important component of PHM.

**Outcomes Measurement.** Building a solid foundation for Population Health Management means leveraging infrastructure for data collection and analysis. Data must be clean, accurate, and thoroughly validated in order for reporting of provider performance and patient outcomes to be meaningful. Advanced clinical rules engines integrate these disparate types of data with evidence-based guidelines to generate customized reports and demonstrate PHM performance. Dashboards enable care providers and administrators to analyze data over time and identify trends and gaps in PHM. The future healthcare ecosystem will be characterized by routine data sharing across traditional organizational boundaries, including significant reduction in the gap that exists between inpatient and outpatient databases. Health Information Exchanges (HIEs) will further increase the interoperability of systems.

"Population Health Management requires healthcare providers to develop new skill sets and new infrastructures for delivering care."
Population Health Management Support

**Data Integration.** To improve the health of a population, healthcare professionals must be able to identify patients across the healthcare system. In order to accomplish this and drive effective quality care management, investment in reliable, integrated, population-level data systems is required. Expansion in the availability of discrete, reportable data, as well as data integrity, is essential. Registries must be population-wide, and should not be limited to patients with specific health conditions. Existing state Immunization Information Systems (IIS) are one example of population-level registries in use by pharmacists and other healthcare providers today. Efforts must be made to improve interoperability in the design of these and other data systems, particularly Electronic Health Records (EHRs).

**Communication.** Scaling of Population Health Management will require the expansion of reliable communication channels for use by patients, healthcare providers, health plans, and other stakeholders. Based on risk, healthcare professionals must be able to make referrals, coordinate care, and engage patients as active participants in their own health journey. For provider teams, the ability to obtain multi-source, real-time data via alerts and reports to inform clinical care management is essential. The sharing of information via patient, provider, and health plan portals will become more advanced, and eventually mainstream.
Providers require tools to influence patient health behaviors in a systematic way. Effective communication strategies will enable providers to connect with patients more frequently, reducing time currently occupied by routine manual activities and increasing time available to intervene with patients who need care most, without exceeding available care capacity. Effective Population Health Management involves the application of complementary human interventions and automation tools. For example, rather than relying on helping patients by solely initiating calls to them, automated messaging can be used to encourage activities such as seeing their healthcare providers, renewing their prescriptions, or providing reminders regarding a patient’s care plan.26

**Analytics.** Based on the ability to integrate data from multiple sources, predictive analytics offers insight regarding clinical and financial patient risk that is redefining capabilities in care prioritization. The ability to target patients with impending risk progression facilitates the identification and management of prevention strategies for the care provider. Predictive analytics must distill big data into actionable information to allow quality patient care management, improved care coordination, and lower costs. Beyond analytics, application of technology and automation will enable pharmacy to support patient care and capitalize on trends that are shaping the healthcare market today and in the future.

Pharmacy must utilize predictive analytics to drive risk-based population stratification and identify patients for whom intervention will make the greatest impact, both clinically and financially. They must have actionable data specific to the nature and timing of individual patient interventions. Visibility of lapsed patients and development of retention strategies will be increasingly important, both from a quality performance and business perspective.
Reporting Capabilities.
Providing timely and accurate reporting of health outcomes is necessary to demonstrate successful implementation of Population Health Management. Clinical, economic, and humanistic outcomes are the relevant indicators of performance. The value-based healthcare future will require a clear understanding of cause and effect—the ability to attribute the achievement of an outcome with the specific interventions of a healthcare professional. In order to collect and report these data, individual providers must be able to efficiently document their actions on technology platforms that link discrete field entries to standardized clinical coding nomenclature, thereby enabling production of reports and analyses to evaluate performance, inform clinical and financial healthcare decision-making, and demonstrate the effectiveness of PHM.

Population Health Management: The State of Chronic Care and Chronic Care Management

While the scope of PHM is not exclusively focused on chronic condition management, chronic care alone accounts for $2.3T, or 75%, of all healthcare spending. Nearly half of all Americans are diagnosed with at least one chronic illness, and 91% of all prescriptions filled in the U.S. are chronic care-related. Accordingly, ensuring appropriately medication use is one of the most effective methods for achieving two primary goals of Population Health Management—improved health outcomes and reduced cost of care. The figure below reflects the cost reduction per patient attributable to medication management.
**Pharmacy’s Role in Population Health Management—Managing Chronic Care**

The aging U.S. population and tremendous advances in healthcare technology have increased the demand for pharmacy services. Active involvement of pharmacists in managing medication therapy is a common theme among most successful examples of cost reduction and measurable quality improvement. The community pharmacist is well positioned to provide frequent assessment of medication use. Pharmacists are frontline in patient care to optimize medication use, manage chronic conditions, and promote self-care and healthy behavior.

In a study published April 2016 in *Annals of Internal Medicine*, Dr. David Katz, director of the Yale University Prevention Research Center, asserted that "some portion of what now constitutes the primary care management of chronic conditions can be taken over ably by pharmacists."
Their accessibility and expertise positions pharmacists well to serve as health coaches, available to provide a variety of patient care services including Medication Therapy Management (MTM), medication synchronization, medication reconciliation, vaccinations, diabetes care, and blood pressure monitoring. Community pharmacy is undergoing a transformation from being the place where people pick up their medications to a healthcare destination.

“Some portion of what now constitutes the primary care management of chronic conditions can be taken over ably by pharmacists.”

David Katz, MD
Director, Yale University Prevention Research Center

Pharmacy-Based Population Health Management and Building Care Capacity

Technology, data integration, and connectivity previously unavailable to pharmacy is now perpetuating pharmacy’s transformation to provide frontline, local support for the successful implementation of Population Health Management.

With 92% of Americans living within 5 miles of a community pharmacy,31 pharmacies offer unparalleled access to care. Additionally, in years past, technologies employed by pharmacy were strictly for the purpose of filling prescriptions as accurately and efficiently as possible. Newer technologies have allowed much needed expansion of patient care services, positioning pharmacies to better leverage the underutilized expertise of the pharmacist in driving improved health outcomes and lowering total healthcare costs.

Population Health Management will further integrate pharmacy as an active participant in team-based care, ready to succeed in the future value-based healthcare system, which transcends all healthcare segments—Medicare, Medicaid, and commercial.

Population Health Management is the future direction of MTM and is a perfect fit for medication synchronization and the appointment-based model, which have emerged as primary builders of care capacity.
Pharmacy-based Population Health Management

What?
- Risk-stratification of patient population
- of needed interventions Identification
- Delivery of interventions
  - to right patient
  - using right method
  - at right time
- Transcends all segments of health care—Medicare, Medicaid, Commercial

Why?
- Preparation for value-based future of health care
  - Ensures allocation of limited resources where need is greatest
- Future direction of Medication Therapy Management
- Perfect fit with Appointment-based Medication Synchronization

For pharmacy, successful implementation of Population Health Management means thinking differently. In order to effectively prioritize workload, pharmacies must identify patients whose needs are most urgent. They require tools that enable them to distinguish activities that warrant allocation of patient care resources versus those that do not. In order to succeed in value-based health care, pharmacies must have the aid of technology to equip them to employ value-based decision-making.

These technologies must also enable pharmacies to monitor patients between visits to their prescribers, delivering local community care where patients work and live. Early pharmacy adopters have found that embracing these newer technologies is allowing them to transform their practices, optimize their care capacity, and become care coordinators, health coaches, and community health monitors in the delivery of Population Health Management.
Omnicell: Advancing Pharmacy-Based Population Health Management

Omnicell is a healthcare technology company specializing in integration of community pharmacy into the broader healthcare system. Omnicell provides patient-centered pharmacy solutions, with demonstrated ability to improve health outcomes and reduce healthcare costs by virtue of platform integration that allows technology-guided, holistic, longitudinal pharmacy interventions.

Omnicell’s technology strength, robust analytics, and data integration capabilities assist pharmacies in the successful implementation of pharmacy-based Population Health Management and facilitate care coordination between community pharmacy, hospitals, health plans, and other payers and healthcare providers to improve health outcomes and reduce costs.

Omnicell’s integrated Patient Management Solutions enable effective management of all patient care needs via a single location, Omnicell’s Patient Management Access Portal (PMAP). PMAP includes comprehensive, fully automated med sync (Time My Meds’), along with Omnicell’s other solutions, as well as integration with EQuIPP, iMedicare, and MTM vendors, for seamless delivery of patient care services. PMAP provides technology-assisted workflow and guides the pharmacy team to provide the right interventions to the right patients at the right time. With Omnicell’s solutions, pharmacies can effectively deliver Population Health Management.
Omicell’s pharmacy-based PHM model drives value-based patient engagement to meet the needs of the entire population with high quality services and low cost programming, yielding improved health outcomes. Omnicell’s Risk Stratification Algorithm effectively evaluates patients’ clinical and financial risk. Touch frequency and method of engagement are determined based on member risk level, with adjustments made in accordance with changes in health status.

By aggregating data from multiple sources, Omnicell is able to optimize the risk stratification process, provide a comprehensive patient-level view for the pharmacy team, and prompt targeted interventions (e.g. resolution of gaps in therapy) that would likely be overlooked if the data source were limited solely to pharmacy.
Pharmacy-Based Population Health Management Model: Targeted Interventions

Omnicell’s Analytics Engine utilizes multisource data and proprietary sets of clinical rules and algorithms to identify patient-specific interventions for the pharmacy to deliver within its pharmacy-based PHM model. Rules and algorithms are promulgated from and consistent with national treatment guidelines and standards of care, quality measures, registries, and other evidence-based interventions.

Rule sets include Adverse Drug Event Prevention, Behavioral Health, Diabetes, Falls Prevention, Heart Failure, Hospital Admission Prevention, Hypertension, Immunization, Incontinence Management, Medication Reconciliation, Polypharmacy Rules, Respiratory (asthma and chronic obstructive pulmonary disease [COPD]), and Specialty Pharmacy, among others (see Appendix A). Omnicell’s clinical rules and algorithms match the needed interventions, with the right priority, to each patient based on Omnicell’s risk modeling and predictive analytics.
Care Management: Patient Engagement

Omnicell provides multiple vehicles for patient care delivery to ensure that patients receive communication based on their preferred methods, all integrated into PMAP.

PMAP affords tremendous flexibility in its approach to member access to care across Omnicell’s network of partner pharmacies with readily deployable network expansion opportunities. PMAP supports coordination of centralized and decentralized care teams. Community-based pharmacists, Omnicell’s Virtual Pharmacist Exchange, and Omnicell’s in-house support team can access and share information among each other and with other members of the patient’s care team. Channels and frequency of touches vary based on patient risk.
Health Coaching

Pharmacist health coaching and education to establish, reinforce, and sustain behaviors consistent with effective management of chronic diseases have been shown to yield improved patient health outcomes provided concurrent with other pharmacist services and in isolation. Tobacco cessation and weight management are two areas in which face-to-face pharmacist education and behavioral counseling have been proven beneficial in assisting patients with achievement of their health goals.

Patient Portal

Omnicell’s mobile patient portal is a tool to assist the pharmacist in health coaching and a primary resource for pharmacies in implementing PHM. It is an integral part of a high-touch strategy for high-risk patients and those with impending risk progression, and a solution for low-risk patients who can be supported largely by digital care strategies.

Within the portal, patients are able to establish their own care circles, composed of their professional and non-professional caregivers, family, and friends. Patients can monitor their medications, document their adherence, track nutrition and exercise progress, keep journals, avail themselves to a library of patient care resources, and upload their biometrics from Bluetooth compatible devices for the pharmacy to access. For the pharmacy, CFL is a tool to allow deployment of automated surveys, and monitoring and tracking of the patient between visits.
Omnicell’s Trifecta for Optimizing Care Capacity

**Omnicell’s Patient Management Access Portal (PMAP)**
**Omnicell’s Time My Meds® Medication Synchronization (Med Sync)**
**Appointment-Based Model (ABM)**

---

**Omnicell’s Patient Management Access Portal (PMAP)**

Omnicell’s integrated Patient Management Solutions assist pharmacy in effectively managing all patient care needs via a single location, Omnicell’s Patient Management Access Portal (PMAP). PMAP is a single platform and access point for all PHM support features and functionality. In addition to housing Omnicell’s complete portfolio of patient care solutions, PMAP harnesses the power of Omnicell’s data integration capabilities, proprietary risk algorithms, and Omnicell’s robust analytics engine.

With PMAP’s technology-assisted workflow, pharmacies are able to effectively and reliably implement Population Health Management and successfully deliver the right interventions to the right patients at the right time.
Through PMAP, Omnicell presents the pharmacy with prioritized, patient-specific tasks and guides the pharmacy through provision and documentation of the interventions. PMAP tracks specific task completion and provides monitoring and outcomes reporting. This, coupled with Omnicell’s ability to provide multidirectional data flow, enables pharmacy to share data with other healthcare stakeholders and participate as active members of the healthcare team.

PMAP is pharmacy’s Population Health Management platform, offering intelligent workflow integration, predictive analytics, patient connectivity and messaging, integrated medication management, full regulatory compliance, performance dashboards, mobile technology integration, and multiple payer solutions and portals.
Medications account for $310B in spending in U.S. today; optimizing their use through improved adherence alone could save $290B

Omnicell’s Time My Meds Medication Synchronization (Med Sync): A Population-Wide Adherence Strategy

Approximately $300B of avoidable U.S. healthcare costs are due to nonadherence, representing 10% of total healthcare costs.\textsuperscript{35} Nonadherence is a principal barrier to safe, appropriate medication use.

Medication synchronization is a process whereby the filling of patient’s chronic medications is coordinated to occur at the same time, on a regular schedule. Omnicell’s Time My Meds med sync solution is highly effective as a population-wide adherence strategy and has established Omnicell as a national leader in medication synchronization. Time My Meds prompts pharmacy review of a patient’s chronic prescriptions in advance of the anticipated prescription fill date and proactive contact with the patient to determine if there have been any changes in the medication regimen due to prescriber visits or hospitalizations that may necessitate reconciliation.

Omnicell’s Time My Meds enables pharmacies to implement med sync within an appointment-based model, building a strong foundation for delivery of individualized services for high-risk patients. Consistent monthly interaction between pharmacy and patient affords opportunities for “teaching moments” to reconcile any medication issues, inquire about OTC self-treatment, and address any questions. Time My Meds ensures ongoing communication between the patient and the pharmacy to address and resolve medication-related problems and to drive adherence.

Additional benefits include reduced medical practice burden due to decreased phone and fax refill request volume, as well as improved efficiency at the pharmacy, yielding more time for the pharmacist to deliver medication management and other patient care services.
Omnicell’s pharmacy partners have enrolled well over 1,000,000 patients in Omnicell’s Time My Meds appointment-based medication synchronization program. Omnicell has been able to study this population to examine patient behavior patterns and to identify better ways for pharmacy to intervene with patients to improve outcomes.

Pharmacies that proactively intervene with patients have demonstrated ability to consistently increase adherence rates above 80%, measured as Proportion of Days Covered (PDC). Illustrated below are the adherence results of pharmacies using Omnicell’s Time My Meds medication synchronization solution in improving adherence, as compared to medications of patients not enrolled in medication synchronization programs.

![Graph showing adherence rates by condition](image)

According to a study published in the American Journal of Managed Care, researchers asserted that pharmacists, “particularly in community pharmacy settings,” have been able to save the healthcare industry up to $37 for every additional dollar spent on improved medication adherence. Additionally, higher PDC scores correlated with much lower direct medical costs. These results suggest that payer partnerships with pharmacies offering ABMS are cost-beneficial, provide a positive return on investment, and yield better outcomes.36
The Appointment-Based Model (ABM)

Pharmacies that have successfully adopted the Appointment-Based Model enjoy a distinct advantage in Population Health Management implementation, as they have already employed tools to manage their patient population and target specific patients who require intervention.

The efficiency-multiplying effect of automated medication synchronization within an appointment-based model is the single most influential tool in building capacity for patient care in pharmacies across the U.S. The ABM affords pharmacy a framework within which to achieve the standardization and efficiency required to both improve healthcare quality and decrease related costs.

By enrolling the pharmacy’s most medically complex patients in med sync, a disproportionate amount of time is saved. Additionally, the ABM offers efficiency by facilitating load balancing, giving the pharmacy staff more control over their workflow. The pharmacy team has time required for visit preparation, and is able to reserve time for scheduled visits that work well for both pharmacy and patient.

The time savings generated by consolidating a pharmacy’s most medically complex patients from multiple visits to one visit per month yields available time for additional pharmacy services to be delivered within a PHM model, e.g. medication reviews, point-of-care testing, and vaccinations.

Population Health Management success is dependent upon effective prioritization of patient care needs and optimization of care capacity to intervene as needed, thereby improving outcomes, lowering costs, and driving pharmacy profitability based on value delivered.
Omicell Solutions

Immunization

In accordance with the Center for Disease Control and Prevention (CDC) Advisory Committee on Immunization Practices (ACIP) guidelines, Omnicell identifies and prioritizes patients within the pharmacy who have vaccination gaps. Through Outbound and Inbound Awareness Messaging integrated with PMAP, and with optional integration to state registries, including both query of the state registries and reporting to the registries, pharmacies located in states that offer real-time reporting are afforded real-time vaccination record access by Omnicell via PMAP.

Pharmacist authority to vaccinate has significantly increased vaccination rates. Immunization programs work particularly well within the appointment-based model, as the ABM process supports proactive identification of patients with vaccination gaps, the pre-visit offer to the patient of vaccination, and vaccination as part of the monthly visit to conveniently close gaps in care.

Transitional Care

Omicell’s Transitional Care Program targets patients discharged from the hospital to reduce preventable hospital readmissions by facilitating bi-directional data flow of discharge data between hospitals and community pharmacies through Omnicell’s Hospital Exchange.

CMS’ Hospital Readmission Reduction Program assesses penalties to hospitals for excessive unplanned 30-day readmissions for heart attack, heart failure, chronic obstructive pulmonary disease (COPD), pneumonia, and coronary artery bypass graft (CABG) beginning in 2017. In addition, health plans are evaluated via an all-cause readmission measure in the Healthcare Effectiveness Data and Information Set (HEDIS). Community pharmacists have demonstrated the ability to reduce unplanned hospital readmissions by up to 50% through the provision of medication reconciliation, ensuring receipt of appropriate discharge medications, and patient check-in calls, as appropriate, during the course of the first 30 days after discharge.
According to the Institute for Healthcare Improvement, community pharmacists are underutilized in addressing the problem of preventable hospital readmissions.

...Nearly two years after full implementation of the Affordable Care Act, and well into the quality - and outcomes-based health payment reforms mandated by the ACA for Medicare — not enough attention is being given to the potential contributions that community pharmacy can make to reducing the readmission rate for patients transitioning from hospital to home.

Institute for Healthcare Improvement, 2015

Omnicell’s transitional care solution facilitates collaboration between hospitals and community pharmacies in improving post-discharge care, thereby positioning pharmacies to affect 30-day readmission reduction.

**Point-of-Care Testing (POCT)**

POCT is testing done with results delivered at the point of care, in close proximity to the patient, rather than in a remote laboratory. Omnicell's POCT solution facilitates three areas of pharmacy-based POCT: wellness screenings, chronic care monitoring, and rapid diagnostic testing. PMAP enables pharmacies that have obtained Clinical Laboratory Improvement Amendments (CLIA)-waived status to schedule, provide, and document finger stick and other POCT efficiently, with ability to track and trend data and communicate necessary information to a patient’s prescriber.
Health Screenings. Evidence shows that patients who receive recommended screenings are more likely to be aware of their health issues and do something about them. Over 30% of patients never see a primary care provider or do so infrequently. By offering PMAP as an easy-to-use platform to support pharmacy-based health screenings, Omnicell is helping its partners make pharmacy-based screenings readily available to patients in advance of a diagnosis, in accordance with U.S. Preventive Screening Services Task Force (USPSTF) recommendations. Such screenings include CLIA-waived finger stick blood glucose testing or blood pressure measurement.

Chronic Care Monitoring. Pharmacy-based monitoring of diabetes, high cholesterol, or blood pressure can be very useful, particularly as part of a care plan for high-risk patients. In the case of diabetes, a glycosylated hemoglobin (or hemoglobin A1c test) measures a patient’s average blood glucose level over the previous 3 months. Administration of this test in the case of diabetes or lipid testing for patients with elevated cholesterol allows the pharmacist to assess effectiveness of a patient’s medication regimen, and recommend adjustments to the prescriber where needed.

Rapid Diagnostic Testing (RDT). RDT influences treatment decisions by determining the probability of presence or absence of disease. Pharmacy-based RDT may be included as part of an antibiotic stewardship program by diagnosing viral illnesses and preventing antibiotic overuse that leads to resistance. Use of antibiotics in the absence of bacterial illness is directly responsible for dangerous antibiotic resistance. Examples of conditions for which RDT is available include influenza, Group A streptococcus pharyngitis, HIV, and hepatitis C.
Medication Management

While many comparative published studies, including a comprehensive, rigorously designed study funded by the Center for Medicare and Medicaid Innovation (CMMI), show significant benefits of pharmacist-provided medication management, widespread adoption has not materialized. Medication Therapy Management programs currently have a Comprehensive Medication Review (CMR) completion rate nationwide of only 15% for PDPs and 30% for MA-PDs. Meanwhile, researchers have proven that face-to-face delivery of medication management services is three times more effective than telephonic communication. More widespread adoption of the ABM model in community pharmacies is needed to enable successful execution of higher rates of CMR and Targeted Medication Review (TMR) completion due to the longitudinal, monthly pharmacist-patient engagement. Omnicell offers integration of MTM cases from other vendors, as well as medication review functionality within PMAP. Omnicell is able to prompt tasks to the pharmacy for completion of a CMR or TMR. Additionally, Omnicell produces a Medication Scorecard for use in guiding the pharmacist consultation with the patient. The scorecard contains all relevant patient-level information pertaining to Star-Rating performance, immunization gaps, as well as other gaps in care.

Chronic Care Management Programs

Modifiable behavioral issues, such as smoking and obesity are responsible for 40% of deaths in the U.S. Omnicell’s disease management programs help the pharmacy to engage patients in the management of health conditions such as diabetes, hypertension, cholesterol, asthma, and COPD, as well as healthy living programs (e.g. weight management, tobacco cessation).

Chronic Care Management (CCM) Programs include high-touch longitudinal management with emphasis on closure of treatment gaps, medication and health condition education for traditional chronic diseases (e.g. diabetes, hypertension, asthma, COPD) and specialty conditions (e.g. Rheumatoid Arthritis, HIV, Hepatitis C). Omnicell’s Specialty solution supports community pharmacy-based strategies to ensure that patients are informed, well equipped with side effect management tools, and able to assist patients in treatment failure avoidance.

Powered by Omnicell’s analytics engine, Omnicell’s CCM Programs prevent waste and drive positive health outcomes for patients managing chronic and/or specialty conditions. The longitudinal, high-touch nature of Chronic Care Management Programs is very well suited to the ABM model.
Conclusion

Population Health Management and value-based patient care of our future healthcare economy will require pharmacy to think differently about patient care delivery, providing care to populations, team-based care, and improving health outcomes. Pharmacy’s breadth of access to patients, ability to take rapid action against the available data, and demonstrated expertise in pharmacist-delivered medication management, will allow pharmacy to emerge as a key party in resolving the need for accessible, affordable, and quality health care. With a strong team of pharmacy and healthcare clinicians, operators, and thought leaders, Omnicell understands pharmacy, its role within health care, and what it takes to succeed in a healthcare landscape defined by competition and change. Omnicell offers solutions for tomorrow’s healthcare problems, today.
Appendix A

Adverse Drug Event Prevention

Seventy percent (70%) of all adverse drug events requiring hospitalization are isolated to overdoses in four distinct medications/therapeutic categories: warfarin, insulin, oral antiplatelet agents, and oral hypoglycemic agents.\textsuperscript{46} Omnicell's Adverse Drug Event (ADE) Prevention program driven by Omnicell's analytics engine targets patients on these four medications to ensure patient understanding of proper dosing and use for prevention of avoidable ADEs.

Behavioral Health

Mental health conditions are frequently associated with highly complex medication needs, with appropriate prescribing and medication adherence essential to patient well-being.\textsuperscript{47} In a comparison of adherence and economic outcomes in antidepressant therapy, while only 43% of patients were adherent, those adherent patients incurred lower annual medical costs.\textsuperscript{48} Pharmacist expertise in highly complex medication management is invaluable to patients with mental health conditions, as many of them have comorbidities. Omnicell's analytics engine targets patients on antidepressants and psychotropic medications to ensure patient understanding of proper use and to manage these comorbidities.\textsuperscript{49}

Diabetes

Medical costs of patients who have diabetes are typically 2.3 times higher than people without diabetes.\textsuperscript{50} Studies show that for every 10% increase in adherence, there is an associated 8.6% to 28.9% decrease in total annual healthcare costs.\textsuperscript{51} Additionally, a four-year longitudinal study found that non-adherent patients have 41% higher annual inpatient costs compared to adherent patients, and concluded that significant costs could be avoided by increasing adherence rates.\textsuperscript{52} Omnicell's analytics engine processes aggregate data and identifies inconsistencies with standards of care, prompting task alerts to the pharmacy team so that they may be quickly resolved.
Falls Prevention

According to the CDC, falls are the leading cause of both fatal and nonfatal injuries among older adults.\(^53\) One out of five falls causes a serious injury such as broken bones or a head injury.\(^54\) Patients 65 and older are at risk for falls, leading to hospitalizations and potential subsequent transitions to long-term care facilities. Each year, 2.5 million seniors are treated in emergency departments for fall injuries.\(^55\) Identifying risk factors that lead to falls is critical to preventing admission into a long-term care facility. A large study of patients 65 and older found that 20% filled at least one prescription for an inappropriate medicine.\(^56\) Use of medicines, such as tranquilizers, sedatives, or antidepressants can affect balance and steadiness in movement of older adults. Omnicell's analytics engine monitors for inappropriate medication use in elderly patients and prompts intervention as needed.

Heart Failure

Heart failure costs the U.S. healthcare system an estimated $32 billion each year.\(^57\) The condition affects more than five million Americans,\(^58\) is responsible for 11 million physician visits each year, and results in more hospitalizations than all forms of cancer combined.\(^59\) Nationwide, annual incidence of heart failure is approximately 10 per 1,000 population after age 65. Omnicell’s analytics engine integrates data from multiple sources, identifies high-risk patients, and prompts targeted interventions by the pharmacy team to provide patient education and monitoring of patient-reported heart failure symptoms; monitor blood pressure, blood glucose and cholesterol levels; and identify and resolve medication-related problems and adherence issues.

Hypertension

High blood pressure is a leading co-morbid cause of heart disease, stroke, congestive heart failure, and kidney disease. Omnicell’s analytics engine identifies gaps in care and drug-related problems related to hypertension and prompts resolution by the pharmacy team.
Hospital Admission Prevention

CMS noted in the 2014 call letter that MTM services decreased total prescription drug costs approximately $4 to $5 per month for Part D health plan members with congestive heart failure and $6 per month for members with Chronic Obstructive Pulmonary Disorder (COPD), affecting a reduction of approximately $370 per patient in all-cause hospitalization costs for COPD. One organization’s Part D plan saved an average of $2,133 and $1,444 on all-cause and COPD related hospitalizations. In 2016, Omnicell’s analytics engine allows selection of members with COPD and CHF for monitoring, member education and resolution of drug therapy problems.

Incontinence Management

Lack of bladder control is a significant quality of life issue for many seniors. Urinary incontinence (UI), or the unintentional loss of urine, is a condition that up to 35 percent of people 60 years of age and older. UI can cause a wide range of morbidity in the elderly, including pressure ulcers, urinary tract infections (UTIs), social withdrawal and depression, and is one of the major causes of institutionalization of the elderly. Teaching moments for each risk group are prompted by PMAP for the pharmacy to educate patients, identify UI problems, and assist them with obtaining appropriate treatment.

Medication Reconciliation

Sixty percent (60%) of all medication errors occur during times of care transition. Additionally, 72% of all post-discharge adverse events are medication-related. Unreconciled medication changes following a hospitalization lead to readmissions and, thus, unnecessary costs. Medication oversight in identifying and resolving drug-related problems (e.g. duplication, interactions, unnecessary medications, and missing medications) is essential to improving patient care, reducing readmissions, and lowering costs. Timely post-discharge provision of medication reconciliation by the pharmacist yields a great opportunity to ensure patient understanding, and address barriers to adherence, and answer any questions the patient may have.
Immunization

Our nation’s healthcare system has fallen woefully short of its Healthy People 2020 goals related to adult immunization. For example, actual rates of vaccination of 61.3% for adults ≥ 65 years of age and 20.3% for high-risk adults aged 18-64 years\textsuperscript{64} pale in comparison to goal vaccination rates of 90% and 60%, respectively.\textsuperscript{65} Similarly, the Healthy People 2020 target for adult administration of the annual flu vaccine is 90%, while the actual rate of adults who received the flu shot is 65%.\textsuperscript{66} Likewise, shingles vaccination goals for adults ≥ 60 years, currently at 20%, fall short of the Healthy People 2020 goal of 30%.\textsuperscript{67} While there is no Healthy People 2020 goal for pertussis, actual vaccination rates is low at 14.2%\textsuperscript{68}

![Vaccination Chart]

Increasingly, community pharmacies are regarded as healthcare partners in closing vaccination gaps. Evidence suggests significant favorable impact on vaccination rates when patients are encouraged to receive a vaccination by a trusted healthcare professional.\textsuperscript{69} While community pharmacists are well positioned to deliver vaccinations, there is significant opportunity to better leverage this delivery channel. Omnicell's analytics engine is able to integrate data from multiple sources, including queries to the state immunization information systems (IIS) or registries to identify patient vaccination gaps and present them as task alerts to the pharmacy via Omnicell’s Patient Management Access Portal (PMAP). The pharmacy staff is able to discuss the importance of receiving CDC recommended vaccinations, obtain patient consent, administer the appropriate vaccination(s) and complete the required documentation within Omnicell’s Patient Management Access Portal (PMAP). Once the pharmacist has administered the vaccination(s), Omnicell updates the registry.
**Respiratory**

Asthma and Chronic Obstructive Pulmonary Disease (COPD) significantly impact healthcare costs, quality of life, and workforce productivity. While COPD exacerbations are the leading cause of hospitalization in the United States, 60% of COPD patients report that they have no action plan for dealing with flare-ups.\(^7\) Medication management services have been shown to reduce the cost of COPD-related hospitalizations on average by $2,133.\(^7\) Studies have shown that improved medication adherence in high-risk asthmatics results in reduced overall healthcare costs due to fewer hospitalizations and emergency department visits.\(^7\) Omnicell’s analytics engine allows selection of patients with COPD, with and without previous hospitalization history, for monitoring to prevent and manage exacerbations through patient education and resolution of any related drug therapy problems.

**Polypharmacy Rules**

Polypharmacy is the use of multiple drugs or more drugs than are medically necessary. Factors leading to polypharmacy include number of diagnoses, severity of illnesses, hospitalizations, multiple prescribers, multiple pharmacies, and increased age. Studies have shown that as many as 58% of elderly patients took one or more unnecessary prescribed drugs,\(^7\) and that polypharmacy is associated with approximately 30% higher medical costs.\(^7\) Additionally, patients taking 5 or more medications have an 88% higher risk of experiencing an adverse drug event than those taking fewer medications.\(^7\) The burden of taking multiple medications also places patients at greater risk of drug interactions, duplicate therapy, functional decline, cognitive impairment, falls, urinary incontinence and malnourishment.\(^7\) Polypharmacy can be avoided through enhanced coordination of care.

Omnicell’s analytics engine identifies patients receiving multiple drugs from multiple prescribers and/or multiple pharmacy locations and prompts intervention/teaching moments to reduce the potential of inappropriate prescribing and resulting medication misuse.

**Specialty Pharmacy**

Specialty treatments represent the single most explosive growth and high cost in health care. Specialty medications are soon to account for 50% of total medication spend, are anticipated to overtake traditional drugs in volume by 2018. 55% of specialty drug spending is counted as a medical benefit.\(^7\) Omnicell’s PMAP prompts the pharmacy with tasks and targeted messaging to support side effect management, enable adherence, and avoid treatment failure.
Omnicell believes that pharmacy is the future of healthcare...and it shows.