Penn Medicine is pleased to present our 2016 Annual Quality and Patient Safety Report. This report highlights Penn Medicine’s achievements in delivering outstanding patient care and provides an extensive review of initiatives being taken to strengthen patient safety and enhance quality of care.

This year’s report describes significant accomplishments and ongoing challenges throughout the Health System. We were able to reduce hospital acquired infections by 10 percent year over year. Each hospital achieved Magnet designation and is ranked highly in the national and/or regional U.S. News Best Hospitals ratings. The Hospital of the University of Pennsylvania (HUP) and Penn Presbyterian Medical Center (PPMC) ranked in the top 10 nationally. Further, each hospital achieved multiple national certifications for outstanding clinical care including the Commission on Cancer, Heart Failure and Stroke. While continuing to improve, our efforts in risk adjusted mortality and unplanned readmission rates were less successful than we had hoped.

Our clinical achievements notwithstanding, external and internal forces are driving an escalation in our efforts to deliver better value. We know that patients and payers want the best care, but with lower costs, convenience and a positive experience. Our quality improvement efforts improve value by eliminating preventable complications, readmissions and deaths. Coordination and continuity of care will enable our patients to receive the right care in the right place at the right time. Timely access and a positive experience will reduce the total cost of care and therefore improve value.

Our commitment to improve the patient experience resulted in significant increases in ambulatory and inpatient satisfaction scores. The Clinical Practices of the University of Pennsylvania (CPUP) and Clinical Care Associates (CCA), as well as all our inpatient facilities, concluded the year ranked between the 65th and 85th percentile among all health care organizations nationally in measures of Access, Communication with Nurses and Doctors and Overall Likelihood to Recommend. Delivering a superb patient experience impacts our patients’ ability to understand treatment options and adhere to their plan of care.

The stories and results highlighted in this report (and those we simply didn’t have enough room to include) represent the collective achievements of every staff member at Penn Medicine. We thank our staff for their commitment to provide the safest, highest quality care to all of our patients.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Page</th>
<th>Section Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Blueprint for Quality and Patient Safety</td>
</tr>
<tr>
<td>8</td>
<td>ENGAGEMENT: The Power of the Patient Voice</td>
</tr>
<tr>
<td>12</td>
<td>ENGAGEMENT: We are Here When You Need Us</td>
</tr>
<tr>
<td>14</td>
<td>ENGAGEMENT: Your Goals are Our Goals</td>
</tr>
<tr>
<td>16</td>
<td>ENGAGEMENT: We Put Our Vision to the Test</td>
</tr>
<tr>
<td>20</td>
<td>CONTINUITY: We Connect with Patients to Help Manage Health</td>
</tr>
<tr>
<td>24</td>
<td>CONTINUITY: We Work Together to Coordinate Care</td>
</tr>
<tr>
<td>26</td>
<td>CONTINUITY: We Rise to the Challenge: Complex Care for Complex Patients</td>
</tr>
<tr>
<td>30</td>
<td>VALUE: We Add Value by Reducing Infections</td>
</tr>
<tr>
<td>32</td>
<td>VALUE: Data Drives Clinical Outcomes</td>
</tr>
<tr>
<td>34</td>
<td>VALUE: Customizing Care for Patient Populations</td>
</tr>
<tr>
<td>38</td>
<td>VALUE: Sharing Risk and Creating Value</td>
</tr>
<tr>
<td>40</td>
<td>AWARDS &amp; ACHIEVEMENTS: External Awards</td>
</tr>
<tr>
<td>44</td>
<td>AWARDS &amp; ACHIEVEMENTS: Internal Awards</td>
</tr>
</tbody>
</table>
ALLIANCE

CHIEF MEDICAL OFFICERS & CHIEF NURSING OFFICERS

The Chief Medical Officers (CMOs) and Chief Nursing Officers (CNOs) from all five hospitals, homecare, hospice, rehabilitation, home infusion, and physician practices, participate in a working alliance called the CMO/CNO Alliance. The group meets monthly to integrate and drive systemwide efforts in support of the Blueprint for Quality and Patient Safety. The CMO/CNO Alliance members are listed below alphabetically.

PJ BRENNAN, MD
Chief Medical Officer, Senior Vice President
UNIVERSITY OF PENNSYLVANIA HEALTH SYSTEM

JAMES R. BALLINGHOFF, MSN, MBA, RN, NEA-BC
Chief Nursing Officer, Associate Executive Director
PENN PRESBYTERIAN MEDICAL CENTER

FRANKLIN CALDERA, DO
Chief Medical Officer
PENN MEDICINE AT RITTENHOUSE
PENN INSTITUTE FOR REHABILITATION MEDICINE

ANGELA R. COLADONATO, DNP, RN, NEA-BC
Senior Vice President, Chief Nursing Officer
CHESTER COUNTY HOSPITAL

REGINA CUNNINGHAM, PhD, RN, FAAN, AOCN
Senior Vice President and Chief Nurse Executive
HOSPITAL OF THE UNIVERSITY OF PENNSYLVANIA

MARY DEL GUIDICE, RN, MSN, BS, NE-C
Chief Nursing Officer
PENN HOSPITAL

RICHARD DONZE, DO, MPH
Senior Vice President for Medical Affairs, Chief Medical Officer
CHESTER COUNTY HOSPITAL

LEE M. DUKE, II, MD
Senior Vice President, Chief Physician Executive
Chief Medical Officer
LANCASTER GENERAL HEALTH

DANIEL M. FEINBERG, MD
Chief Medical Officer
PENN HOSPITAL

NEIL O. FISHPHAN, MD, MA
Associate Chief Medical Officer
UNIVERSITY OF PENNSYLVANIA HEALTH SYSTEM

KEVIN M. FOSNOCHT, MD, FACP
Chief Medical Officer, Associate Executive Director
PENN PRESBYTERIAN MEDICAL CENTER

MICHAEL A. GRIFFI, MD
Chief Medical Officer
GOOD SHEPHERD PENN PARTNERS
SPECIALTY HOSPITAL AT RITTENHOUSE

C. WILLIAM HANSON, III, MD
Chief Medical Information Officer
UNIVERSITY OF PENNSYLVANIA HEALTH SYSTEM

MONICA A. HEUER, MPP, MBA
Director, Change Management
PENN MEDICINE ACADEMY

DAVID A. HOROWITZ, MD
Associate Chief Medical Officer
UNIVERSITY OF PENNSYLVANIA HEALTH SYSTEM

SANDRA G. JOST, RN, PhD
Chief Nursing Officer, Associate Executive Director
PENN HOME CARE AND HOSPICE SERVICES

NINA O’CONNOR, MD
Director, Hospice and Palliative Care
UNIVERSITY OF PENNSYLVANIA HEALTH SYSTEM

CHARLES F. ORELLANA, MD
Chief Medical Officer
CLINICAL CARE ASSOCIATES

MICHAEL POSENCH, MD
Associate Chief Medical Officer, Value Improvement
UNIVERSITY OF PENNSYLVANIA HEALTH SYSTEM

BARBARA PRIOR, MSN, NE-BC
Associate Executive Director, Clinical Operations
CLINICAL PRACTICES OF THE UNIVERSITY OF PENNSYLVANIA

MICHAEL RESTUCCIA
Chief Information Officer
UNIVERSITY OF PENNSYLVANIA HEALTH SYSTEM

LANYCE ROLDAN, MSN, RN
Senior Vice President, Chief Nurse Executive
LANCASTER GENERAL HEALTH

JEAN ROMANO, MSN, RN, NE-BC
Chief Nursing Officer
PENN MEDICINE AT RITTENHOUSE
GOOD SHEPHERD PENN PARTNERS

PATRICIA GARCIA SULLIVAN, PhD
Chief Quality Officer
UNIVERSITY OF PENNSYLVANIA HEALTH SYSTEM

MARISSA WILCK, MD
Assistant Professor, Clinical Medicine
UNIVERSITY OF PENNSYLVANIA HEALTH SYSTEM

AUSTIN WILLIAMS, MS
Chief Operating Officer
OFFICE OF THE CHIEF MEDICAL OFFICER OF THE UNIVERSITY OF PENNSYLVANIA HEALTH SYSTEM
Since 2007, the Blueprint has served as the framework for Penn Medicine’s efforts to improve quality, patient safety and patient experience.

Penn Medicine has established three imperatives to guide our operating units and practices to implement specific strategies that achieve the goals of improving health and assuring safe care. These imperatives are Engagement, Continuity and Value.

The third and current version of the Blueprint sets system wide goals to improve health and assure safe care for all patients receiving care across the Penn Medicine continuum of care.

**ENGAGEMENT**
Achieving the ambitious goals of the Blueprint requires engaged staff, patients, and families. Engagement requires motivated and involved staff working in partnership with patients and families to activate health behaviors that support health improvement and safe care. Unit Based Clinical Leadership teams (UBCLs) and similar front line clinical leadership teams across the continuum are integral to achieving this imperative.

**CONTINUITY**
Transitions in care and coordination of care have been important components of the Blueprint since the beginning of the process. Keeping patients out of the hospital requires the delivery of seamlessly coordinated care across all settings and service lines.

**VALUE**
Patients and families, insurers, employers, and others are placing increasing emphasis on value-based care. For Penn Medicine, this means providing high quality and safe care, free of preventable complications, and readmissions at a lower cost. At its essence, value-based care entails providing the right care at the right time in the right place.

As the Blueprint has evolved so have the strategies that have been employed to address the resources and structures used to support the work. The organization has made significant investments over the last 10 years in order to achieve the goals of the Blueprint for Quality. Working with organizational leadership, in late 2015, the CMOs and CNOs identified three strategic priorities to increase the value of the care we provide across Penn Medicine. These three priorities are:

- **REDUCE READMISSION RATES**
- **IMPROVE ICU (INTENSIVE CARE UNIT) VALUE**
- **ELIMINATE PREVENTABLE HAI’s (HOSPITAL-ACQUIRED INFECTIONS) AND HACs (HOSPITAL-ACQUIRED CONDITIONS)**

The intent is to work with each entity to identify resources and tactics that will give them the flexibility within the framework to maximize outcomes related to specific opportunities for each. This unique approach has helped Penn Medicine drive system wide strategies and support local accountability structures that oversee planning and implementation efforts.
CONNECTING THE BLUEPRINT IMPERATIVES THROUGH THE YEARS

2007
- TRANSITIONS IN CARE
- REDUCE VARIATIONS IN CARE
- ACCOUNTABILITY

2011
- TRANSITIONS IN CARE/COORDINATION OF CARE
- REDUCING UNNECESSARY VARIATIONS IN CARE
- PROVIDER ENGAGEMENT, LEADERSHIP AND ADVOCACY
- ACCOUNTABILITY FOR PERFECT CARE
- PATIENT AND FAMILY CENTERED CARE

2014
- CONTINUITY
- VALUE
- ENGAGEMENT

FOUNDATIONAL ELEMENTS
- DIVERSITY & INCLUSION
- SERVICE EXCELLENCE
- ACCOUNTABILITY
- PATIENT & FAMILY CENTERED CARE
ACHIEVING THE AMBITIOUS GOALS OF THE BLUEPRINT REQUIRES ENGAGED STAFF, PATIENTS, AND FAMILIES. ENGAGEMENT REQUIRES MOTIVATED AND INVOLVED STAFF WORKING IN PARTNERSHIP WITH PATIENTS AND FAMILIES TO ACTIVATE HEALTH BEHAVIORS THAT SUPPORT HEALTH IMPROVEMENT AND SAFE CARE.
The Power of the Patient Voice
We are Here When You Need Us
Your Goals are Our Goals
We Put Our Vision to the Test
[My caregiver] was truly devoted to her job and helping me because she patiently took the time to listen to my concerns then address my needs. [She] obviously developed great listening skills which is vitally important for effective communication.

These words, shared by a Penn Home Care patient, embody Penn Medicine’s vision for the experience patients will have throughout our health system.

For many, a hospital stay is the culmination of weeks or months of appointments shrouded in feelings of uncertainty and anxiety. Penn Medicine strives to alleviate the worry and ensure a positive environment for people being treated, their families and staff, to create what a Lancaster General Health patient described as, “a very, very calming experience.”
PATIENT-CENTERED APPROACH
Key to this philosophy is the focus on a more person-centered approach—one that relies on the involvement of patients and families in the development and review of programs and services. Patients and families can offer unique perspectives and valuable feedback on the care they receive.

Four major initiatives drove continued progress to a more patient-centered strategy in 2016:

1. PATIENT AND FAMILY ADVISORY COUNCILS

2. PARTNERING IN CHERRY HILL

3. TRANSPARENCY OF PATIENT PROVIDER SATISFACTION RATINGS

4. PATIENT-CENTERED NURSE REPORTING

PATIENT AND FAMILY ADVISORY COUNCILS
Patient and family advisory councils offer an unparalleled vehicle for fostering a culture of respect and collaboration between staff and recipients of services. Councils provide a mechanism to engage advisors in safety and quality initiatives and, in doing so, improve both communication and services.

The past year saw the introduction of advisory councils at Pennsylvania Hospital (PAH) and Chester County Hospital (CCH) based on the model in place at the Hospital of the University of Pennsylvania (HUP) since 2011. These councils involve advisors in quality and change initiatives, expanding on what a former CCH patient describes as a “culture of caregiving exhibited by the wonderful staff.” Another patient at CCH wrote, “As a patient, you prepare yourself for all the possibilities that come with being a patient. The team recognized my anxiety issues and showed empathy and tact in helping me remain calm. Care is a word, but in this case it was people.”

The Wall Street Journal recognized Penn Medicine’s leadership in this area in a July 2016 story on how to get the best from nursing staff. The article highlighted advisory council co-chair Anita McGinn-Natali, whose husband has had 15 surgeries since his diagnosis with oral cancer in 2007.

Nurses taught her to care for her husband at home between procedures; he was often assigned to the same nurses, who got to know him and his preferences and needs.

The councils have driven a dramatic shift in culture. Since their inception, advisors have influenced clinical and administrative improvement projects related to patient billing systems, wayfinding, bed tower design, interdisciplinary rounds and, most recently, patient-centered nurse report.

“MY HUSBAND’S MEDICAL TEAM WAS VERY INFORMATIVE AND UNDERSTANDING, WHILE REMAINING A CALMING FORCE, AND FOR THAT I AM SO GRATEFUL.”

FAMILY MEMBER OF PATIENT, Pennsylvania Hospital
PARTNERING IN CHERRY HILL
Outpatient services also can benefit from the patient voice. Patients and families played a vital role in the development of the Penn Medicine Cherry Hill practice that opened in 2016. The site offers primary care, specialty care, radiology and lab work at one location. In order to create an environment that best meets the needs of the community, ambulatory leadership partnered with Penn Medicine Academy (PMA) on the planning and development. The comprehensive process addressed patient experience, change management, customer service, leadership, decision charting, process improvement and involved simulation and emphasized communication and teamwork.

In the months leading up to the fall opening, the team hosted and facilitated rapid process design sessions to refine the call center, centralized registration and check-out processes. Leadership training facilitated the development of a collaborative, standardized approach to managing staff and setting expectations. The resulting culture is one of teamwork and truly patient-centered care.

One visitor notes, “The staff was very courteous and comforting, asking me about my comfort level before the procedures. They were willing to answer questions and give thorough instructions calmly and without rushing through them.” Real-time surveys provided by PMA continue to offer valuable feedback that contributes to immediate changes to increase patient satisfaction.

TRANSPARENCY OF PATIENT PROVIDER SATISFACTION RATINGS
American health care consumers face difficult choices as they navigate a complex health care environment, seek doctors and weigh treatment options. Recognizing this, Penn Medicine recently launched Patient Provider Satisfaction Ratings, a pioneering initiative to allow consumers in the Philadelphia region to find ratings and reviews of providers online via PennMedicine.org.

For years, Penn Medicine has used data collected through satisfaction surveys to guide improvements in care and delivery. The surveys empower patients to provide relevant and constructive feedback on the care they receive from providers in any of Penn Medicine’s specialty and primary care practices. Internally, these data have helped measure both clinical and operational performance. By making the information available publicly, Penn Medicine aims to help consumers make thoughtful decisions. Over 1,300 provider profiles now contain patient satisfaction data, culled from over 275,000 returned surveys. Each month, the ratings are updated with new comments and scores added over a rolling 12-month period.

"EVERY DECISION WE MAKE IS GUIDED BY OUR PATIENT’S FEEDBACK. ALL MEMBERS OF OUR TEAM ARE DRIVEN BY OUR VISION TO PROVIDE AN EXCEPTIONAL EXPERIENCE IN A SAFE, CARING AND RESPECTFUL ENVIRONMENT. WE WANT PATIENTS LEAVING OUR FACILITY FEELING CONFIDENT KNOWING THAT THEIR CARE AND EXPERIENCE ARE OUR FIRST PRIORITY.

TRACEY COMMACK, Associate Executive Director, Penn Medicine Cherry Hill"
WE’VE HAD A TREMENDOUSLY POSITIVE RESPONSE FROM BOTH PATIENTS AND FAMILIES ABOUT PATIENT-CENTERED NURSE REPORT. IT REALLY LETS PATIENTS KNOW ABOUT WHAT WE’RE FOCUSING ON, IT PROVIDES THEM WITH INFORMATION THAT IS KEY FOR THEM, WE HAVE THE OPPORTUNITY TO ANSWER ANY QUESTIONS THAT THEY MIGHT HAVE ABOUT THEIR CARE AND COLLABORATE ON WHAT THE PRIORITIES ARE FOR THE DAY.

REGINA CUNNINGHAM, PHD, RN, FAAN, AOCN
Senior Vice President and Chief Nurse Executive, Hospital of the University of Pennsylvania

PATIENT-CENTERED NURSE REPORTING
A review of organizational impact, research and best practices resulted in the decision to adopt an ISHAPED model for reporting that emphasizes active exchange among the triad of the oncoming nurse, the outgoing nurse and the patient/family related to: Introductions, Story, History, Assessment, Plan, Error Prevention and Dialogue. The committee sought to highlight the enormous value patients and families place on being included as an essential part of the communication triad. The program contributed to an improvement in Penn Medicine’s “communication with nurses” score, elevating hospital scores to the 97th percentile among hospitals with 600+ beds.

Patient-centered nurse report–or bedside reporting–offers advantages for staff, patients and family members. In 2016, the Hospital of the University of Pennsylvania’s (HUP) Patient Centered Nurse Report Steering Committee engaged advisory council members, key stakeholders and subject matter experts throughout the organization to provide feedback and input into strengthening the bedside report experience. Their goals were to improve the patient experience and promote safety.

ISHAPED MODEL
• INTRODUCTIONS
• STORY
• HISTORY
• ASSESSMENT
• PLAN
• ERROR PREVENTION
• DIALOGUE

COMMUNICATION WITH NURSES SCORE IMPROVED TO THE 97TH PERCENTILE AMONG HOSPITALS WITH 600+ BEDS
WE ARE HERE WHEN YOU NEED US

The doctor is in; yet reaching the doctor right away is not always easy. Penn Medicine knows this and, in 2016, escalated efforts to help patients schedule and remember appointments, reduce wait times and communicate with physicians and care teams.

Improving access to our practices, allowing patients to see the right physician at a convenient location in a timely fashion, is one of our highest priorities.

Ronald Barg, MD, FACP, FCPP, Executive Director, Clinical Care Associates

Making an Appointment

First impressions are important. For many people, scheduling an appointment may be the first interaction with the health system so it is critical that the experience be positive. A number of primary care practices offer early morning, evening and weekend hours to accommodate patient needs. The past year saw increased use of walk-in hours and same-day appointments, which, combined, represent approximately 25 percent of Penn Medicine’s primary care visits.

In 2016, Penn Medicine transformed appointment scheduling, improving organizational efficiency while increasing patient satisfaction. New initiatives use technology to offer online scheduling and reminders.

A highlight was the introduction of patient self-scheduling through myPennMedicine. This patient portal connects patients with information from their medical record and facilitates direct communication with their care providers. This feature is now available in many Clinical Care Associates (CCA) and Clinical Practices of the University of Pennsylvania (CPUP) practices, providing convenient access to more than 750 providers. The goal is to expand to all practices in the coming year.

The positive feedback was immediate. Nearly 90 percent of users felt the feature enhanced their image of Penn Medicine and will likely use it again. Of those who have not yet tried online scheduling, 75 percent plan to do so. As one user described, “I don’t always have privacy at work to call for appointments, so being able to schedule appointments online is great for me.”

25% of primary care visits are walk-in appointments or scheduled as same-day appointments.

750 providers allow patients to self-schedule appointments with them through myPennMedicine.
At Penn Medicine, we leverage new technology to provide patients with a variety of options to access care, receive clinical information, and communicate with their care team in their preferred way, improving the quality and value we can provide to our patients.

Jake Moore, Business Process Integration Consultant

Another new online portal, DocASAP, offers similar convenience for first-time patients. Developed by Penn graduate students, this app allows computer and smart phone users to quickly search for and make appointments that best match their medical concern, insurance, schedule and location requirements. DocASAP is accessible through its own website, Penn Medicine’s website and public sites such as WebMD.

The new platforms have increased the number of new appointments scheduled by 133 percent and the number of providers available for scheduling by 42 percent. From the patient’s perspective, “access” scores jumped from the 62nd to 72nd percentile during 2016. Planning is underway to increase the number of participating providers.

Keeping an Appointment
People lead busy lives. A medical appointment, sometimes scheduled far in advance, can be easily forgotten. A missed appointment bears a financial cost and represents a failed opportunity to provide health care to someone who needs it. For these reasons, Penn Medicine looks for new ways to help patients remember appointments. Online scheduling is a first step, as data show that users are more likely to keep appointments, but reminders help too.

In the age of cell phones, text messaging is a direct and efficient way to reach people. Penn Medicine worked with Clinical Care Associates (CCA), the Clinical Practices of the University of Pennsylvania (CPUP) and Radiology to introduce one patient-friendly text messaging reminder system. Since the introduction of the new system, approximately half the patients receiving text messages have responded to confirm or cancel an appointment.

Improving the Office Visit
Access doesn’t end when a patient enters the practice. The time a person spends waiting—or not seeing—the provider affects their overall experience. Longer wait times lead to decreased satisfaction, less likelihood of recommending the practice and, perhaps even more significantly, lower patients’ confidence in the provider and the care they received.

At Penn Medicine, the wait time initiative offered an opportunity to close the gap between top-rated clinical outcomes and somewhat weaker patient satisfaction scores. Waits are sometimes unavoidable but can have a tremendous impact on the visit. Our goal is to decrease waits, but perhaps more significantly, help improve communication around delays.

Data on “moving through your visit” provided a starting point to identify practices that are leaders in this area and others that struggle. By spotting common themes among the high performers, project leaders were able to develop an online toolkit to communicate information to patients. Throughout the process, staff were encouraged to think from a patient’s perspective.

The Wait Time Toolkit was promoted through a CPUP-wide awareness campaign. The project resulted in a 10 percent increase in CPUP’s scores in the “moving through your visit” section.

10% improvement in “moving through your visits” scores
In Penn Medicine’s focus on patient-centered care, entities as well as clinical departments, develop ways to partner with patients to meet their health care needs more effectively. Strategies around maximizing patient engagement are the key to these efforts—from improving communication to understand patient goals, using the patient portal myPennMedicine more effectively and incorporating family and friends into the care process.

PATIENT-REPORTED OUTCOMES
When a patient talks about their health condition a clinician listens, a meaningful dialogue ensues. Increasingly at the national level, quality standards are incorporating patient goals and expectations for care into the list of important metrics. Despite the fact that this practice is not currently widespread, Penn has begun to incorporate this type of outcome metric into their data collection and quality improvement process.

Patient-reported outcomes, or PROs as these metrics have been termed, have been defined by the National Institutes of Health as “any self-report of the status of a patient’s health condition that comes directly from the patient, without interpretation of the patient’s response by a clinician.” This type of information can bridge the gap between complex clinical knowledge and judgement and patient reality. PROs typically evaluate symptoms, function, satisfaction, adherence, and the perceived value of treatment. This data has the potential to enable improvement by tailoring treatment plans to meet patient preferences and needs.

By using simple questions to gather information, PROs gather information on patient goals and medical history. Questions may be posed via interviews, paper forms or computer/mobile device-based surveys. PRO results can be benchmarked against national satisfaction data using the National Institute of Health’s PROMIS system.
AS WE INNOVATE WITH THESE NEW TOOLS, WE MOVE TO THE FOREFRONT OF PRECISION MEDICINE. WE ARE NOW ABLE TO PROVIDE A NEW PATIENT WITH IMPACT ON QUALITY OF LIFE FROM THOUSANDS SIMILAR PATIENTS HAVING UNDERGONE A PRIOR INTERVENTION. THE NEW PATIENT FINALLY HAS THE POWER TO ESTABLISH A GOAL FOR QUALITY IMPROVEMENT, AND WE CAN HELP THEM REALIZE THAT GOAL WITH TARGETED TREATMENTS.  

NEIL MALHOTRA MD, Assistant Professor, Department of Neurosurgery, Hospital of the University of Pennsylvania

“NEUROSURGERY SERVICE LINE

Another example of PRO utilization is from the Neuroscience service line in the Department of Neurosurgery. The system was initiated to capture PROs for patients before and after they undergo a neurosurgical procedure. The first phase was to implement a nationally validated instrument/questionnaire and capture the baseline data of the patient condition before undergoing surgery. Issues related to functional capacity, level of pain and overall quality of life were and continue to be, captured from the patient perspective.

This first phase was fully implemented and over 97 percent of patients completed their questionnaire, allowing clinical providers to document the patient perspective on their clinical condition before undergoing a surgical intervention. Baseline information is critical if one is to accurately measure and compare pre vs. post-surgical improvement.

Beta testing for phase 2, the collection of postoperative data, has recently been completed which now allows for the comparison between pre- and post-surgical outcomes. This comparison has focused on the degree to which functional outcomes improved as a result of the surgery. Involving almost 1,900 patients, the data showed that in this group of patients, the average quality adjusted life year gained improved in a statistically significant manner. This innovative and ground-breaking work has begun to achieve national recognition and will continue to be built upon ongoing findings and opportunities for improvement.

1,900 PATIENTS HAD LIFE YEAR GAIN IMPROVEMENTS

OVER 97% OF PATIENTS COMPLETED QUESTIONNAIRES

MUSCULOSKELETAL AND RHEUMATOLOGY SERVICE LINE

Penn Medicine’s Musculoskeletal and Rheumatology (MSKR) service line has initiated PRO efforts during the past year by developing and integrating PRO related questionnaires into the Penn electronic medical record. Since our patients are diverse, multiple processes were set up to collect PROs. Patients, who actively use the myPennMedicine online portal, receive an on-line questionnaire along with their appointment reminder. Other patients complete questionnaires in the practice before meeting with the doctors. Responses transfer directly to PennChart, populating the “provider notes” data field. Based on its preliminary success with Rheumatology and the Acute Pain service, this effort has been expanded from an initial pilot site to all MSKR sites across the health system.
Innovation is only successful when it works. Even the most impressive ideas can fall short when challenged by real-world scenarios. For this reason, Penn Medicine uses simulation to test new ideas internally before launching them for our patients and the community. This strategy fosters staff engagement by seeking and incorporating feedback into a finished design or process.

Simulations drove improvement in two major areas in 2016—planning for a new hospital pavilion at the Hospital of the University of Pennsylvania (HUP) and enhancements to the PennChart electronic medical record.

NEW HOSPITAL
Plans for a new pavilion at the Hospital of the University of Pennsylvania (HUP) led Penn Medicine Academy (PMA) and the PennFIRST teams to turn to simulation to obtain feedback from the people best suited to evaluate the success of a clinical space—our employees. Health system leadership invited staff to participate in simulations and tours of a 40,000 square foot foam mockup of the proposed inpatient care unit. In all, 108 employees representing 17 specialties offered insight.

“It is amazing—truly innovation. Very patient/family focused,” remarked one certified nurse assistant participant.

The PMA and PennFIRST teams collected input via observation, focus groups, debriefing, audiovisual recording and surveys. Staff feedback was instrumental in the development of a dramatically modified design. The use of a mock-up for simulated patient scenarios identified more opportunities for improvement. The knowledge gained from these test runs will continue to inform patient quality and safety efforts moving forward.

WE CONTINUE TO SEEK COLLABORATIVE AND INNOVATIVE WAYS TO USE SIMULATION TO PRODUCE QUALITY CARE, PATIENT-FOCUSED FACILITIES AND HIGH-PERFORMANCE OPERATIONS.

GRETCHEN KOLB. Director, Simulation at Penn Medicine

WE PUT OUR VISION TO THE TEST

40,000 SQ. FT. FOAM MOCKUP OF THE PROPOSED INPATIENT CARE UNIT WAS CREATED FOR STAFF SIMULATIONS

108 EMPLOYEES, 17 SPECIALTIES PARTICIPATED
PennChart provided another opportunity to introduce novel testing methods to assess how well the electronic medical record could handle different scenarios. The effort employed human factor methods, an approach that closely pairs the actions of people—in this case clinicians—with the way that information technology is designed and used.

Penn Medicine’s human factors team set out to test workflows in settings that were, as much as possible, clinically realistic. For two workflows, the team used authentic scenarios in full clinical simulation to assess how the electronic health record would work in situations where collaboration and information sharing are key.

In the first simulation, a female patient experienced an emergency pregnancy delivery followed by hemorrhaging. This simulation provided insight into the dependencies between nursing and provider (physician, advance practice nurse) documentation, while offering IT analysts a chance to observe the system in use during high-stress activity. The results highlighted the significance of the timing of nurse documentation relative to provider documentation and concluded that nurses can optimize the success of the new system by charting in real time or shortly after.

The second simulation focused on improving interdisciplinary rounds to ensure that patient needs are met in the safest and most efficient way. The rounding simulation tested an interdisciplinary approach using both mobile and stationary tools for reviewing patient data, documenting status and placing orders. The outcome led to the formation of a workgroup to develop an integrated process for handoff and rounding that incorporates PennChart and other tools such as Penn Medicine’s Carelign mobile app.

“We are developing a range of options from desktop workflow exercises to user walk-throughs to high-fidelity simulations,” said Susan Harkness Regli, Human Factors Scientist. “All of these give system builders and system users a way to experience and evaluate workflows with PennChart.” The team also looked at other workflows, such as blood transfusion and breast milk administration, using walk-throughs without full simulation. Results led to streamlining and better consistency in breast milk administration across hospitals.

The blood transfusion walk-through confirmed that regulatory requirements were being met and identified an area for correction to assure greater patient safety.

These exercises were well received: as one participant said, “I have participated in many simulations... but never with documentation involved and it is such an important addition to the drill. I hope to participate in more when the users have had some time to work in the system and really be able to incorporate it in a more meaningful way.” PennChart workflow exercises will continue after the system goes live at all hospitals to optimize performance, incorporate staff input and, most importantly, reflect Penn Medicine’s commitment to the highest quality and safety standards.

The Simulation for PennChart project was a collaboration of Human Factors, Simulation at Penn Medicine, Clinical Informatics, and the PennChart team of Penn Medicine.

**HUMAN FACTORS METHODS CONNECT THE WORKFLOW OF CLINIcIANS TO THE FUNCTIONALITY OF THE ELECTRONIC HEALTH RECORD.**

Susan Harkness Regli, PhD, Human Factors Scientist
TRANSITIONS IN CARE AND COORDINATION OF CARE HAVE BEEN IMPORTANT COMPONENTS OF THE BLUEPRINT SINCE THE BEGINNING OF THE PROCESS. KEEPING PATIENTS OUT OF THE HOSPITAL REQUIRES THE DELIVERY OF SEAMLESSLY COORDINATED CARE ACROSS ALL SETTINGS AND SERVICE LINES.
CONTINUITY

We Connect with Patients to Help Manage Health
We Work Together to Coordinate Care
We Rise to the Challenge: Complex Care for Complex Patients
Technology helps to keep us connected. Penn Medicine leverages technology to share information and make it easy. Efforts aim to get and keep patients healthy and, whenever possible, out of the hospital. 2016 saw the introduction of a mobile app for wound management and expanded use of technology to manage complex chronic illnesses at home. Another initiative relied on more traditional means of communication to reconnect lapsed diabetics with health care providers.

**WE CONNECT WITH PATIENTS TO HELP MANAGE HEALTH**

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**TABLETS CONNECT CHRONICALLY ILL TO CARE**

Penn Medicine’s Telehealth program remotely manages complex chronic illnesses in the home by connecting patients to nurses and doctors in the health system. In 2016, the PENN E-LERT® team, in cooperation with Penn Care at Home, expanded and diversified the population of patients receiving Telehealth services.

The impact was profound and far-reaching. Telehealth averaged 150 patients on service per month, double the volume from 2015. In 2016, only 10.6 percent of the 1,009 users eligible for a 30-day readmission to the health system returned. Across groups, the Telehealth rates of readmission were far below the national rates of readmission for diverse complex chronic illnesses.

Engagement is core to the approach. Telehealth fosters self-management by enabling daily monitoring of symptoms and biometric measures through the use of a tablet provided by the program. Patients demonstrate motivation and commitment with each use of the technology. Significantly, the Telehealth team provides an extra layer of clinician support during a vulnerable time—following a hospital stay or with the progression of complex chronic illness, always focusing on the patient and actively managing the risk of readmission. By involving homecare services and providers throughout the health system, the program deftly coordinates care across the continuum.
Telehealth is one component of Penn Care at Home’s approach to reduce 30-day unplanned re-hospitalizations. The multi-pronged effort also includes early social work interventions, in which patients are almost always seen within 24-48 hours of discharge. In addition, an assigned case manager proactively calls between scheduled home health visits. Patients in need of this additional outreach are identified through admissions huddles and case conferences and Project BOOST, an evidence-based practice tool. This comprehensive effort led to an 11 percent decrease in the number of readmissions in 2016 compared to the prior year.

TECHNOLOGY PROMOTES BETTER WOUND MANAGEMENT

Smart phones enable people to take and share images within seconds. Penn Care at Home and Caring Way recently collaborated with an external vendor to study the use of a mobile app in wound management.

Nurses use an iPhone app to take pictures of a patient’s wound. The picture is sent to a secure server and the computer analyzes the picture, where the wound is measured and the tissue type is analyzed. The picture is sent back to the nurse and forwarded to the provider. Providers can access pictures on the server to review a series of their patient’s pictures to assess progress over time. Thus far, nearly 700 images from 238 patients have been analyzed.

SANDRA G. JOST, RN, PhD, Chief Nursing Officer & Associate Executive Director, Penn Home Care and Hospice Services

WE ARE EXCITED ABOUT ENHANCING OUR REMOTE PRESENCE BY IDENTIFYING AND USHERING IN NEW TECHNOLOGIES THAT WILL EMPOWER HOMECARE PATIENTS TO MANAGE ASPECTS OF THEIR OWN CARE AND BUILD VIRTUAL REAL-TIME RELATIONSHIPS WITH PROVIDERS.
IN 2016, CPUP, CCA AND THE PENN ACCESS CENTER DEVELOPED A PROTOCOL FOR OUTREACH TO A HIGH RISK POPULATION OF PATIENTS WITH DIABETES.

OUTREACH CONNECTS DIABETICS TO PROVIDERS
Chronic diseases are often predictors for increased health services utilization as well as less than optimal outcomes. Proper care and regular office visits to primary care practitioners can help patients manage their conditions and prevent future complications. Proactive outreach to re-engage patients with chronic conditions such as diabetes who have not seen their provider in some time is a priority in population management for primary care practices. In 2016, the Clinical Practices of the University of Pennsylvania (CPUP) and Clinical Care Associates (CCA) of Penn Medicine collaborated with the Penn Access Center to develop a protocol for outreach to a high risk population of patients with Diabetes who meet this criterion.
PATIENTS WITH DIABETES

34% OF ELIGIBLE PATIENTS SCHEDULED AND COMPLETED APPOINTMENTS

FUTURE PLANS FOR DIABETES OUTREACH

• EXPANDING THE LAPSED CARE PROCESS TO OTHER CHRONIC DISEASES
• INCREASING COLLABORATION WITH THE PENN MEDICINE ACCESS CENTER
• IMPROVING PENNCHART PROCESSES, ENSURING THAT PATIENTS ARE CONNECTED TO THE RIGHT PCPs

TARGETED, PERSONAL OUTREACH MAY BE JUST THE ANSWER TO RECONNECT PATIENT WITH THEIR PROVIDER AND/OR PRACTICE.

SUSAN DAY, MD, MPH, Penn Care Internal Medicine Associates

Internal Medicine, Family Medicine and Clinical Care Associates (CCA) identified approximately 1,500 patients with diabetes who had not been seen for a year in one of these practices. Of those patients, almost 605 (46 percent) were ineligible because they had relocated, were in hospice or homecare, deceased, or changed care providers. Another 177 (12 percent) scheduled appointments before being contacted. Up to three outreach attempts was made to the remaining 626 eligible patients using the patient’s preferred contact method:

- myPennMedicine
- TELEPHONE
- WRITTEN COMMUNICATION

The outreach resulted in 131 (22 percent) of eligible patients scheduling and completing appointments.

Future plans include expanding the lapsed care process to other chronic diseases and increasing collaboration with the Penn Medicine Access Center for additional outreach activity. This initiative also identified opportunities for database improvements. Uniform data definitions were established in PennChart to categorize primary care providers (PCPs) appropriately, and standardized processes developed to reassign PCPs and monitor and remove inactive patients.
WE WORK TOGETHER TO COORDINATE CARE

“Having had many family-related experiences in numerous hospitals, I never experienced such coordination and communication. Through my professional experiences, I know that organizations are striving for such integrated care,” said a Chester County Hospital patient.

Penn Medicine’s responsibility to patients does not end when they walk out the door. What happens next is a product of the provider input and patient needs. The goal—which is in best interest of both patients and the health system—is to ensure safe transitions and keep patients in the appropriate setting to maximize recovery.

Successful efforts emphasize communication and rely on relationships with partner organizations. Programs at Lancaster General Health (LGH) and Chester County Hospital (CCH), along with the system-wide move to patient-center medical home, are redefining care coordination and promoting positive health outcomes.

PATIENT-CENTERED MEDICAL HOME (PCMH)

The PCMH care delivery model sets standards for the coordination of patient care through primary care providers in the ambulatory setting. One of the many hallmarks of this team-based and patient-focused model is assuring safe transitions for patients transferring from other care settings.

Lancaster General Health (LGH), the Clinical Practices of the University of Pennsylvania (CPUP) and Clinical Care Practices (CCA) have all embraced the PCMH model. All LGH Physician primary care practices have achieved the highest level of PCMH recognition from the National Committee for Quality Assurance (NCQA). Under the PCMH model, CCA increased outreach calls related to transitions of care by 31.3 percent from 2015 to 2016. Care calls completed within two days of discharge increased 3.6 percent during the same time period.

“OUR WORK ON ASSURING SAFE TRANSITIONS IS JUST ONE OF MANY AREAS OUR PRACTICES ARE FOCUSED ON. IMPLEMENTING THE PCMH MODEL OF CARE HAS ALLOWED US TO FOCUS ON WHAT IS MOST IMPORTANT FROM A PATIENT PERSPECTIVE, INCLUDING DELIVERING ENHANCED ACCESS TO TIMELY CARE, CARE THAT IS WELL-COORDINATED AND THAT ULTIMATELY LEADS TO IMPROVED HEALTH OUTCOMES.”

CHARLES ORELLANA, MD, Chief Medical Officer, Clinical Care Associates

IN 2016 UNDER THE PCMH MODEL, THERE WAS A 31.3% INCREASE IN OUTREACH CALLS RELATED TO TRANSITIONS OF CARE
APPROACH AT LANCASTER GENERAL HEALTH (LGH)
By working with primary care practices, LGH helps ensure that moderate and high-risk patients are seen within five to seven days of discharge, lowering their risk of readmission. This approach has led to a reduction in the hospital’s seven-day readmission rate.

LGH’s novel approach to caseload assignment steers the effort. Rather than supporting patients on a floor or unit, case managers see patients connected with specific primary care practices (PCPs). This structure facilitates stronger communication between case managers and PCPs concerning the needs of at-risk patients. Case managers also form relationships with medically complex patients, and are better able to help them navigate medical and non-medical factors that affect their health.

The hospital identifies patients at risk for readmission at admission using a LACE score. LACE is a validated screening tool that considers Length of stay, the nature of the Admission (via the emergency room or elective), Co-morbidities and past ER visits.

A transition of care report, prepared for each primary care practice, summarizes the practice’s patients who were discharged from the hospital within the past two weeks. Every day, nurses from the practices call people identified by the report as discharged within the past 48 hours. They use a standardized call template that encourages patients to follow up with a PCP visit within three to five days, seven days at the latest. As a result, 96 percent of high-risk patients are contacted within 48 hours and 62 percent of patients are seen at their PCP office within seven days.

APPROACH AT CHESTER COUNTY HOSPITAL (CCH)
Payers can also be effective partners. CCH’s nurse-driven effort aims to improve individual experiences moving through the healthcare continuum. They promote positive outcomes through coaching, education, and staying connected.

Initiated in January 2015, the joint program with Independence Blue Cross (IBC) identifies a Continuum Of Care Nurse (COCRN) who meets with IBC enrollees within 72 hours of admission to establish a relationship that will better facilitate outpatient interventions. Collaboration with the care team enables the COCRN to assist with coordination of care and advocate for individual concerns and needs at discharge. People who are at high risk of readmission receive post-discharge telephonic coaching and care coordination at 72 hours, seven days, 15 days and 25-30 days after discharge. Communication with post-acute facilities, homecare and medical providers helps ensure patients stay connected with their providers. This targeted outreach resulted in a 10 percent reduction in IBC readmissions during the last measurement time frame.

Data analysis also revealed opportunities in scheduling follow-up appointments for high-risk patients. CCH has reeducated nurses and standardized the process to better support this patient group. Future plans include:

- Developing programs with Clinical Care Associates (CCA) to improve communication and assure timely follow-up for high-risk patients.
- Enhancing and creating new relationships with post-acute facilities.
- Assisting in a collaborative approach with goals of care discussions and decision making.

THE ROLE OF THE CONTINUUM OF CARE NURSE AT CHESTER COUNTY HOSPITAL IS TO PROVIDE OUR PATIENTS WITH A PERSONAL CONTACT FOR ALL QUESTIONS REGARDING THEIR RECENT HOSPITALIZATION AND DISCHARGE PLAN. SINCE THE RELATIONSHIP IS ESTABLISHED AT THE HOSPITAL, PATIENTS AND FAMILIES ARE REASSURED THAT A NURSE, FAMILIAR WITH THEIR CARE, IS AVAILABLE AS THEY TRANSITION HOME OR TO ANOTHER PROVIDER.

MARY LOU LAFRENIERE, Director Quality & Patient Safety, Chester County Hospital
The Agency for Healthcare Research and Quality (AHRQ) recently reported that 10 percent of the population accounts for 64 percent of all health expenditures in the United States. Many of these individuals suffer from chronic conditions or have complex physical, behavioral and social needs that are not easily met through the current system. As a result, they often make repeated visits to the emergency department or have multiple hospitalizations.

Penn Medicine is designing innovative programs to improve the health of these patients by identifying and eliminating barriers to high-quality continuity care. Programs aim to reduce frequent Emergency Department visits or hospitalizations, by reaching patients with multiple complex conditions in the ambulatory or community setting.

Noteworthy efforts of the past year include programs such as Lancaster General Health’s (LGH) Care Connections, Penn Family Care’s Superutilizer program, the Hospital of the University of Pennsylvania’s (HUP) focus on high utilizers and targeted outreach by the Penn Center for Primary Care and Penn Presbyterian Medical Center (PPMC) to reach high-risk populations and better understand their needs.

"This Priority Access Program has been pivotal in developing and testing a structure for identifying high-risk patients, their utilization drivers and the interventions to improve the value of care."

Chyke Doubeni, MD, FRCS, MPH, Department Chair, Family Medicine & Community Health

We rise to the challenge: Complex care for complex patients

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CARE CONNECTIONS
Lancaster General Health (LGH) prevents hospitalization through its Care Connections program. Care Connections delivers integrated, coordinated care to individuals with complex health and social needs. The program provides a transitional, team-based primary care medical home for people who have been admitted to the hospital multiple times due to a combination of behavioral health issues and three or more medical challenges.

Program members develop a relationship with a specific care team, which includes patient care navigators, physicians, advanced practice providers, social workers, care management nurses, a behavioral health psychologist, a clinical pharmacist, a chaplain and a medical-legal attorney. The care navigator works with patients to develop specially tailored, patient-crafted goals that drive the work of the entire team.

Most participants are enrolled for six months, enough time to stabilize medical issues, provide guidance in how to navigate the healthcare system and help them become more engaged in their care. Integrated partnerships and affiliations with local agencies link the group to needed services, including education and workforce transformation. The program promotes individual engagement and emphasizes provider accountability.

After meeting predetermined criteria, patients graduate back to standard office care. The result is a 55 percent decrease in hospitalization and a 18 percent decrease in ED visits. Hospitalizations that occur tend to be shorter. A 72 percent decrease with an average of patient days. “Meeting other people who are in the same situation as myself has been an eye opener. I know that I am not alone. Also I’ve learned that loving myself in spite of my health issues is beneficial,” said a LGH patient.

SUPER-UTILIZERS
Another example of a program expressly designed for complex patients is the super-utilizer program overseen by Penn’s Department of Family Medicine. “Super-utilizers” are patients who rely heavily on the emergency room or hospital admissions for their health care. Penn Family Care identified people with five or more Emergency Department (ED) visits within 12 months, two within 1 week or three within 28 days. They sought to reduce ED use by this group through targeted outreach. Activities included providing patients with a dedicated phone number to call with urgent concerns and weekly phone calls to check in and schedule follow-up office visits as needed. Social service support, transportation support, chart reviews and case reviews with specialists and primary providers were also provided. The results were impressive. ED use by this population declined by approximately 45 percent initially with a sustained 30 percent reduction over 12 months. This effort was supported by Innovations Accelerator Grant awarded in October 2015.

HIGH RISK
The Penn Center for Primary Care employs an interdisciplinary care model to help high-risk patients from South and Southwest Philadelphia who are Medicaid or dual eligible and have more than two uncontrolled conditions, such as diabetes, hypertension, obesity or smoking. The program provides care coordination, medication management and helps eliminate or reduce barriers to care. Many participants have mental health diagnoses and struggle with lack of consistent housing.

FUTURE PLANS
A number of other programs to address these challenges are under development. Penn Presbyterian Medical Center (PPMC) is currently using data to identify and better understand the high users of the hospital’s general medicine services with the goal of piloting an intervention to decrease length of stay, readmissions, denied days or emergency room visits.

“This program is a win win for the patients, the team and the organization. These people who trust us with their care are in the highest of risk bands. They are struggling with health challenges, social challenges and economic challenges. Often times our team are the first to help them see that with our help they can make a real positive impact and accomplish positive goals.”

STACEY YOUCIS, Senior Vice President, Service Lines and Population Health, Lancaster General Health
Patients and families, insurers, employers, and others are placing increasing emphasis on value-based care. For Penn Medicine, this means providing high-quality and safe care, free of preventable complications, and readmissions at a lower cost. At its essence, value-based care entails providing the right care at the right time in the right place.
We Add Value by Reducing Infections

Data Drives Clinical Outcomes

Customizing Care for Patient Populations

Sharing Risk and Creating Value
Infections can result in prolonged hospital stays that delay recovery and increase cost. For the past six years, Penn Medicine has established system-wide goals for reducing hospital-acquired infections (HAI), while empowering each entity to address the issue in a relevant and meaningful way. The results incorporate newer innovations and more established practices.

Efforts focus on the most persistent challenges:

- **CLOSTRIDIUM DIFFICILE (C. DIFF)**
- **CATHETER-ASSOCIATED URINARY TRACT INFECTIONS (CAUTI)**
- **CENTRAL LINE-ASSOCIATED BLOODSTREAM INFECTIONS (CLABSI)**
- **SURGICAL SITE INFECTIONS (SSI)**

SUCCESS IN PREVENTING HAIS, AND SUSTAINING LOW INFECTION RATES AT PPMC, CAN BE ATTRIBUTED TO THE INCREDIBLE DEDICATION OF THE NURSES, INFECTION PREVENTIONISTS, AND PROVIDERS WHO HAVE DEMONSTRATED AN ONGOING, UNWAVERING COMMITMENT TO REVIEW EACH HAI AND ALWAYS ASK, HOW CAN WE DO BETTER NEXT TIME?

JUDITH O’DONNELL, MD.
Hospital Epidemiologist and Director, Infection Prevention and Control,
Penn Presbyterian Medical Center

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CLOSTRIDIUM DIFFICILE (C. DIFF)

C. diff is a bacterial infection that causes gastrointestinal symptoms. Risk of infection increases with antibiotic exposure, age, and length of hospital stay. Infection control emphasizes both timing and approach. Bleach cleaning and hand washing are stalwarts in prevention and eradication. The past year saw a 6 percent overall reduction in C. diff infection with these highlights:

- **IMPROVED CLEANING PROTOCOLS**
  All hospitals strengthened cleaning protocols to incorporate more timely and thorough use of bleach to clean rooms. Monitoring and reinforcement facilitated better adherence to hand washing guidelines. Chester County Hospital (CCH) reduced its C. diff rate by 17 percent between 2015 and 2016 by using a more effective bleach protocol. Penn Presbyterian Medical Center (PPMC)’s successful cleaning protocols resulted in a statistically significantly lower-than-expected rate.

- **STRONGER TOOLS AND NEW TECHNOLOGY**
  The Hospital of the University of Pennsylvania (HUP) updated its cleaning practice through the acquisition of the Imop, a high-tech replacement for disposable mops. A dedicated technician propels the machine, which simultaneously scrubs, disinfects, vacuums and dries the floors.

  Ultraviolet (UV) light offers an advanced alternative to traditional cleaning. PPMC has incorporated UV light in its approach to lowering C. diff for the past two years. At HUP, UV light eradicated infection in 79 percent of C. diff cases and 88 percent of MRSA cases, falling slightly short of its goal of 90 percent. CCH has implemented UV technology in procedural areas and at discharge if patients are C. diff positive.

  Since 2011, Pennsylvania Hospital (PAH) has used hydrogen peroxide foggers to disinfect rooms. PAH has the lowest rate of infection in the health system.

- **REAL TIME MONITORING**
  Most Penn hospitals use the NaviCare bed board system to tracks hospital room cleaning status and notifies nurses in real time to ensure consistent and immediate response in rooms with infection or infection risk.
CATHETER-ASSOCIATED URINARY TRACT INFECTIONS (CAUTI)
Penn Medicine also spearheads efforts to decrease CAUTI. Successful strategies engage nurses and promote value by eliminating unnecessary urine tests. Chester County Hospital (CCH) earned a 2015 Penn Medicine quality and patient safety award for its use of a nurse-driven protocol, nurse mentoring by unit leaders and vigorous monitoring to decrease CAUTI.

For the past three years, Penn Presbyterian Medical Center (PPMC) has maintained a lower-than-expected CAUTI standardized infection ratio (SIR) due to exceptional nursing engagement in the nurse-driven protocol for catheter use. When an infection occurs, a mini-root cause is performed and immediate feedback is provided to the team caring for the patient. PPMC also uses the reflex urine culture algorithm to ensure that patients with bacteria in their urine but without symptoms do not get treated with unnecessary antibiotics. The algorithm supports the use of urine culture only in patients with positive urinalysis.

At the Hospital of the University of Pennsylvania (HUP), the year-to-date CAUTI rate is 14 percent lower than the previous year, due primarily to a nurse-driven removal protocol and the reflex culture algorithm. The algorithm is now embedded as an order set in knowledge-based charting and the overall rates are about a third of those reported in the two prior fiscal years.

CENTRAL LINE-ASSOCIATED BLOOD STREAM INFECTIONS (CLABSI)
CLABSI have been a specific focus at Lancaster General Health (LGH) and Pennsylvania Hospital (PAH). In response to a slow increase in CLABSI, LGH appointed a task force that studied the issue and recommended a re-emphasis on standard practice. A core group of nurses trained in line care performed all line insertions, maintenance and removals. The procedure included a chlorhexidine bath prior to line insertion and application of a chlorhexidine dressing to the line. LGH saw a 42 percent decrease in central line infections in the six months following implementation.

PAH’s infusion support team of four certified nurses helps prevent CLABSI by overseeing central line care and maintenance. Since 2014, the team has inserted less invasive midline catheters to avoid the need for central lines. The standardized infection ratio has remained less than expected since the national benchmark was created. PAH plans to continue to use midlines and may explore the use of ultrasound technology to advance the practice.
DATA DRIVES CLINICAL OUTCOMES

Critical care is the site of some of a hospital’s most challenging battles. In 2016, Penn Medicine turned to data science and predictive analytics to help improve the quality of care and enhance value in the critical care setting.

The Penn Medicine Critical Care Committee is core to this effort. Representatives of intensive care units (ICUs) across the health system comprise this interdisciplinary task force charged with improving outcomes, appointing subcommittees to find solutions, reviewing and approving recommendations and supporting the implementation of new initiatives. Subcommittees are currently addressing: quality improvement and data analytics; mechanical ventilation and post-extubation care; PENN E-LERT (remote monitoring); pain, agitation and delirium (PAD); glycemic control; and nutrition.

Three data-driven efforts are highlighted from 2016. They include:

• AN EARLY WARNING SYSTEM TO PREVENT SEPSIS
• AN EVALUATION OF PAIN MANAGEMENT ASSESSMENT
• A NEW PROGRAM TO REDUCE DURATION OF MECHANICAL VENTILATION

EARLY WARNING SYSTEM 2.0

Despite advances in modern medicine—including effective antibiotics—sepsis remains a primary cause of preventable in-hospital death. Early diagnosis is difficult because many of its symptoms—including fever, increased heart rate and difficulty breathing—are similar to those associated with other conditions. “Sepsis deaths can be prevented if sepsis cases are detected earlier. And we’re talking hours, not days,” said Craig Umscheid, MD, Vice Chair of Quality and Safety in the Department of Medicine.

In 2012, Dr. Umscheid and his team developed Early Warning System (EWS) 1.0, a simple detection algorithm that identified patients with sepsis based on six variables. “We wanted to make sure no one was being missed,” he said. Two years later, they joined forces with Penn Medicine’s data scientists to take this surveillance one step further—to predict patients at high risk for sepsis.

EWS 2.0, released in June 2016, is more sophisticated, training on over 500 variables. The algorithm looks beyond blood pressure and heart rate to include lab results, such as measures of renal function and infection. It sends alerts to physicians up to 30 hours in advance of patients developing several of the key symptoms of sepsis.

Early results from EWS 2.0 suggest that more providers may be acting on the alerts. For example, there was a small increase in testing for sepsis in those who were triggered. It is too soon to determine if it will have an effect on the prevention of septic shock. Still, Dr. Umscheid feels it is “an important step forward to plot what’s next in this lifesaving effort. EWS 1.0 was crawling; EWS 2.0 was walking.” He adds, “The next version will continue to improve our abilities to decrease sepsis. It’s tough to run before you can even walk.”
PAIN, AGITATION & DELIRIUM
The past year saw progress in the areas of pain management, agitation and delirium. The Pain, Agitation and Delirium (PAD) Subcommittee continues its focus on decreasing unnecessary variation in the management of these conditions in the ICU which contribute to patient discomfort, longer lengths of stay and potentially poor clinical outcomes. The PAD Subcommittee conducted an evaluation of current ICU PAD assessment processes to help identify and focus its efforts. Preliminary accomplishments include:

- Consensus on the use of PAD assessment tools (Numerical Pain Score, BPS, RASS, CAM-ICU) across Penn Medicine’s ICUs;
- Increased use of PAD assessment tools and PAD online education;
- Updates to the standard guideline for use of Propofol, a medication that is used for light to moderate sedation; and,
- Development and approval of guidelines related to other existing as well as new to Penn pain relief and sedative medications.

Plans for the coming year include continued evaluation of the use of the PAD assessments and medication guidelines and the debut of a website to share PAD guidelines, education and publications.

ABC PROGRAM: A COMPUTERIZED VENTILATOR AND SEDATION WEANING PROGRAM
The Mechanical Ventilation Subcommittee collaborated with Penn Medicine’s data science team to launch the Awakening Breathing Coordination (ABC) program in the intensive care units (ICUs) of the Hospital of the University of Pennsylvania (HUP) and Penn Presbyterian Medical Center (PPMC) in the fall of 2016. The care of patients receiving mechanical ventilation is often acute and complicated. This complexity may be associated with excessive caution—or simply delays—in titrating down high levels of ventilation and sedative support despite ICU guidelines that promote this, according to Barry Fuchs, MD, Medical Director of the Medical ICU and Respiratory Care.

Dr. Fuchs and his team collaborated with data science to develop a computerized program designed to shorten the time people spend on mechanical ventilation by leveraging the electronic health record to prompt ventilator and sedation weaning at the earliest appropriate time, consistent with ICU guidelines.

The ABC system is programmed to enable electronic screening and bedside practitioner alerts. In addition, visual display of real-time information through an online application, developed by the Penn Center for Innovation and Learning, lets the care team know when patients are ready to wean from ventilator and sedative support. Accurate information is conveyed in real time around the clock. Although late notifications have changed extubation practices, 24/7 surveillance and bedside support through Penn E-LERT, a state-of-the-art remote electronic ICU system, provides an important safety net to support this program.

Results from the first ICU’s to adopt the ABC program show that it has effectively reduced the duration of mechanical ventilation, shortened ICU stay and reduced operating costs, improving the patient experience and creating capacity for more critical care patients to be transferred to Penn from outside hospitals in a more timely manner.

DISPLAYING DATA TO STAFF IN REAL TIME HAS TRANSFORMED OUR CARE FOR MECHANICALLY VENTILATED PATIENTS.

BARRY D. FUCHS, MS, MD,
Medical Director,
Medical Intensive Care, Hospital of the University of Pennsylvania
CANCER CARE, IS BY NATURE, BECOMING INCREASINGLY COMPLEX, OFTEN INVOLVING MEDICAL ONCOLOGISTS, SURGICAL ONCOLOGISTS, RADIATION ONCOLOGISTS, PATHOLOGISTS, RADIOLOGISTS AND OTHER SPECIALTIES. ONLY WITH A MULTIDISCIPLINARY APPROACH THAT COORDINATES CARE AT ALL LEVELS, WILL THE PATIENT BENEFIT FROM THE EXPERTISE PENN HAS – AND AT PENN WE PROVIDE THIS, ACROSS DEPARTMENTS AND ACROSS OUR 5 HOSPITALS.

LAWRENCE SHULMAN, MD,
Professor of Medicine,
Deputy Director for Clinical Services, Abramson Cancer Center

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CUSTOMIZING CARE FOR PATIENT POPULATIONS

Population health management is the design, delivery, coordination and payment of high-quality health care services to support better patient experience, improved health and lower health care costs for a population. At Penn Medicine, we focus on reducing variations in care for specific patient populations to improve outcomes and eliminate unnecessary costs.

By channeling resources more efficiently, Penn Medicine adds value while better serving patients and supporting staff. Efforts span from initial diagnosis to a hospital stay to post-acute care, focusing on key goals such as reducing readmissions, more accurately predicting post-acute needs and creating overall efficiencies. Disease-based service lines are integral to this process. 2016 saw noteworthy accomplishments by the neuroscience, orthopaedics, cancer and heart and vascular service lines.
INTAKE PROCESS ADDS VALUE IN ONCOLOGY

Lung cancer is complex. A complete diagnosis requires many tests often spanning multiple visits. The wait time between appointments can be inconvenient and anxiety producing. Penn Medicine’s thoracic oncology care team developed a new process to ensure that people with a preliminary diagnosis of lung cancer get in the door faster.

A disease-specific intake form now routes patients to appointments before all diagnosis and staging is completed. As a result, patients at the Hospital of the University of Pennsylvania (HUP) and Penn Presbyterian Medical Center (PPMC) see a physician within seven days. A patient coordinator and nurse navigator guide the process. All patients are risk stratified and placed on a clinical pathway.

The change has resulted in the scheduling of approximately five to eight new patients per week who might have been previously turned away. Everyone who was offered next day appointments was seen. This represents a 7 percent increase over the prior quarter. Additionally, 80 percent of patients received all imaging within 72 hours of their first visit.

CLINICAL PATHWAYS ACROSS THE CONTINUUM

One of the major ways we reduce variation is through the design and implementation of clinical pathways. Clinical pathways define the standard treatment for a specific clinical condition. The intent is to cover 70 to 80 percent of patients with the condition, allowing for the inevitable variation found in complex care settings such as Penn.

For example, Penn Medicine’s Center for Evidence-based Practice (CEP) teamed with medical residents participating in the Healthcare Leadership in Quality Track to create a pathway for the use of red blood cell (RBC) transfusions in oncology inpatients. Implementation of this pathway led to a nearly 10 percent reduction in low-value RBC transfusion, corresponding to approximately 520 fewer RBC transfusions per year and an annual estimated savings of $520,000. Avoiding unnecessary treatments also reduces the risk of treatment-related complications.

This systematic approach is generalizable to many clinical conditions and treatment protocols. Service line teams also use clinical pathways to define diagnostic and treatment expectations for conditions such as heart failure, lung cancer, joint replacement and spine surgery. Disease pathways are not limited to the inpatient setting and are used for care across the continuum of health care.

The pathway development process involves a multidisciplinary group of stakeholders who review existing pathways and guidelines. With CEP’s support, they then craft and refine a prototype. Disease teams meet to consider evidence and often use consensus to finalize the pathway. The result is marketed using physician and nurse champions, posters, other printed material and educational sessions. The Penn Pathways website and mobile application enable widespread dissemination within the system. More than 110 clinical pathways averaged nearly 1,300 views per month over the past six months.

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BLUEPRINT FOR QUALITY & PATIENT SAFETY
EARLY MOBILIZATION AND DATA DRIVE VALUE IN NEUROSCIENCE

Moving is a key step in the post-operative recovery component of the clinical pathway for neurosurgery patients. The Department of Neurosurgery uses early mobilization to improve surgical outcomes, increase patient satisfaction and reduce length of stay. Credited with consistent leadership and engagement from multiple disciplines, the early mobilization intervention has proved successful at multiple entities.

For example, as Pennsylvania Hospital (PAH) patients who underwent spine surgery achieved a 35 percent reduction in length of stay, sending the patient home earlier and producing a cost savings of $124,330 per year. The Hospital of the University of Pennsylvania (HUP) patients with subarachnoid hemorrhage (SAH) within the neuro-intensive care unit demonstrated significant improvement, including a 75 percent reduction in ventilator days, a 5.3 day decrease in length of stay, and fourfold increase in discharge to home. By helping these patients move safely sooner, nurses have changed the culture around post-operative care for the SAH population.

The success of early mobilization—in concert with a new discharge follow-up call program and efforts to reduce surgical site infections and readmissions—earned Penn Medicine entities a Blue Distinction Center for Spine Surgery. Next steps will focus on continuing to improve quality and value through the establishment of a shared dashboard, the introduction of a quality incentive plan and the development of pathways to unify care delivery across entities and settings.

Neurosurgery also employs the NQII EpiLog system to optimize quality improvement efforts, hypothesis-driven research and precision medicine. The Penn Interventional Patient Satisfaction Index survey has been built into the system to capture key satisfaction measures. Patients complete the survey pre- and post-operatively providing useful data to improve care and satisfaction.

Responding to the heightened focus on care coordination across the continuum, NQII EpiLog also incorporates a risk assessment and prediction tool (RAPT) to determine the most appropriate disposition location prior to admission for surgery. A 12-point scoring system assigns patients to three possible destinations—home, an acute rehabilitation facility or a skilled nursing facility. By relying on an existing technological tool, guided by a skilled team, this effort has brought high value for minimal cost.

NQII EPILOG

- Optimizes quality improvement efforts
- Follows hypothesis-driven research and precision medicine
- Uses RAPT to determine disposition location prior to admission

RAPT

12 Point Scoring System for Assigning Patients To

3 Possible Destinations:
- Home
- Acute Rehabilitation Facility
- Skilled Nursing Facility

CUSTOMIZING CARE FOR PATIENT POPULATIONS

Please make sure that the staff realizes the value of what they do and how well they’re doing it. Because of them, I had an incredible patient experience.

Patient, Pennsylvania Hospital
HEART AND VASCULAR AND ORTHOPAEDICS REDUCE READMISSIONS
A successful hospital stay does not end when the person leaves the building. The hours and days following release are critical. Infection, pneumonia, heart failure—all conditions that can lead to readmission.

Penn Medicine’s Heart and Vascular service line used a comprehensive approach to coordinate care for heart failure (HF) patients across the continuum and reduced readmissions. Developed by a multidisciplinary team, the critical components of the HF clinical pathway, “WIRED,” identify heart failure patients in the hospital and deploy targeted interventions based on risk.

Penn’s data-science team and a human factors scientist worked with the HF team to build a predictive algorithm to alert care teams and capture care interventions within 24 hours of admission to a post-acute care facility. A pilot test with Penn Care at Home and Pennsylvania Hospital (PAH) resulted in a 25 percent reduction in HF readmissions to PAH and a 6.8 percent reduction among high-risk HF patients across Penn Medicine.

Orthopaedics also reduced joint replacement readmissions system-wide. The hospitals reported a decline in total hip replacement/total knee replacement readmissions between FY15 and FY16. Notably, Chester County Hospital’s (CCH) FY16 rate was less than half that of FY15.

The hospitals attribute their success with orthopaedic patients to focused review and analysis of readmissions to identify and address ongoing opportunity. As an example, Penn Presbyterian Medical Center’s (PPMC) “hot joint protocol” outlines the diagnosis and treatment plan for potential infections and is a collaborative effort between the orthopaedic team, the Emergency Department and the Hospitalist service. PAH and CCH also now use this protocol.

Similar to the Neuroscience service line, the Musculoskeletal service line observed that the time prior to surgery is critical for a successful recovery and reducing readmissions. The team piloted the use of the RAPT patient questionnaire to plan for the next site of care after the hospital stay. The Risk Assessment Prediction Tool (RAPT), guides discussion of post-operative plans, including the relative merits of preparing the home versus finding a comfortable rehabilitation facility. Social workers at PPMC and PAH use the five-question tool to engage patients and families in the planning process during a pre-admission visit. The resulting discharge plan is shared with the interdisciplinary inpatient team before surgery and reviewed again later in the process, pending any events that occurred during or after surgery.

5 QUESTION TOOLS USED BY PPMC & PAH SOCIAL WORKERS, ENGAGE PATIENTS AND FAMILIES IN PRE-ADMISSION VISIT PLANNING PROCESS

A CORE TENET OF OUR SERVICE LINE DISEASE TEAM WORK IS TO USE DATA AND CREATE TRANSPARENCY WITH OUR METRICS IN ORDER TO DESIGN RELIABLE CARE PATHWAYS, ACROSS SETTINGS OF CARE TO REDUCE VARIATION AND ENSURE THE ULTIMATE PATIENT EXPERIENCE.
LU ANN BRADY, Chief Administrative Officer, Heart Vascular Service Line, University of Pennsylvania Health System
SHARING RISK AND CREATING VALUE

Rising costs are one of the biggest challenges facing health care in the United States. The impact extends to those who give and receive health care as well as those who pay for it. For this reason, Penn Medicine strategically partners with payers to share the risk and reduce costs while maintaining excellence in clinical care. Bundled payments are one such solution.

Introduced by health care reform advocates, bundled payments aim to improve quality and reduce cost through better coordination of care across care settings. Although most government and commercial bundled payment programs are retrospective in current practice, the goal is to evolve to a prospective payment for a given episode of care. An episode of care is the care delivery process for a specific condition, or care delivered within a defined period of time. Organizations who can successfully improve the quality and cost of care, share in the savings; those that exceed the pre-arranged reimbursement for the episode bear the financial responsibility for overages. Most current bundled payment arrangements have only the shared savings provision of the payment model in place.

Within Penn Medicine, 2016 saw continued participation in bundled payment programs ("bundles") at Lancaster General Health (LGH), Pennsylvania Hospital (PAH) and Penn Presbyterian Medical Center (PPMC) with preliminary success. These programs aim to add value and reduce readmission rates.

THROUGH OUR WORK WITH THE SERVICE LINES IN THE CMS BUNDLED PAYMENTS FOR CARE IMPROVEMENT (BCPI) PROGRAM, WE HAVE LEARNED A GREAT DEAL ABOUT CARING FOR POPULATIONS OF PATIENTS ACROSS THE CARE CONTINUUM. AS PENN MEDICINE BEGINS TO SHARE RISK IN ENSURING HIGH QUALITY OUTCOMES BY DELIVERING EFFICIENT, LOWER COST CARE, WE WILL CREATE BETTER VALUE FOR OUR PATIENTS AND COMMUNITIES.

DANIEL M. FEINBERG, MD,
Chief Medical Officer Professor of Clinical Neurology, Pennsylvania Hospital
ONE OF THE MOST BENEFICIAL ELEMENTS OF THE BUNDLED PAYMENT PROGRAM IS THE TRANSPARENCY WITH COST DATA PROVIDED TO OUR SURGEONS. IT’S ALLOWED OUR ADMINISTRATIVE TEAM TO WORK MORE COLLABORATIVELY ON THE MANAGEMENT OF DIRECT COST ASSOCIATED WITH JOINT REPLACEMENT AND SPINE SURGERY CASES. WE’VE GAINED CONSIDERABLE GROUND AS A TEAM IN THE MANAGEMENT OF IMPLANT COSTS AND READMISSIONS.

LANYCE ROLDAN, MSN, RN, Senior Vice President, Chief Nurse Executive, Lancaster General Health

BUNDLES AT LANCASTER GENERAL HEALTH (LGH)

Starting in 2014, LGH has looked to bundles to reduce inefficiencies and promote cost savings while maintaining or improving the quality of care. This past year marked the third year of LGH’s participation in a Center for Medicaid and Medicare Services Innovation (CMMI) bundled payment agreement for episodes of hospitalization related to spine surgery, hip/knee replacement, cardiac surgery, percutaneous coronary intervention (PCI) and pacemakers. In addition to adding value, participation has strengthened ties to the hospital’s many independent physicians.

Using bundles, LGH achieved a four percent reduction in cost per case across specialties, with the spine surgery bundle generating a 33 percent reduction in mean cost per case. Another impact was the dramatic reduction in hospital-acquired complications with orthopaedic replacement surgeries. The Hip and Knee bundle resulted in a 59 percent and 70 percent reduction, respectively. Bundled payment offers a means of motivating providers to change practice patterns, standardize services and consider more efficient strategies to delivering care, while providing a mechanism to share cost savings with providers. Clinical documentation now reflects the full disease burden of the beneficiaries, improving LGH’s risk adjustment factor. Better access to primary care means that patients are more likely to receive the appropriate level of care at the appropriate place of service, decreasing short-term hospital costs and utilization, especially in the ambulatory sensitive conditions.

In order to benefit fully from bundled payment, LGH also participates in a Medicare Shared Savings Program (MSSP). While bundles focus on creating efficiencies within an episode of hospitalization, MSSPs look beyond, or before, the hospitalization to consider steps that could have been taken in advance to prevent or minimize the episode.

BUNDLES AT PENN PRESBYTERIAN MEDICAL CENTER (PPMC) AND PENNSYLVANIA HOSPITAL (PAH)

Programs at PPMC and PAH have also produced favorable results, demonstrating the advantages of bundling. Orthopaedics at both hospitals instituted a protocol to identify post-acute care needs earlier in the patient’s operative journey. PPMC and PAH have successfully shifted the percentage of patients that are discharged home by more than 35 percent.

Agreements with CMS and Horizon Blue Cross Blue Shield bundle heart and vascular services including percutaneous coronary intervention, coronary artery bypass graft surgery at PPMC and heart failure, valve and other vascular at PAH. The CMS bundle includes the acute care episode plus 90 days post-discharge. As a result, Cardiovascular Medicine at PPMC saw a 5 percent decrease in the 30-day readmission rate for coronary artery bypass graft patients.

In the coming year, PPMC plans to introduce new bundles for percutaneous coronary intervention and clinical care pathways for coronary artery bypass graft and percutaneous coronary intervention. Penn Medicine strongly believes that bundled payment and other alternative payment models will continue to increase as a percentage of our revenue. These early experiences are an important way to learn from our experience and develop the infrastructure and processes to support this payment model going forward.

35% SHIFT IN PERCENTAGE OF PATIENTS DISCHARGED HOME

5% DECREASE IN 30-DAY READMISSION RATES FOR CORONARY ARTERY BYPASS GRAFT PATIENTS

33% DECREASE IN MEAN COST PER CASE FOR SPINE SURGERY BUNDLES AND

59% DECREASE IN HIP BUNDLES AND

70% DECREASE IN KNEE BUNDLES

4% REDUCTION IN COST PER CASE ACROSS SPECIALTIES
EXTERNAL AWARDS

AMERICAN HEART ASSOCIATION/AMERICAN STROKE ASSOCIATION
The award recognizes these Penn Medicine hospitals’ commitment and success in implementing a higher standard of stroke care by ensuring that stroke patients receive treatment according to nationally accepted standards and recommendations. The American Heart Association has provided the following awards to Penn Medicine:

CHESTER COUNTY HOSPITAL
• Get With The Guidelines - Stroke Silver Plus Quality Achievement Award with Target StrokeSM Honor Roll

LANCASTER GENERAL HEALTH
• Get With The Guidelines - Stroke Silver Plus Quality Achievement Award with Target: StrokeSM Honor Roll

HOSPITAL OF THE UNIVERSITY OF PENNSYLVANIA
• Get With The Guidelines - Stroke Gold Plus Award Gold Plus with Target: Stroke Elite Plus Honor Roll
• Get With The Guidelines - Heart Failure Gold Plus with Target: Heart Failure

PENNSYLVANIA HOSPITAL
• Get With The Guidelines - Stroke Gold Plus Award with Target: Stroke Elite Plus Honor Roll
• Get With The Guidelines - Heart Failure Bronze Award

PENN PRESBYTERIAN MEDICAL CENTER AND PENNSYLVANIA HOSPITAL
• Get With The Guidelines - Stroke Gold Plus Award with Target: Stroke Elite Plus Honor Roll

BEACON AWARD FOR EXCELLENCE
The American Association of Critical-Care Nurses awards the Beacon Award for Excellence to critical-care units nationally.

HOSPITAL OF THE UNIVERSITY OF PENNSYLVANIA
Critical Care Unit: Silver Award
Critical Intensive Care Unit: Silver Award
Rhoads 1: Gold Award
Founders 12: Silver Award
Medical Intensive Care Unit: Silver Award
Post-Anesthesia Care Unit: Silver Award
Intensive Care Nursery: Silver Award

PENNSYLVANIA HOSPITAL
Critical Care Unit: Silver Award

PENN PRESBYTERIAN MEDICAL CENTER
MICU: Gold Certification for outstanding critical care

BECKER’S HOSPITAL REVIEW
Becker’s Hospital Review provides hospital and health system news, best practices and legal guidance specifically for healthcare leaders.

HOSPITAL OF THE UNIVERSITY OF PENNSYLVANIA
WOMEN & BABIES HOSPITAL – LANCASTER GENERAL HEALTH
Penn Medicine hospitals are ranked among the top hospitals in the country by U.S. News & World Report. The Hospitals of the University of Pennsylvania-Penn Presbyterian (HUP/PPMC) are ranked among the nation’s top hospitals by U.S. News & World Report in 2016. HUP/PPMC is ranked #9 in the nation, in the publication’s prestigious annual “Honor Roll” recognition for excellence in multiple specialties.

Penn Medicine’s hospitals are all recognized as among the best regionally. In the Philadelphia metro area, HUP/PPMC is ranked #1, while Pennsylvania Hospital (PAH) is ranked #4 and Chester County Hospital (CCH) is ranked #6.

Across the state of Pennsylvania, HUP/PPMC is ranked #1 with Lancaster General Hospital (LGH) at #5, PAH at #7 and CCH at #12.

2016 RANKINGS:
- **Cancer**: HUP/PPMC:
  Highest in the Philadelphia region
- **Cardiology & Heart Surgery**:
  HUP/PPMC:
  Highest in the Philadelphia region
- **Diabetes & Endocrinology**:
  HUP/PPMC:
  Highest in the Philadelphia region
- **Ear, Nose & Throat**:
  HUP/PPMC:
  Highest in the Philadelphia region
- **Gastroenterology & GI Surgery**:
  HUP/PPMC:
  Highest in the Philadelphia region
- **LGH**:
  Among the nation’s leaders
- **Geriatrics**:
  HUP/PPMC:
  Highest in the Philadelphia region

**Nephrology**:
HUP/PPMC:
Highest in the Philadelphia region

**Neurology & Neurosurgery**:
HUP/PPMC:
Highest in the Philadelphia region

**Orthopaedics**:
HUP/PPMC:
Among the nation’s leaders

**PAH**:
Among the nation’s leaders

**Pulmonology**:
HUP/PPMC:
Highest in the Philadelphia region

**LGH**:
Among the nation’s leaders

**Urology**:
HUP/PPMC:
Highest in the Philadelphia region

Facilities designated as Blue Distinction Centers® offer “comprehensive care programs for adults, delivered by multidisciplinary teams with subspecialty training, and distinguished clinical expertise in treating these conditions.” Penn Medicine has received designation as a Blue Distinction Center® for the following services:

**CHESTER COUNTY HOSPITAL**
- Cardiac Care
- Maternity Care
- Knee and Hip Replacement

**HOSPITAL OF THE UNIVERSITY OF PENNSYLVANIA**
- Bariatric Surgery
- Complex and Rare Cancers
- Maternity Care
- Transplant
- Spine Surgery

**LANCASTER GENERAL HEALTH**
- Cardiac Care
- Maternity Care
- Hip Replacement
- Knee Replacement
- Bariatric Surgery

**PENN PRESBYTERIAN MEDICAL CENTER**
- Bariatric Surgery
- Knee and Hip Replacement

**PENNSYLVANIA HOSPITAL**
- Bariatric Surgery
- Maternity Care
- Spine Surgery
CMS
The Centers for Medicare & Medicaid Services, (CMS), is part of the Department of Health and Human Services (HHS). CMS created the Five-Star Quality Rating System to help consumers, their families, and caregivers compare nursing homes.

**CCH: 5 Star | PPMC: 4 Star | LGH: 4 Star | HUP: 3 Star | PAH: 3 Star**

**ENA LANTERN AWARD - EMERGENCY DEPARTMENT**
The Lantern Award is a recognition award given to emergency departments that exemplify exceptional practice and innovative performance in the core areas of leadership, practice, education, advocacy and research. The award is a visible symbol of an emergency department’s commitment to quality, presence of a healthy work environment, and accomplishment in incorporating evidence-based practice and innovation into emergency care.

**PENNSYLVANIA HOSPITAL**

**HAP AWARD**
Penn Medicine was named the “Top Health System” in southeastern Pennsylvania. The Hospital of the University of Pennsylvania and Penn Presbyterian Medical Center were named “Top Hospitals.” Pennsylvania hospitals continuously work to adopt and implement forward-thinking initiatives in order to provide high-quality, more affordable health care to patients. The Hospital and Healthsystem Association of Pennsylvania (HAP) recognizes these innovative efforts through its respected Achievement Awards programs.

**HOSPITAL OF THE UNIVERSITY OF PENNSYLVANIA**
**PENNSYLVANIA HOSPITAL**
**PENN PRESBYTERIAN MEDICAL CENTER**

**HEALTHGRADES**
Healthgrades provides comprehensive online information about physicians and hospitals. Penn Presbyterian Medical Center has received the following Healthgrades awards:
- America’s 100 Best Hospitals
- America’s 100 Best Cardiac Hospitals
- America’s 100 Best Hospitals for Coronary Intervention
- America’s 100 Best Hospitals for Prostate Surgery and for the 4th time
- Won Distinguished Hospital for Clinical Excellence Award
- Excellence in Women’s Health, Pulmonary Care, General Surgery, Stroke Care

**PENNSYLVANIA HOSPITAL**

**INFORMATIONWEEK’S ELITE 100**
Penn Medicine Information Services Ranks Fourth
For the second year in a row, Penn Medicine has been ranked in the top 10 in InformationWeek Elite 100, an annual list of U.S. businesses from all industries that use innovative and leading information technologies to run their business. Penn Medicine is being recognized for the implementation of Penn Signals, a real-time big data platform used to generate multiple predictive applications delivered to clinical teams.

**INTERMACS VANGUARD CENTER AWARD**
Penn Presbyterian Medical Center received the Vanguard Center Award for excellence in data quality and compliance. Intermacs – which stands for Interagency Registry for Mechanically Assisted Circulatory Support – is the United States national registry for patients who are receiving durable mechanical circulatory support device therapy to treat advanced heart failure. In order to receive the award, PPMC had to have more than 95 percent data compliance with the International Intermacs Database, and 100 percent regulatory compliance for the data over a one-year time period, with at least 20 participants enrolled.

**PENN PRESBYTERIAN MEDICAL CENTER**

**THE JOINT COMMISSION’S GOLD SEAL OF APPROVAL**
The Joint Commission, an independent, not-for-profit organization, accredits more than 20,000 health care organizations and programs in the United States. Penn Medicine has received advanced certification in:

**CHESTER COUNTY HOSPITAL**
- Advanced Primary Stroke Center

**HOSPITAL OF THE UNIVERSITY OF PENNSYLVANIA**
- Recertification as Comprehensive Stroke Center
- 2016 Ventricular Assist Device
- 2017 Heart Failure

**PENN PRESBYTERIAN MEDICAL CENTER**
- Primary Stroke Center
- Ventricular Assist Device
- Joint Replacement - Hip
- Joint Replacement - Knee

**PENNSYLVANIA HOSPITAL**
- Recertification as Primary Stroke Center

**GOOD SHEPHERD PENN PARTNERS SPECIALTY HOSPITAL AT RITTENHOUSE**

**CLINICAL PRACTICES OF THE UNIVERSITY OF PENNSYLVANIA**

**PENN HOME INFUSION THERAPY**

**LANCASTER GENERAL HOSPITAL**
- Primary Stroke Center
- Ventricular Assist Device Disease Specific Care
- Joint Replacement – Hip
- Joint Replacement – Knee
LEAPFROG
The Leapfrog Group works with its employer members to promote easy access to health care information as well as rewards for hospitals that have a proven record of high-quality care. Its Hospital Safety Score® assigns A, B, C, D, and F grades to more than 2,500 U.S. hospitals based on their ability to prevent errors, accidents, injuries, and infections. The Hospital Safety Score is calculated by top patient safety experts, peer-reviewed, and free to the public.

THE CHESTER COUNTY HOSPITAL
Spring 2016, A | Fall 2016, A

HOSPITAL OF THE UNIVERSITY OF PENNSYLVANIA
Spring 2016, B | Fall 2016, A

PENNSYLVANIA HOSPITAL
Spring 2016, C | Fall 2016, C

PENN PRESBYTERIAN MEDICAL CENTER
Spring 2016, B | Fall 2016, B

LANCASTER GENERAL HEALTH
Spring 2016, A | Fall 2016, B

MAGNET® AWARD FOR NURSING
All Penn Medicine Acute Care Facilities
The Chester County Hospital (CCH), Hospital of the University of Pennsylvania (HUP), Lancaster General Health (LGH), Penn Presbyterian Medical Center (PPMC), and Pennsylvania Hospital (PAH) have all achieved Magnet® status from the American Nurses Credentialing Center, the highest institutional honor awarded for nursing excellence—from the American Nurses Credentialing Center (ANCC).

MIDAS PLATINUM QUALITY AWARDS
2016 Midas+ Solutions recognizes excellence in clinical healthcare through its Platinum Quality Award. This award reflects achievement in quality outcomes, care efficiency, and consistent delivery of evidence-based best practices in healthcare delivery. Organizations that use either the Midas+ Comparative Performance Measurement System (CPMS) or Midas+ DataVision™ are eligible

“MOST WIRED”
Penn Medicine has been recognized by Hospitals and Health Networks with Most Wired Award. The “Most Wired” survey measures the level of information technology adoption in U.S. hospitals and health systems.

NATIONAL COMMITTEE FOR QUALITY ASSURANCE (NCQA)
National Committee for Quality Assurance (NCQA) recognizes practices as a patient-centered medical home. Making primary care more accessible, comprehensive, and coordinated; to improve patient outcomes; and to lower overall healthcare costs. There are 3 levels of NCQA recognition, ranging from Level 1 to Level 3, the highest.

CLINICAL CARE ASSOCIATES
• 20 Primary Care Practices
• 2 Adolescent and Young Adult Medicine Practices
• 2 PennCare for Kids Practices

CLINICAL PRACTICES OF THE UNIVERSITY OF PENNSYLVANIA
Department of General Internal Medicine Practices
• Penn Internal Medicine University City
• Edward S. Cooper Internal Medicine
• Penn Center for Primary Care
• Penn Medicine at Radnor - General Internal Medicine

Family Medicine Practice
• Penn Family Care (Department of Family Medicine and Community Health)

TOP DOCTORS – PHILADELPHIA MAGAZINE
Each year, Philadelphia Magazine compiles its “Top Doctors” list of the region’s best physicians. In 2016, 193 Penn physicians were included in the rankings.

UNICEF/WHO BABY FRIENDLY DESIGNATION
hospital of the university of pennsylvania
Pennsylvania hospital
women & babies hospital – Lancaster General health

VPP STAR
Occupational Safety and Health Administration (OSHA) with VPP (Voluntary Protection Programs) Star Status. This prestigious honor includes LGH and facilities and services associated with its license including BURLE, Women & Babies Hospital and 14 outpatient centers, including the Downtown and Suburban pavilions. VPP recognizes organizations and employees who have implemented effective safety and health management systems and maintain injury and illness rates below national averages.

LANCASTER GENERAL HEALTH

UGO AWARD
Community Wellness Venture for contributions to the People’s Emergency Center in West Philadelphia.

PENN PRESBYTERIAN MEDICAL CENTER
2016 QUALITY AND PATIENT SAFETY AWARDS

The Quality and Patient Safety Award has been a long-standing opportunity for teams to formally document their achievements in quality and patient safety over the last 12 months. The Award has been designed to acknowledge Penn Medicine departments who have exhibited leadership and innovation in activities that ensure high-quality clinical outcomes, patient satisfaction, patient safety and cost efficiency. Winners are listed below, and in 2016 we had a record setting 127 submissions sent from throughout the health system.

CHESTER COUNTY HOSPITAL
QUALITY AND PATIENT SAFETY WINNER:
Collaborative Bedside Rounding to Improve Patient Satisfaction
OPERATIONAL: Surgical Specimen Handling in the Operating Room: Spring FY16 Cohort 16
HONORABLE MENTION: Improvement in Time to First Pump for Breast Feeding Mothers of NICU Infants

CLINICAL CARE ASSOCIATES
QUALITY AND PATIENT SAFETY WINNER:
Implementing a Standardized Workflow to Minimize Vaccination Errors in CCA Primary Care Practices
OPERATIONAL: Wood Clinic and Hall Mercer - Integrating Behavioral Healthcare into Primary Care
HONORABLE MENTION: Improving tracking of hospitalized patients to increase rates of completed transitional care management (TCM) visits

CLINICAL PRACTICES OF THE UNIVERSITY OF PENNSYLVANIA
QUALITY AND PATIENT SAFETY WINNER:
Hepatitis C Eradication in an HIV Co-infected Population: The MacGregor ID Practice Multidisciplinary Approach
OPERATIONAL: Postoperative Telehealth Follow-up Visits after Routine, Low-Risk Surgery
HONORABLE MENTION: Improving adherence to patient INR monitoring through effective cross training and collaborative approach to patient care

PENN INSTITUTE FOR REHABILITATION MEDICINE
QUALITY AND PATIENT SAFETY WINNER:
Restraint Reduction on an Inpatient Brain Injury Rehabilitation Unit
HONORABLE MENTION: 95 percent Compliance with Weekly Team Conference Notes

SPECIALTY HOSPITAL AT RITTENHOUSE
OPERATIONAL: Interdisciplinary Catheter Associated Urinary Tract Infection Prevention Bundle
HOSPITAL OF UNIVERSITY OF PENNSYLVANIA
QUALITY AND PATIENT SAFETY WINNER: Response to CRE ‘Superbug’. Ensuring patient quality and safety throughout the scope processing continuum
OPERATIONAL: Forerunning the Future of Healthcare Facility Planning and Design: Interprofessional Simulations in a Built-to-Scale Inpatient Care Unit Mockup of the HUP New Patient Pavilion
HONORABLE MENTION: The SPIN team: Supporting Premature Nutrition in the HUP ICN
HONORABLE MENTION: Blood Delivery and Wastage in the PeriOperative Setting

PENN MEDICINE
QUALITY AND PATIENT SAFETY WINNER: Handoffs and Transitions in Critical Care (HATRICC)
OPERATIONAL: Agent
HONORABLE MENTION: CareLign: Reimagining Interdisciplinary Care Coordination
HONORABLE MENTION: myPennMedicine Patient Self-Scheduling

PENN HOME CARE AND HOSPICE SERVICES
QUALITY AND PATIENT SAFETY WINNER: Implementation of a Standardized Bowel Program to reduce Opioid Constipation in Hospice Patients
OPERATIONAL: Fall Reduction and Injury Prevention
HONORABLE MENTION: Oxygen Safety in the Homecare and Hospice Services

PENNSYLVANIA HOSPITAL
QUALITY AND PATIENT SAFETY WINNER: Improving the quality of care through a sustained, coordinated bundled approach
OPERATIONAL: PAH PennChart Safety Plan
HONORABLE MENTION: Reducing Unplanned Extubations in the Intensive Care Nursery

PENN HOME CARE AND HOSPICE SERVICES
QUALITY AND PATIENT SAFETY WINNER: Implementation of a Standardized Bowel Program to reduce Opioid Constipation in Hospice Patients
OPERATIONAL: Fall Reduction and Injury Prevention
HONORABLE MENTION: Oxygen Safety in the Homecare and Hospice Services

PENN MEDICINE
QUALITY AND PATIENT SAFETY WINNER: Handoffs and Transitions in Critical Care (HATRICC)
OPERATIONAL: Agent
HONORABLE MENTION: CareLign: Reimagining Interdisciplinary Care Coordination
HONORABLE MENTION: myPennMedicine Patient Self-Scheduling

PENN PREBESBYERIAN MEDICAL CENTER
QUALITY AND PATIENT SAFETY WINNER: Nurse-Driven Early Mobility Program for Total Knee Arthroplasty/Total Hip Arthroplasty Patients on Cupp 5
OPERATIONAL: Infectious Diseases Transitions Service (IDTS)
HONORABLE MENTION: Implementation of a Provider-in-Triage Model to Reduce Rising Left Without Being Seen Rates and Door-to-Provider Times Despite a Sustained Volume Surge
2016 HOSPITAL ACQUIRED INFECTION DAYS FREE AWARD

The Penn Medicine “Hospital Acquired Infection (HAI) Days Free Award” was created to recognize units that keep patients free from hospital-acquired infections (BSI, UTIs, VAPs). Penn Medicine established four levels of achievement: Bronze (500 days free), Silver (750 days free), Gold (1,000 days free) and Platinum (over 1,500 days free). The Health System has found the awards to be a tremendous source of pride for the units and a great motivator for continued high performance.

2016 CENTRAL LINE BLOOD STREAM INFECTIONS

**PLATINUM**

CHESTER COUNTY HOSPITAL
Progressive Care Unit

LANCASTER GENERAL HEALTH
3 West 4 Lime
4 East 5 West
4 West 7 West
4 North

**GOLD**

CHESTER COUNTY HOSPITAL
3 Lasko Tower

LANCASTER GENERAL HEALTH
6 East

PENN PRESBYTERIAN MEDICAL CENTER
ACE

**SILVER**

CHESTER COUNTY HOSPITAL
West Wing 2

LANCASTER GENERAL HEALTH
5 North
3 East Childrens Health Unit

HOSPITAL OF THE UNIVERSITY OF PENNSYLVANIA
Ravdin 9

**BRONZE**

CHESTER COUNTY HOSPITAL
West Wing 1
4 Lasko Tower
Neonatal Intensive Care Unit

LANCASTER GENERAL HEALTH
7 North
9 North

HOSPITAL OF THE UNIVERSITY OF PENNSYLVANIA
Silverstein 11

PENN PRESBYTERIAN MEDICAL CENTER
ACE
4 South

PENN PRESBYTERIAN HOSPITAL
3 Schiedt

2016 CATHETER ASSOCIATED URINARY TRACT INFECTIONS

**PLATINUM**

LANCASTER GENERAL HEALTH
4 Lime
6 East
7 North
8 North

WBH:
- Couplet Care
- Women’s Inpatient Unit
- Special Care Unit
6 North: Intermediate Intensive Care

HOSPITAL OF THE UNIVERSITY OF PENNSYLVANIA
Silverstein 8

**GOLD**

LANCASTER GENERAL HEALTH
3 East

PENN PRESBYTERIAN MEDICAL CENTER
HVICU

**SILVER**

HOSPITAL OF THE UNIVERSITY OF PENNSYLVANIA
CICU

PENN PRESBYTERIAN MEDICAL CENTER
3 Widener B
4 Widener

**BRONZE**

HOSPITAL OF THE UNIVERSITY OF PENNSYLVANIA
CCU

PENN PRESBYTERIAN MEDICAL CENTER
3 Schiedt

VENTILATOR ASSOCIATED PNEUMONIA

**PLATINUM**

CHESTER COUNTY HOSPITAL

**GOLD**

PENN PRESBYTERIAN MEDICAL CENTER

**SILVER**

HOSPITAL OF THE UNIVERSITY OF PENNSYLVANIA

**BRONZE**

PENN PRESBYTERIAN MEDICAL CENTER
3 Schiedt
2016 INNOVATION ACCELERATOR PROGRAM

Designed to support faculty and staff from across Penn Medicine in their efforts to develop, test, and implement new approaches to improve health care delivery and patient outcomes. Over six months, teams learn high impact innovation methods for refining and rapidly validating solutions, and work closely with mentors from the Center for Health Care Innovation to test and develop their concepts. At the end of each cycle, the program culminates with a pitch event, where teams present their progress for the opportunity to receive additional investment to take their ideas to scale.

WINNERS

- Reducing readmissions in cirrhotic and post liver transplant patients
- Improving nutrition monitoring for critically ill patients
- Increasing the identification and monitoring of Outpatient Parenteral Antibiotic Therapy (OPAT) patients to improve outcomes
- Reducing functional decline and loss of mobility for hospitalized patients
- Evidence based guideline for management of hyperglycemic emergencies

FINALISTS

- Integrative therapies to reduce anxiety and pain
- Predictive analytics to supplement nursing judgment of inpatient fall risk
- Reducing readmission rates at Good Shepherd Penn Partners (GSSP)
- Silent checklist to improve ICU care
- Platform for management and dissemination of basic clinical trials
- Preventing hernia-related complications after abdominal surgery
- Platform for management and dissemination of basic clinical trials
- Preventing hernia-related complications after abdominal surgery
2016 PATIENT ADVOCACY RECOGNITION AWARDS

The award recognizes staff members who have demonstrated patient advocacy and consistently partnered with the Patient & Guest Relations offices and the Office of Patient Affairs in the pursuit of patient satisfaction, patient advocacy, and furthering the Penn Patient Experience. Each year, approximately 12 Penn Medicine staff at each entity are selected to receive a Patient Advocacy award.

PENNSYLVANIA HOSPITAL

ANTHONY ACELLO, Security
ARBENA MEROLLI, MSW, Neurosurgery
CHRISTINE WHITE, DO, Hospitalist
DEBORAH J. DRAYTON, EDD, MSN, RN, CMSRN, NE-BC, Nursing
EMILY FLEMING, RN, BSN, Nursing
JEAN TOMEZSKO, Pastoral Care
JOHN WIERZBOWSKI, MSC, MPH, CHEP, Safety & Emergency Management
LAMONICA WILLIAMS, Nursing
LYNN IVES, MSN, RN-BC, Nursing
PATTY INACKER, LCSW, MBA, Behavioral Health Services
RASHEED ELLIOTT, Patient Access
RODERICK AGUARDA, Environmental Services
STEPHANIE CHANDO, MSW, LSW, MED, Social Work, Palliative Care

HOSPITAL OF THE UNIVERSITY OF PENNSYLVANIA

SINDHU SRINIVAS, MD, MSCE, Maternal Fetal Medicine
JOSEPH MOFFA, MSN, BS, RN, NE-BC, CCRN, Nursing Administration
KENNETH FLYNN, Environmental Services
SARAH ALLEN, BSN, BA, RN, Emergency Nursing

SUSAN E. KREIDER, MSIT, RN, CPC, Clinical Effectiveness and Quality Improvement
SANDRA WILLIAMS, Food Services
JULIA TCHOU, MD, PHD, Surgical Oncology
MAURICE HOWERTON, Transport Services
SHARON JORDAN, Emergency Department
CHRISTINE COLON, Radiation Oncology
CHRISTOPHER IYOOB, RDMS, Radiology
DIANE CAPPELLETTI, BSN, RNC-OB, Nursing Administration

PENN PRESBYTERIAN MEDICAL CENTER

SUSAN CITTA CHODOFF, MBA, Regulatory
LIZANN BATCHELLER, Finance
CHARLOTTE MASON, M.ED., Psychiatry
SHERDINA MCCOY-JAMES, Patient Access
SHEILA MARIE PANGALDAN, BSN, Nursing
CAROLYN PERSINGER, BS, RTR, Radiology
DENISE PINEIRO, Environmental Services
AMY SCHWARTZ, Orthopaedics
WILSON Y. SZETO, MD, Cardiothoracic Surgery
GREGORY TINO, MD, Medicine
MARGARET TOY, RN, Nursing
SHIRLENE WALTHOUR, BSN, RN, Nursing
BRIAN DAVID WORK, MD, MPH, Medicine
2016 PATIENT SAFETY INNOVATOR AWARDS

Created by the Hospital of the University of Pennsylvania (HUP) and the Clinical Practices of the Hospital of the University of Pennsylvania (CPUP) Patient Safety Steering Committee to recognize exceptional employees who identify opportunities that may increase risk to patients, staff, and visitors and implement strategies to reduce or eliminate harm. Innovator Awards are usually associated with a project.

ALEX SZYMANIK, Pharmacist
KENNETH QUEZADA, Anesthesia Technician

2016 PATIENT SAFETY ADVOCATE AWARDS

The HUP Patient Safety Advocate Awards was created by the Hospital of the University of Pennsylvania (HUP) and the Clinical Practices of the Hospital of the University of Pennsylvania (CPUP) Patient Safety Steering Committee to recognize employees for their contribution to patient safety. The HUP Patient Safety Advocates Awards are to acknowledge staff for speaking up and/or taking the extra step. They can be peer or supervisor referred.

MICHELLE CHARBONEAU, Perioperative Nursing
JENNIFER BOYLAN, Perioperative Services
STEPHANIE BOURNE-WHITMORE, Perioperative Nursing
LASHONDA DIXON, Environmental Services
LAUREL ROGERS, Pharmacy Technician
RYAN FULLER, Pharmacist