June 2016

Dear Neighbor,

Each year, as we prepare to write to you introducing the Inova Quality Matters report, we take the opportunity to reflect on the past 12 months and look ahead to the future. 2015 was a year of significant progress in many ways across Inova, including gains in quality and safety.

For the past few years, Inova has been developing a high reliability culture. The concept of a “high reliability organization” is drawn from other industries, such as manufacturing and aviation, and refers to an organization that, essentially, is able to avoid accidents. In healthcare’s complex environment, high reliability principles can be used to help hospitals achieve patient safety goals, and the Agency for Healthcare Research and Quality has led the way in adapting high reliability concepts for use in healthcare. Inova has embraced these principles as a new way of thinking about how to approach quality and safety, and particularly, how to design programs and protocols that will make a difference for patients.

This year’s report summarizes year-end data in many key quality, safety and patient experience categories. We are particularly proud of the gains we made this year in improving patient experience and reducing the number of patients who experience unplanned hospital readmissions. Inova hospitals have continued to maintain their excellent performance in a range of other categories, including patient safety indicators (PSIs), patient mortality rates and core measures.

As we look ahead to 2016, we will continue to focus on some areas, including infection prevention and fall prevention. You can read more about our ongoing efforts in the “Inova improvement focus” sections throughout the report.

As you read the examples of successful quality improvement programs implemented across Inova this year, know that programs and principles are nothing without dedicated people to implement them and keep their constant focus on maintaining quality and safety standards for every patient, every day. We are fortunate to have an exceptional group of people at Inova, and we thank them for their commitment to our patients and our community.

Sincerely yours,

Loring S. Flint, MD
Executive Vice President
Chief Medical Officer

Deneen M. Richmond
Vice President
Performance Improvement & Outcomes
# Quality Matters 2015

## Overview

<table>
<thead>
<tr>
<th>Section 1: Patient Harm Indicators</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthcare-associated infections</td>
<td>4</td>
</tr>
<tr>
<td>Patient Safety Indicators</td>
<td>10</td>
</tr>
<tr>
<td>Serious Reportable Events</td>
<td>15</td>
</tr>
<tr>
<td>Hand Hygiene Compliance</td>
<td>17</td>
</tr>
</tbody>
</table>

## Section 2: Patient Outcomes

| Patient Death Rates                | 19 |
| Unplanned Hospital Readmissions    | 21 |
| Patient Experience                 | 28 |

## Section 3: Quality in Action- IAMS Awards Winners and Merit Citations

| Clot Busters                        | 40 |
| Zeroing in on MIA                   | 41 |
| Return of the Jedi                  | 42 |
| The Golden 15                       | 43 |
| Zero Harm through VTEs              | 45 |
| Implementing on Evidenced-Based Practice... | 46 |
| Safe Passages Program               | 47 |
| Standing Down for Safety            | 48 |
| Systemwide improvement projects     | 49 |

## Section 4: Process Measures

| Overall perfect care                | 52 |
| Perfect care for surgical care      | 53 |
| Perfect care for stroke care        | 54 |
| Perfect care for VTE care           | 55 |
| Perinatal care                      | 56 |
| Children’s asthma care              | 60 |
| Vaccine preventive care             | 61 |

## Conclusion

| Conclusion                          | 63 |
Overview

On behalf of our 16,000 employees, we are proud to present Inova’s 2015 Quality Matters report. This is Inova’s fifth annual public report on key quality and safety metrics. As an organization on a high reliability journey, Inova places a high value on transparency and accountability.

Across the country, healthcare organizations are zeroing in on the issue of patient harm. The issue of patient harm and patient safety first gained national attention in 1999 after a study published by the National Institute of Medicine of the National Academies concluded that 98,000 patients die each year as a result of the preventable medical errors, adverse events, infections, and other instances in which patients is harmed – not by the illness or injury for which they are hospitalized, but for the very healthcare that is supposed to be helping them. Several subsequent studies put the number much higher. In fact, when the National Institute of Medicine reexamined the issue in a 2010 study, the researchers found that patient harm numbers had increased. Medical error is now the third leading cause of death in the United States.

National initiatives like the Center for Medicare and Medicaid Services Partnership for Patients, which aims to reduce hospital-acquired conditions by 40 percent, are helping healthcare organizations focus their energies within the complex and dynamic healthcare environment. The first step toward solving this problem is engaging all stakeholders – patients, families, hospitals, doctors, nurses, government agencies and private sector partners – in the issue. We hope that this quality report helps to continue this important national conversation.

The report’s organization reflects our focus on outcomes-related data. Section 1 of this year’s report covers patient harm categories, including infections, patient safety indicators (using the PSI-90 composite), serious reportable events and hand hygiene compliance.

Section 2 covers patient outcomes, including readmissions, patient mortality and patient experience.

In section 3, we highlight examples of improvement-focused changes Inova teams made in 2015, including quality award-winning programs as well as additional systemwide programs.

Process measures, including core measures performance for surgical care, stroke, venous thromboembolism (VTE), perinatal and children’s asthma care, are included in Section 4.
To give readers a broader context in which to understand the data’s significance, each hospital’s performance is placed alongside relevant external benchmarks, either government issued statistics or reliable comparative data from the Premier healthcare alliance, a coalition of over 1,000 hospitals across the country. Data from 2013 and 2014 is also included in this report for reference. Following each section’s data summaries are details about where Inova is focusing its improvement efforts moving forward.

A note on the charts contained in this report: Data related to Inova’s performance is presented as a series of charts. Before the first chart in each section, a double-headed arrow indicates whether higher or lower numbers indicate strong (better) performance for a given data set. Where applicable, national benchmarks are represented on the chart as a point of reference.
Section 1: Patient Harm Indicators

Healthcare-associated infections

Healthcare-associated infections (HAIs) are infections that a person contracts while receiving medical care for another condition. Nationwide, HAIs are a significant cause of patient harm and patient deaths. Low HAI numbers indicate that a hospital is doing a good job of preventing infections.

CMS is increasing the weight it gives a hospital’s HAI rate in evaluating a hospital’s quality. This shift reflects the role of HAIs in determining patient outcomes and underscores the reality that HAIs can, in most cases, be prevented.

HAIs are reported using a standardized infection ratio (SIR), which is a calculation that compares the actual number of infections in a hospital to an expected number that is based on national benchmarks and adjusted based on factors about the hospital and the patient. The CMS SIR benchmarks will be different for each infection type and are based on national performance for that type of infection. Lower SIRs represent better-than-expected infection rates. A score of zero — meaning no infections — is best. When the number of expected infections is less than one, a SIR is not calculated. In those instances, the graph will note this by indicating the SIR is “Not Reported” (NR).

In this year’s report, Inova has divided HAI data into four charts that report data for three of the most common and costly HAIs: central line-associated blood stream infections (CLABSIs), catheter-associated urinary tract infections (CAUTIs), and surgical site infections (SSI) after colon surgery and abdominal hysterectomy. The CMS goal for each infection type is included on the graph.

Notes on HAI data

In 2015, CMS expanded the types of units for which infection data must be publicly reported. Prior to 2015, only data for adult and pediatric Intensive Care Units (ICUs) were reported. Beginning in 2015, adult and pediatric medical, surgical and medical/surgical units’ HAI data were reported as well.

In comparing data points on these infection charts, it is helpful to remember that Inova Fairfax Medical Campus is the largest hospital in the Inova system and the only tertiary care center. Inova Fairfax Medical campus has higher patient volume and a greater complexity of cases, and its expected number of infections is correspondingly higher. Other Inova hospitals have low expected numbers of infections relative to Inova Fairfax Hospital. Therefore, a single infection at, for example, Inova Loudoun Hospital can result in an SIR higher than the CMS benchmark. The goal across Inova is always zero infections.
A central line is a tube that is inserted into a large vein of a patient’s neck or chest to deliver medications. Central lines can be an easy way for germs to enter the body when they are not put in correctly or maintained clean, or are left in for a long period of time. Chart 1 shows three years of data for CLABSIs at each Inova hospital as well as a system average. The CMS goal is included for reference.

CLABSIs can be largely prevented by using central lines only when they are needed, using good infection control steps to insert them, keeping them as clean as possible, and removing them as soon as they are no longer needed.

Please note: lower rates are better for healthcare-associated infections.

In 2015, one Inova hospital had zero CLABSI infections: Inova Fair Oaks Hospital. In addition to Inova Fair Oaks Hospital, one other Inova hospital met the CMS CLABSI goal: Inova Loudoun Hospital (see Chart 1). The systemwide average was 0.786 in 2015.
Chart 2 shows three years of data for CAUTIs. A common component of hospital care, a urinary catheter is a tube inserted into a patient’s urinary bladder that is left in place to collect urine. When a urinary catheter is incorrectly inserted, not maintained properly, or left in for long periods of time, it can become an easy way for germs to enter the body and cause a urinary tract infection. In those cases, the infection counts as an HAI because the catheter contributed to it.

Like CLABSIs, CAUTIs can be largely prevented by using catheters only when they are needed, using good infection control steps to insert them, keeping them as clean as possible, and removing them as soon as they are no longer needed.

Please note: lower rates are better for healthcare-associated infections.

Four out of five Inova hospitals reduced their CAUTI rates from their 2014 levels. In 2015, Inova Loudoun Hospital and Inova Mount Vernon Hospital met the CMS goal. Inova Fairfax Medical Campus and Inova Fair Oaks Hospital made large improvements in 2015.
According to the Joint Commission Center for Transforming Healthcare, SSIs are the second most common HAI, and they are especially high after colon surgeries.\(^1\) Chart 3 covers surgical site infections after colon surgery.

To support the increased focus on infection prevention in hospitals, CMS is expanding the number of HAIs for which it is publicly reporting data. Colon surgeries and abdominal hysterectomies are the most common abdominal surgeries, and the nationwide data CMS has collected suggests that there is an opportunity for hospitals to improve SSI rates in these surgeries. Future reports will continue to expand HAI types.

Please note: lower rates are better for healthcare-associated infections.

![Chart 3: Surgical Site Infection: Colon Surgeries](image)

<table>
<thead>
<tr>
<th>Hospital</th>
<th>2013 SIR</th>
<th>2014 SIR</th>
<th>2015 SIR</th>
<th>Goal: 0.751</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inova Alexandria</td>
<td>1.846</td>
<td>0.639</td>
<td>0.767</td>
<td>NR</td>
</tr>
<tr>
<td>Inova Fairfax</td>
<td>2.117</td>
<td>1.094</td>
<td>0.96</td>
<td>NR</td>
</tr>
<tr>
<td>Inova Fair Oaks</td>
<td>1.32</td>
<td>0.639</td>
<td>0.899</td>
<td>NR</td>
</tr>
<tr>
<td>Inova Loudoun</td>
<td>1.582</td>
<td>0.767</td>
<td>0.899</td>
<td>NR</td>
</tr>
<tr>
<td>Inova Mount Vernon</td>
<td>1.477</td>
<td>1.477</td>
<td>1.112</td>
<td>NR</td>
</tr>
<tr>
<td>System</td>
<td>1.007</td>
<td>1.112</td>
<td>1.112</td>
<td>NR</td>
</tr>
</tbody>
</table>

There were no Inova hospitals that had an SIR below the CMS goal for colon SSIs in 2015, although Inova Fairfax Hospital and Inova Loudoun Hospital reduced their rates compared to 2014. Inova Mount Vernon Hospital did not have an expected number of infections greater than one due to their low volume of colon surgery, so an SIR was not reported. The graph notes this by indicating “NR.”

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Another subset of SSI that CMS began publicly reporting in 2015 are SSIs following abdominal hysterectomy. Chart 4 shows each Inova facility’s performance over the past three years, with the CMS goal listed for reference.

Please note: lower rates are better for healthcare-associated infections.

<table>
<thead>
<tr>
<th>Facility</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>Goal: 0.698</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inova Alexandria</td>
<td>2.008</td>
<td>0.973</td>
<td>1.073</td>
<td>NR</td>
</tr>
<tr>
<td>Inova Fairfax</td>
<td>0.837</td>
<td>0.943</td>
<td>0.901</td>
<td>NR</td>
</tr>
<tr>
<td>Inova Fair Oaks</td>
<td>1.173</td>
<td>1.073</td>
<td>1.073</td>
<td>NR</td>
</tr>
<tr>
<td>Inova Loudoun</td>
<td>NR</td>
<td>NR</td>
<td>NR</td>
<td>NR</td>
</tr>
<tr>
<td>Inova Mount Vernon</td>
<td>NR</td>
<td>NR</td>
<td>NR</td>
<td>NR</td>
</tr>
<tr>
<td>System</td>
<td>NR</td>
<td>NR</td>
<td>NR</td>
<td>NR</td>
</tr>
</tbody>
</table>

Only Inova Fairfax Medical Campus had an expected number of infections greater than one for 2015. All other hospitals had SIRs Not Reported (NR) due to the lower volume of abdominal hysterectomy procedures.

**Inova improvement focus for healthcare-associated infections**

Infection prevention is multifactorial. In other words, there is no one "silver bullet" to prevent infection; rather, there are many contributing factors that must be taken into account. Each Inova hospital has implemented process improvements and strategies based on what works for that specific facility.
At a system level, Inova focused on "prevention bundles" in 2015. Prevention bundles are groups of evidence-based guidelines and best practices from the content experts at the Centers for Disease Control and Prevention (CDC) and other agencies. Prevention measures for each type of infection are bundled together to form a consistent, evidence-based infection prevention practice.

To implement each piece in a prevention bundle, Inova's infection prevention experts work with departments to operationalize the practice, including education, training, products and processes. Each step is analyzed and implemented in a way that sets the staff up for success given the dynamic nature of the patient care environment.

We regularly review each piece of the process to assess how we can improve the process framework so that best practices are "hardwired" as much as possible. Inova's infection prevention team also continuously monitors for compliance.
**Patient Safety Indicators**

Developed by the Agency for Healthcare Research and Quality (AHRQ),² patient safety indicators (PSI) track a hospital’s incidence of potentially preventable hospital complications and adverse events following surgeries, procedures and childbirth. Examples include post-operative sepsis, central venous catheter-related bloodstream infection and obstetric trauma.

Using PSI data, hospitals can identify potential adverse events that might need further study, decrease the incidence of adverse events and in-hospital complications and recognize and avoid potential patient harm or patient safety events.

The methodology CMS uses to track PSI data is called the PSI-90 Composite. It combines eight AHRQ PSIs into a single observed-to-expected ratio. CMS uses PSI-90 data to evaluate hospitals as part of its value-based purchasing and hospital-acquired conditions (HAC) reduction initiatives.

The PSI-90 Composite is calculated using the weighted average of the observed-to-expected ratios for the following component indicators:³

- **PSI #3 Pressure Ulcer Rate** – Pressure ulcers, commonly known as bed sores, are injuries to a patient’s skin and tissue resulting from constant pressure over an extended period of time. People who are not mobile or who have trouble changing position are at greater risk of developing pressure ulcers, including hospitalized patients and people in wheelchairs. PSI #3 measures the percentage of patients who develop severe pressure ulcers while in the hospital.

- **PSI #6 Iatrogenic Pneumothorax Rate** – An iatrogenic pneumothorax is a lung injury, which can occur as a result of certain medical procedures. It occurs when air leaks into the space between the lungs, causing chest pain, pressure and shortness of breath. PSI #6 measures the percentage of patients who experience this complication.

- **PSI #7 Central Venous Catheter-Related Blood Stream Infection Rate** – Sometimes a patient may have a catheter inserted into a vein to make it easier to administer fluids or medicine. Another name for a central venous catheter is a “central line.” If the catheter’s insertion site becomes infected, it can cause serious blood infections, called central line-associated blood stream infections, or CLABSIs. PSI #7 measures a hospital’s CLABSI rate per AHRQ specifications. Note that AHRQ’S definition differs from the

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² AHRQ is a federal agency dedicated to improving healthcare quality, safety, efficiency and effectiveness. For more information, visit ahrq.gov.
³ Full information on each of these patient safety indicators is available at www.qualitymeasures.ahrq.gov.
surveillance definition developed by the Centers for Disease Control and Prevention (CDC) that is used in the healthcare-associated infections section above.

- **PSI #8 Postoperative Hip Fracture Rate** – Patients can be susceptible to fractures after surgery. However, with proper care most fractures can be avoided. PSI #8 measures how many surgical patients break a hip after surgery.

- **PSI #12 Perioperative Pulmonary Embolism or Deep Vein Thrombosis Rate** – A pulmonary embolism (PE) is a life-threatening condition that occurs when a blood clot breaks off, travels through the blood stream and becomes lodged in the lungs. Deep vein thrombosis (DVT) is a blood clot in a deep vein. Both are serious complications that can largely be avoided through proper preventative measures.

- **PSI #13 Postoperative Sepsis Rate** – Sepsis is a life-threatening condition that arises when the body’s response to an infection injures its own tissues and organs. Postoperative sepsis is a rare complication of surgery when sepsis has occurred shortly after surgery, which affects one or more organs of the body.

- **PSI #14 Postoperative Wound Dehiscence Rate** – This PSI measures how often patients’ surgical wounds in the abdominal or pelvic area re-open after surgery. Good post-surgical care should prevent wound dehiscence.

- **PSI #15 Accidental Puncture or Laceration Rate** – This PSI measures how often patients are harmed by an accidental puncture or cut (laceration) during surgeries or procedures.
Chart 5 shows Inova’s performance on the PSI-90 Composite for 2014 and 2015, with the Premier top decile\(^4\) (i.e., top ten percent performance) presented as a green line for reference. Because CMS switched to the PSI-90 Composite in 2014, there are only two years of data available.

As Chart 5 shows, the systemwide average was better (i.e., lower) than the CMS benchmark for the past two years, with a 2015 average of 0.475.

Please note: lower numbers are better for patient safety indicators.

### Chart 5: Patient Safety Indicators- All Patients

![Chart 5: Patient Safety Indicators- All Patients](image)

Most of each hospital’s PSI rate can be attributed to a single indicator: PSI-12, postoperative pulmonary embolism or deep vein thrombosis rate. To find out more about the steps Inova is taking to reduce PSI-12 rates, see the summary on page 50.

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\(^4\) For more information on the Premier healthcare alliance, a nationwide coalition of more than 1,000 hospitals that share quality data, visit www.premierinc.com.
Chart 6 shows two years of PSI-90 data for Medicare-eligible patients, with the CMS benchmark included for reference. Inova has consistently performed well, with lower (i.e., better) than expected PSI rates and a systemwide average of 0.351 for 2015.

Please note: lower numbers are better for patient safety indicators.

**Chart 6: Patient Safety Indicators - Medicare Patients**

<table>
<thead>
<tr>
<th>Hospital</th>
<th>2014</th>
<th>2015</th>
<th>CMS Benchmark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inova Alexandria</td>
<td>0.375</td>
<td>0.464</td>
<td></td>
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<tr>
<td>Inova Fairfax</td>
<td>0.318</td>
<td>0.333</td>
<td></td>
</tr>
<tr>
<td>Inova Fair Oaks</td>
<td>0.287</td>
<td>0.399</td>
<td></td>
</tr>
<tr>
<td>Inova Loudoun</td>
<td>0.364</td>
<td>0.451</td>
<td></td>
</tr>
<tr>
<td>Inova Mount Vernon</td>
<td>0.306</td>
<td>0.519</td>
<td></td>
</tr>
<tr>
<td>Inova System</td>
<td>0.289</td>
<td>0.351</td>
<td></td>
</tr>
</tbody>
</table>

**Inova improvement focus for patient safety indicators**

The PSI-90 is a function of three factors: hospital performance in the eight PSIs, NQF weighting of each PSI and a smoothing effect for smaller hospitals. Two of the PSIs are heavily weighted (PSI-12 DVT/PE & PSI-15 Accidental Puncture/Laceration). Reducing PSI-12 rates has been a particular focus of Inova hospitals in 2015. For more information on how Inova is reducing PSI-12 rates, see page 50.

The coding department has a PSI tool that flags cases as soon as they are coded. The cases then go to each hospital’s quality department, and quality consultants work with physicians to analyze the case and determine whether it represents a documentation opportunity or a clinical care concern and address it accordingly.
Each Inova hospital has a weekly meeting involving physicians, quality, and coding. During each week’s meeting, each PSI, hospital-acquired condition, and patient death is reviewed. Reliable data helps us as we continue to focus on improving patient care and patient safety.
Serious Reportable Events

A serious reportable safety event (SRE) is an adverse event in which a patient suffers death or serious harm because of an error that is usually preventable. They include injuries that occurred during the patient’s care (not due to the patient’s disease) as well as harm that occurred because a healthcare worker did not follow standard care or institutional protocols.

Inova hospitals had a total of 40 SREs in 2015. Four of five Inova hospitals had single-digit SRE totals for the year, and three hospitals had two or fewer SREs. Chart 7 shows each hospital’s number of SREs.

Please note: lower numbers are better for serious reportable safety events.

It is important to note that an increase in SRE totals is not likely to be the result of an increase in events. Rather, because of Inova’s systemwide focus on increased reporting, increased numbers are more likely the result of better data capture.

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5 The serious reportable event measurement was developed by the National Quality Forum (NQF). The NQF’s mission is to improve healthcare quality across the country by establishing and promoting shared quality standards. For more information, visit qualityforum.org.

6 As the largest Inova hospital and the only tertiary care center, Inova Fairfax Hospital typically has a higher overall number of SREs due to the volume and complexity of cases.
Inova improvement focus for serious reportable events

**Falls**
Most of the SREs at Inova in 2015 were falls. Improvement teams made several changes to the process for assessing each patient’s risk of falling while in the hospital. After evaluating the current fall assessment tool and researching options, the systemwide improvement team selected a new fall assessment and prevention tool. The new tool was developed by Johns Hopkins Hospital, and Inova has modified it to work in Inova hospitals.

**High reliability culture**
In 2015, Inova focused on developing each hospital’s culture of reliability. To that end, Inova’s current safety initiatives have several components, including regular safety checks and a redesigned safety event workflow. Reporting great catches and serious safety events are critical to developing a high reliability organization.

Senior leadership and representatives from various departments meet every day to briefly discuss “great catches” (i.e., near misses) and safety events/concerns that have occurred in the last 24 hours and review the anticipated needs for the next 24 hours. The goal is to create an environment of open communication to mitigate risks and system failures that could potentially lead to events of patient and employee harm.

Analysis of safety events is shared with operational leadership to ensure true root causes and appropriate corrective actions are identified to prevent a similar event from recurring. The team shares lessons learned from each event’s analysis so other leaders can consider making adjustments within their own areas to prevent similar safety events.

Reporting great catches, precursor safety events and serious safety events are critical to a high reliability culture. Creating a user-friendly process to report safety events is one component of this process. Another part is streamlining the workflow and creating a notification process by which leadership is notified of high harm safety events in real time. The real time element is essential to ensure teams deploy adequate resources right away.

To see high reliability principles in action, see the Iams award-winning program “Zero Harm through VTEs” on page 46. For another example of how Inova is building a high reliability, safety-focused culture, see the Iams award-winning safety standown program on page 49.
**Hand Hygiene Compliance**

Hand hygiene is the single most important thing healthcare providers can do to prevent an infection. In 2015, Inova began a systemwide hand hygiene campaign aimed at improving hand hygiene compliance through accountability. Inova is committed to improving hand hygiene through peer-to-peer coaching as well as patient feedback.

Chart 8 shows hand hygiene compliance for 2015. These numbers will serve as a benchmark for future reports.

Please note: higher numbers are better for hand hygiene compliance.

<table>
<thead>
<tr>
<th>Location</th>
<th>% Compliance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inova Alexandria</td>
<td>58%</td>
</tr>
<tr>
<td>Inova Fairfax</td>
<td>66%</td>
</tr>
<tr>
<td>Inova Fair Oaks</td>
<td>69%</td>
</tr>
<tr>
<td>Inova Loudoun</td>
<td>72%</td>
</tr>
<tr>
<td>Inova Mount Vernon</td>
<td>74%</td>
</tr>
<tr>
<td>System</td>
<td>68%</td>
</tr>
</tbody>
</table>

Chart 8’s data is based on audits conducted by infection preventionists, consisting of observation and reporting. In compliance auditing processes, staff typically don’t know they are being observed. These percentages represent an average of performance over the entire year. More detailed month-by-month data would show a steady increase in hand hygiene compliance over the course of 2015, thanks to the improvement programs detailed below.
Inova improvement focus for hand hygiene

In addition to compliance observations and reporting, Inova uses internal checks and real-time coaching to improve compliance. Staff are trained in the World Health Organization’s “5 Moments for Hand Hygiene” protocol, which requires proper handwashing at five points: before patient contact, before an aseptic task, after body fluid exposure risk, after patient contact and after contact with patient’s surroundings. Unit leadership uses observation and coaching to help front-line staff stay aware and implement the protocol consistently.

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7 World Health Organization. “Your 5 Moments for Hand Hygiene.”
Section 2: Patient Outcomes

The concept underlying CMS and The Joint Commission’s shift from process-focused measures to outcomes-focused measures reflects changes in the way we think about quality healthcare.

There are certainly evidence-based practices that inform a process of care for many conditions. Patients coming in with a heart attack, for example, should expect to receive intervention within a certain amount of time and should expect to receive certain medications during and after hospitalization. Quality measures that focus on process – the things healthcare providers should do – are still useful, and we have reported some of them in Section 4 of this report.

Outcomes measures, on the other hand, look at what happened to a patient as a result of the care he or she received. Did the patient get better? Did the patient transition home successfully and avoid readmission to the hospital? Did the patient have a positive hospital experience?

This section offers information about Inova’s performance in these outcomes-focused measures.

Patient death rates

A hospital’s mortality (death) rate refers to risk-adjusted information about the number of people who die while in the hospital. The death rate takes into account how sick patients were when they were hospitalized, as well as a person’s age, medical condition and other risk factors that may increase the likelihood of death. Risk-adjusting the death rate is necessary to have fair and meaningful hospital comparisons, since some hospitals treat sicker patients.

Death rates provide information about important aspects of hospital care that can affect patients’ outcomes – such as prevention of complications and early recognition and response to a change in a patient’s condition. Thus, data about a hospital’s death rate can be an important indicator of that hospital’s overall quality.

Inova benchmarks its results against the performance of the Premier healthcare alliance. A score of 1.0 indicates that there is no difference between the hospital’s actual mortality rate and the expected mortality rate. A score of less than 1.0 means that there were fewer deaths than expected based on patients’ medical condition and risk profile. A score greater than 1.0 means that there were more deaths than expected based on the same risk parameters.
As Chart 9 shows, all five Inova hospitals have had lower-than-expected patient death rates for the past three years.

Please note: lower scores are better for patient death rates.
Unplanned Hospital Readmissions

A hospital’s readmission rate is the rate at which discharged patients are readmitted to the hospital. The CMS benchmark is the 30-day readmission rate, which measures how many patients experience unplanned readmissions to any hospital within 30 days of discharge from a previous hospital stay. Patients are counted as readmissions whether or not they are admitted to the same hospital from which they were discharged.

The logic behind using a hospital’s 30-day readmission rate as a quality indicator is that if a patient received high quality care while in the hospital, including an effective transition to outpatient follow-up care, that patient will be more likely to have a good outcome and avoid readmission.

When a patient has an unplanned readmission to the hospital a short time after being discharged, it can indicate a problem that a patient developed as a result of the care they received, or it can indicate that the problem for which a patient was treated was not fully resolved. It could also indicate that the patient did not have the support they needed once they left the hospital, with follow up care, medications or community resources, and thus did not transition to the outpatient setting successfully.

In other cases, the readmission is unrelated to the care the patient received during a previous hospital stay. For example, a heart failure patient who is discharged from the hospital and breaks a leg in an automobile accident two weeks later would be counted, even though the trauma is unrelated to the previous admission for heart failure.

CMS uses a risk-adjusted methodology for calculating a hospital’s 30-day readmission rate. The risk-adjusted rate takes into account additional factors that may make a given patient’s readmission more likely, including age, medical history, and the patient’s other diseases and medical conditions. Accounting for differences in patients’ risk profiles ensures that hospitals are compared with each other fairly.

Readmission data is presented as a ratio of a hospital’s observed readmission rate to its expected readmission rate (often called the observed-to-expected, or o/e, ratio), adjusted for patient risk profiles. A score of 1.0 indicates that there is no difference between the hospital’s actual 30-day readmission rate and the expected rate. A score of less than 1.0 means that there were fewer readmissions than expected based on patients’ medical conditions and risk profile. A score greater than 1.0 means that there were more readmissions than expected based on the same risk parameters.
Inova benchmarks its performance using Premier healthcare alliance data. For Charts 10 to 15, the blue dotted line indicates the performance of the top 25 percent (top quartile) of Premier hospitals. The green dotted line indicates the rate achieved by the top 10 percent (top decile).

Charts 10 to 15 show Inova’s 30-day readmissions performance for 2013 to 2015.

30-day risk-adjusted readmission rates: all inpatients, all causes

In 2015, Inova’s systemwide 30-day readmission observed-to-expected ratio for all inpatients was 0.93, indicating that the actual readmission rate was better (i.e., lower) than the expected rate. This represents a steady three-year improvement in readmission rates for Inova. All five Inova hospitals had better (i.e., lower) than expected readmission rates in 2015 (see Chart 10).

Please note: lower scores are better for 30-day readmission rates.

![Chart 10: 30-Day All-Cause Risk-Adjusted Readmissions](chart)

A readmission rate less than 1.0 means that actual readmissions are lower than expected.
Heart attack readmissions

Chart 11 shows 30-day readmissions for Medicare-eligible patients age 65 or older who were hospitalized for heart attack. In 2015, Inova’s systemwide rate was better than expected at 0.91. The system has achieved a steady three-year improvement in readmission rates. Inova Fairfax Hospital’s rate of 0.75 was among the top quartile of all Premier hospitals nationwide.
Chronic obstrucive pulmonary disease readmissions

Chronic Obstructive Pulmonary Disease, or COPD, is a term used for a group of lung diseases; among them are emphysema and chronic bronchitis. Chart 12 shows three years of 30-day readmission data for Medicare-eligible individuals age 65 or older who were admitted with COPD.

Once again, Inova’s systemwide average (0.89) was better (i.e., lower) than the corresponding expected rate in 2015, which represents three years of sustained improvement. Four out of five Inova hospitals had better-than-expected rates as well (see Chart 12).

![Chart 12: 30-Day All-Cause Risk-Adjusted Readmissions](chart)

**COPD Medicare 65+**

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Heart failure readmissions

Chart 13 summarizes three years of readmission rates for Medicare-eligible heart failure patients at each Inova hospital. In 2015, four out of five Inova hospitals reduced heart failure readmissions over 2014 levels. At 0.87, Inova’s systemwide readmission rate was better than the expected rate.
Pneumonia readmissions

Readmission rates for Medicare-eligible pneumonia patients are depicted on Chart 14. In 2015, Inova’s systemwide rate (0.87) was better than the expected rate, a steady three years of improvement. Four out of five Inova hospitals had better-than-expected (i.e., lower) readmission rates for pneumonia patients.

Chart 14: 30-Day All-Cause Risk-Adjusted Readmissions

*Pneumonia Medicare 65+*
Hip and knee joint replacement readmissions

Chart 15 shows Inova hospitals’ readmission rates for Medicare-eligible joint replacement (hip and knee) patients. Inova’s systemwide rate was 1.2 in 2015. Inova Fairfax Hospital and Inova Mount Vernon Hospital both had 2015 rates that were better than the expected rate and fell within the top 25 percent of Premier hospitals nationwide.

Inova improvement focus -- readmissions

The concept behind Inova’s readmission improvement strategies has not changed in 2015: the focus remains on ensuring the quality of discharge from the hospital and the transition to home, with particular attention to medication reconciliation. Specific steps include:

- Identifying a patient with a high readmission risk at admission, using a predictive analysis tool in EpicCare.
- Conducting an analysis and audit of each readmission that occurs
- Staffing each hospital’s emergency department with case management staff
- Focusing on medication reconciliation by collaborating with each hospital’s pharmacy department
- Including palliative care screening at admission, so that eligible patients can be seen by palliative care consultants
- Adding post-acute services education on heart failure, COPD, altered mental status and early warning signs of sepsis
Patient Experience

Quantifying patients’ satisfaction with their hospital care is no simple task. So many factors, from how doctors, nurses and staff spoke with them to whether they experienced complications can create patient perception of a hospital’s quality. Often, a single positive or negative interaction colors an entire experience.

Despite the complexities inherent in collecting experience data, Inova is committed to making each patient’s experience the best it can be. The Healthcare Consumer Assessment of Healthcare Providers and Systems (HCAHPS)\(^8\) is a CMS-mandated survey that tracks patients’ perception of their hospital experience. Using a standardized patient experience survey like HCAHPS allows Inova to compare its results directly with other hospitals.

To collect this data, each Inova hospital sent thousands of surveys to recently discharged patients: in 2015, Inova collected more than 13,000 survey responses system wide. It is important to note that even if there are multiple positive answer choices – for example, some questions ask the patient to rate on a scale that includes “never,” “sometimes,” “usually,” or “always” – only the most positive “top-box” answer counts. In this example, only a rating of “always” would count as a positive answer. In other words, if a patient reports that the hospital’s staff “usually” responded quickly to the call bell, that answer would count as a negative score.

\(^8\) HCAHPS was developed by CMS and AHRQ. Please note that these results may differ slightly from the official CMS HCAHPS results, because the case-mix adjustment that CMS applies to survey results may vary slightly from the simulated case-mix adjustment Inova has used to generate this data.
Nursing communication

The HCAHPS survey has three questions covering patients’ opinions of how well a hospital’s nurses communicated, including:

- how often nurses treated them with courtesy and respect,
- how often nurses listened carefully to them and
- how often nurses explained things in a way they could understand.

Chart 16 shows each Inova hospital’s nursing communication performance for the past three years, with the CMS national average indicated by a dotted line. All five Inova hospitals improved their rates between 2014 and 2015 or equaled 2014’s rate. Three hospitals’ 2015 rates exceeded or equaled the national average: Inova Fairfax Hospital, Inova Fair Oaks Hospital, and Inova Loudoun Hospital.

Note on patient experience charts: although patient experience data is calculated to one decimal place, the charts in this report use data labels with whole percentage values. Slight differences in bar heights represent slight differences in percentages (less than one percent).
Doctor communication

In the doctor communication category, patients were asked to rate the hospital on three aspects, including:

- how often doctors treated them with courtesy and respect,
- how often doctors listened carefully to them and
- how often doctors explained things in a way they understood.

Chart 17 provides three years of data for each Inova hospital’s doctor communication, with the CMS national average included for reference. All five Inova hospitals improved their rates between 2014 and 2015. Inova Fairfax Hospital’s 2015 rate met the national average (82 percent of patients reporting that their doctors always communicated well), with Inova Loudoun Hospital coming within one-tenth of one percentage (81.9 percent). Inova Fair Oaks Hospital’s rate (85 percent) was higher than the national average.
Responsiveness of staff

The HCAHPS survey collects data on two aspects of staff responsiveness, measuring patients’ opinion of whether:

- their call bell was always answered quickly and
- they always received help right away when they needed to use the bathroom.

Chart 18 summarizes Inova’s performance in this category over the last three years with the CMS national average included for reference. All five Inova hospitals have increased their rates for the past two years. Two hospitals, Inova Fair Oaks Hospital and Inova Loudoun Hospital, posted 2015 rates that were better than the national average, with over 70 percent of patients reporting that they always received help as soon as they wanted.
Pain management

In this HCAHPS category, patients were asked to rate their hospital’s effectiveness in managing their pain during their stay, including:

- how often their pain was well controlled and
- how often the hospital staff did everything they could to help relieve pain.

Chart 19 depicts Inova hospitals’ performance over the past three years and compares it to the CMS national average. All five Inova hospitals scored better than the national average in this category in 2015.
Communication about medications

In this category, patients were asked about how well hospital staff explained medicines to patients before administering them, including:

- how often hospital staff explained what a new medicine was for before giving it to the patient and
- how often hospital staff clearly explained possible side effects of any new medicine before giving it to the patient.

Chart 20 shows each Inova facility's performance over the last three years in this category and includes the CMS national average as a point of reference. In 2015, two Inova hospitals had rates higher than the national average, with more than two-thirds of patients reporting that staff always explained about medicines before giving it to them. Four out of five hospitals improved their rates over 2014 levels.
Hospital environment

This category assesses patients’ perception of their hospital’s environment, including:

- how often their room and bathroom were kept clean and
- how often the area around their room was kept quiet at night.

Chart 21 summarizes Inova’s performance in this HCAHPS category for three years, with the CMS benchmark included for reference. Because the two segments of this category have different national averages, 2014 and 2015 data for each segment are also included in Charts 21a and 21b.

In 2015, three hospitals exceeded the national average. Four out of five hospitals improved their rates compared to 2014 levels.

![Chart 21: Patients who reported that their room and bathroom were "always" clean and that the area around their room was "always" quiet at night](image)
Note on Chart 21a: this chart shows the question-specific national average (74 percent).

Note on Chart 21b: this chart shows the question-specific national average (62 percent).
Discharge instructions

The discharge instructions portion of the survey collects data about whether patients felt they were appropriately prepared for discharge. In contrast to the previous categories, patients are asked to answer “yes” or “no” as to:

- whether someone on their healthcare team asked whether they had the help they needed when they left the hospital and
- whether they were given written information about symptoms or problems to look for after they left the hospital.

Chart 22 provides data on Inova hospital’s performance over the past three years, benchmarked against the CMS national average. In 2015, four out of five hospitals met or exceeded the national average. All five hospitals improved their performance relative to 2014.
Care transitions

This category, which was new in 2014, asks patients to rate how well the hospital prepared them to transition home from the hospital, including:

- Whether staff took their preferences and those of their family or caregiver into account in deciding what my health care needs would be when they left,
- Whether they had a good understanding of the things they were responsible for in managing their health and
- Whether they clearly understood the purpose for taking each of their medications when they left.

Since this survey category was new in 2014, only two years of data are available. As Chart 23 shows, all five Inova hospitals had rates that were better than the national average. All hospitals matched or improved their rates between 2014 and 2015.
Overall rating

This HCAHPS category asks patients to rate the hospital overall on a scale from 0 (worst possible hospital) to 10 (best possible hospital). Chart 24 depicts what percentage of respondents selected the highest scores (9 or 10) in response to this question.

All five Inova hospitals improved their rates between 2014 and 2015. In addition, four out of five Inova Hospitals had rates that were better than the national average. This means that approximately three quarters of patients rated these four hospitals as excellent (9 or 10) overall.

Inova improvement focus for HCAHPS

Inova demonstrated significant improvement in HCAHPS scores in 2015 as compared to 2014. A continued focus on accountability encouraged teams to involve leaders in validating the service essential behaviors that have the most direct impact on how patients and their families feel about their time in an Inova hospital.
Patient experience teams continued to lead Inova staff in developing standard work for service essential behaviors. The standard work documentation and checklists created in 2015 include:

- Clinical Teams - Purposeful Rounding and Associated Competency Worksheets
- Leader Validation of Behaviors
- Leader Rounding and Associated Competency Worksheet
- Patient Experience Leader Rounding and Documentation Worksheet
- Patient Relations Grievance Management
- Environmental Services Communication and Connection

Another focus area was education, and in 2015 Inova implemented a centralized approach to patient experience education for new clinicians across the system by developing a curriculum to be included in New Nurse Orientation and the Clinical Technician Academy. The program will be expanded to incorporate an additional teamwork session for all new nurses and clinical technicians, allowing them to partner for hands-on practice/training in a separate half-day work session shortly after orientation.
Franklin P. Iams was the visionary and founder of the Fairfax Hospital Association, the founding organization of Inova Health System.

Long before Inova Health System was bricks and mortar, Iams had a dream of a healthcare system that would be responsive to the ever-changing needs of the community and provide excellent quality of care. Iams also inspired Inova’s culture of valuing employees as the System’s greatest asset and invested financial resources in improving the professional skills of all employees. He established teaching and education as integral parts of Inova’s mission.

Based upon the principles of excellence in performance and service and patient safety, the Iams Memorial Quality Leadership Awards reflect the ideals of Franklin P. Iams and the tenets of Inova Health System. Applicants for the Iams award must demonstrate a measurable improvement in clinical quality, service or patient safety.

**Clot Busters – 2015 Iams Award Winner**

**Inova System**

After surgery, hospitalized patients are at an increased risk of blood clots in the body’s deep veins (called deep vein thrombosis, or DVT). If part of a clot breaks or becomes dislodged, it can circulate through the blood stream and travel to the lungs, a potentially fatal condition called pulmonary embolism (PE). Postsurgical DVT and PE are a significant cause of poor patient outcomes, including a longer hospital stay, increased risk of complications, greater chance of readmission, and mortality.

Total knee replacement surgery accounted for most of the reported DVT/PE, so the improvement team focused their energies there. At the start of the effort (2013), AHRQ data showed a systemwide DVT/PE rate in total knee replacement patients of 5.77 (per 1,000 patients). The system’s aim was to reduce the rate to below the Premier overall top performer status benchmark, which was 4.87.

The team studied the data, matching the records of knee replacement patients who did develop DVT/PE with the records of healthy knee replacement patients who shared similarities (same procedure, same physician, same hospital, close age, and close discharge date). The team also conducted a literature review of relevant studies to find common factors that might explain the difference between the two groups of patients.
One factor stood out: only 17 percent of the patients who developed DVT/PE got out of bed and walked on the day of their surgery (called ambulation), compared to the similar healthier group at 63%. The team made day of surgery ambulation a top priority for total knee replacement patients.

Each hospital across Inova developed strategies to increase day of surgery ambulation. Some strategies were common to all hospitals, while other techniques were most helpful for individual hospitals. The improvement team shared strategies across Inova, so that all teams could adapt the most effective practices for each hospital. One big lesson was the value of collaboration and teamwork among nursing, post-anesthesia care unit (PACU) staff, and physical therapy staff to get patients up and moving as soon as possible.

The team began seeing gains quickly, and in 2015, the rate of DVT/PE in total knee replacement patients was down to 0.94, significantly better than the Premier overall top performer benchmark. Ambulation on the day of surgery is having a dramatic effect on patient outcomes and patient satisfaction across Inova. Watch a video summary of the Clot Busters project.

Zeroing in on MIA – 2015 Iams Award Winner
Inova Mount Vernon Hospital, Pharmacy Department

Administering medication – on time, and in accurate dosages – is a part of hospital care that patients may take for granted. But when you consider that there are thousands of medications available, hundreds of patients in each hospital, and different prescriptions and dosages for each patient, it’s easy to see that managing a hospital’s medication supply is a big job.

It takes a lot of logistical coordination, communication and teamwork between pharmacy and nursing staff to ensure that each patient gets the correct medication in the proper dose at the right time. For many of the most commonly prescribed medications, each unit has an automated medication dispenser stocked. However, pre-stocked medication can run low quickly.

During a 2014 employee survey, pharmacy staff at Inova Mount Vernon Hospital identified problems with missing medications as a significant source of frustration. Nursing staff also found that searching for medications prevented them from spending more time at each patient’s bedside. The pharmacy staff saw an opportunity to improve processes around medications that would alleviate both problems.
The pharmacy set an ambitious goal of reducing missing medications by 20 percent in 2015. They began the process by talking with nurses to collect anecdotal information, which they supplemented with formal data collection. Pharmacy staff learned that the automated medication dispenser was a problem for nursing staff because medications ran out fairly often, causing extra work and delays for both nurses and pharmacy staff. Nursing staff also reported that they wasted time looking in several different places for medications.

To solve the problem, the pharmacy staff studied the patterns of “out of stock” reports for various medications throughout the hospital and changed the amounts of medication in the dispensers and the frequency with which the dispensers are checked. The number of “out of stock” notifications dropped from over 20 per day to less than five per day.

The staff also conducted refresher education on each of the nursing units, to refresh nurses’ training on how to use Epic to see where the medication should be. This helps busy nurses spend less time searching the unit for medication, which means they have more time to spend at each patient’s bedside.

As a result of these changes, missing medications decreased by more than 70 percent, vastly exceeding the pharmacy department’s original goal. The department looks forward to sustaining these improvements. Watch a video summary of the Zeroing in on MIA project

**Return of the Jedi – 2015 Iams Sustainability Award Winner**

Continuation of 2013 Iams Award Winning Program, “Tame the Rapid Killer”

Inova Alexandria Hospital and Inova Mount Vernon Hospital

The sepsis improvement team at Inova Alexandria Hospital made significant gains in reducing deaths from sepsis over the course of 2013. Sepsis is a condition that is both deadly and difficult to diagnose. When the body’s immune system is being overwhelmed by an infection, sometimes the body floods the bloodstream with toxins in an effort to kill the infection. These toxins, however, damage systems throughout the body, resulting in organ failure – and, in up to half of cases, death.

Inova Alexandria Hospital and Inova Mount Vernon Hospital started their journey in 2012. They set out with a goal of reducing mortality by 15%. Both hospitals exceeded that goal, ending at 17% and 26% reductions, respectively. They won an Iams quality award in 2013 for their efforts to “Tame the Rapid Killer.”
As new initiatives throughout the hospital threatened to shift the team’s focus away from sepsis, the team maintained focus and continued diligently working on their “taming” efforts. The team was passionate about sepsis reduction, and The Joint Commission Center for Transforming Healthcare took notice. In 2014, the center chose Inova Alexandria Hospital and Inova Mount Vernon Hospital as two of five hospitals nationwide to participate in a national sepsis collaborative, working on developing ideas and solutions to decrease mortality from sepsis. The center’s aim is to spread the ideas and solutions from these five hospitals to other hospitals nationwide.

In partnership with The Joint Commission, the team was encouraged to improve mortality rates by another 20 percent. With monthly support from the center’s sepsis collaborative to keep them on track, in 2015 the team achieved even more than they thought possible. Sepsis mortality decreased further at both hospitals, yielding a total mortality decrease of 30 percent at Inova Alexandria Hospital and 36 percent at Inova Mount Vernon Hospital. This reduction significantly exceeded the goal rate of 20 percent. To put the percentages into perspective: two hundred and sixteen lives have been saved through the team’s efforts.

In 2015, CMS introduced sepsis as a required core measure. Having focused on reducing sepsis mortality since late 2012, Inova hospitals are well ahead of CMS requirements.

Watch a video summary of the Return of the Jedi project.

“The Golden 15” – Iams Award Winner
Inova Mount Vernon Hospital - Pharmacy Department

How important is time during a stroke? Every minute that passes kills 1.9 million brain cells in the average stroke patient. Getting treatment right away makes a huge difference for stroke victims – it’s the difference between life and death in some cases. In other cases, a few minutes makes the difference between permanent disability and a good quality of life after rehabilitation. “The Golden Hour” is a phrase used to denote the amount of time a hospital team should take to administer treatment for stroke, particularly the clot-busting drug tPA. If tPA is administered in time, the stroke’s severity can be reduced.

Once the patient gets to the hospital, a lot of things have to happen before the patient can get tPA. For example, the absence of bleeding must be confirmed using an MRI or CT scan. The patient must also be screened to determine whether tPA is a viable option for that patient.

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Inova Mount Vernon Hospital’s pharmacy department, which is responsible for mixing the tPA and bringing it to the bedside, wanted to reduce the amount of time that elapsed between a physician ordering tPA for a stroke patient and the patient receiving the medication. When the pharmacy team studied recent cases, they discovered that the average order-to-infusion time was 20 minutes. This exceeded the guideline of 15 minutes set by the American Heart Association/American Stroke Association. The pharmacy team was determined to find ways to deliver the tPA more efficiently – within what they came to call “The Golden 15.”

Within those 15 minutes, a physician has to submit the order for tPA, which is then verified by the pharmacist. The pharmacy technician prepares the medication, and it is double checked by the pharmacist before the pharmacy technician delivers the medication to the emergency department. The final step is that the nurse needs to administer the tPA to the patient.

To figure out where and how the department could shave minutes off the process, the pharmacy collected data by implementing a tracking tool that recorded the time at several stages in the process.

One area where delays sometimes occurred was between the emergency department physician sending in the order and the pharmacist seeing it. If the pharmacist is not sitting in front of the computer when the order comes in, minutes may pass before the order is acted upon. The team changed the communication protocols so that the emergency department calls the pharmacy before the order is placed, notifying the pharmacy that a patient is in the emergency department who is a likely candidate for tPA. The pharmacy staff begins preparing the medication right away – often before the order comes through – so that it is ready if and when the order is given.

The strong communication between the emergency department and the pharmacy department goes both ways. If the expected order does not come through within a few minutes, the pharmacy calls the emergency department to ask if anything has changed. If no order comes within 30 minutes, the pharmacy calls again to close the loop.

The pharmacy was able to cut time a bit further by creating a tPA kit with all of the necessary tools and supplies in one place. Rather than the pharmacy technician needing to go to three different rooms to get the necessary materials, everything is now in one place, and the pharmacy technician can start preparing the medication right away.

The team also discovered a pause in the process after the tPA was delivered to the emergency department. Nursing staff in the emergency department had been seeking final physician confirmation before administering the drug. The team encouraged the nurses to feel
empowered giving the patient the drug as soon as the pharmacy technician brought it, without waiting for further confirmation.

The average time that elapsed between tPA order and tPA infusion improved dramatically as a result of all of these changes. In 2015, the time dropped to 12 minutes, which means that patients were getting tPA 40 percent faster as compared to 2014. Watch a video summary of the Golden 15 project

Zero Harm through VTEs – 2015 Iams Award Winner
Inova Alexandria Hospital

Reducing postoperative venous thromboembolisms (VTEs) has been a focus of efforts across Inova for the past three years. Inova Alexandria Hospital’s journey to improve VTE rates in postoperative total knee replacement patients was particularly dramatic.

In 2013, the hospital’s VTE rate was 15 per 1,000 patients, which was higher than the Quest benchmark (5.67 per 1,000 patients). The hospital organized a multidisciplinary joint replacement clinical effectiveness team composed of nurses and physicians as well as representatives from physical therapy, pharmacy, nutrition, case management and quality.

The hospital’s initial goal was to bring VTEs down to the benchmark level. The team made improvements during the first year, but the rate decreased only slightly.

Midway through 2014, Inova Alexandria Hospital started its journey to become a high-reliability organization. The team looked at the problem through the lens of high reliability principles by focusing on the problem, seeking research and best practices, and examining the data. Were all of the recommended elements of reducing postoperative VTEs being followed each and every time?

As it turned out, the key to reducing postoperative VTEs at Inova Alexandria Hospital was not in adding new protocols. Rather, the key was to make sure existing protocols were followed every time. As all protocols (such as ambulation day of surgery, early anticoagulation and mechanical prophylaxis) were followed consistently and purposefully by everyone involved in patient care, significant improvement followed. During the process, the team used cycles of improvement and introduced creative solutions to implement and sustain the consistent use of correct protocols.
The results speak for themselves. For all of 2015, Inova Alexandria Hospital had a record low of zero VTEs among postoperative total joint replacement patients. This makes IAH a top performer in the category. Watch a video summary of the Zero Harm Through VTEs project.

Implementing an Evidence-Based Practice Approach to Improve Perception of Nurse-Patient Communication at the Bedside – 2015 Iams Merit Citation
Inova Alexandria Hospital – Medical Oncology Unit

Anyone who has spent time in a hospital knows how important nurses are to patient care. The relationship between nurses and patients helps to define a patient’s hospital experience. Recent studies have connected patient perception of nursing communication to other patient experience metrics, including pain management, staff responsiveness, communication about medications and overall hospital quality. Positive patient outcomes are also correlated with nursing communication.

At Inova Alexandria Hospital, an improvement team made up of nurses and clinical technicians wanted to improve patients’ hospital experience by improving nurse-patient communication, as measured by HCAHPS. Rather than guessing at what might help, the team chose to use evidence-based practice model. After reviewing relevant literature, the team zeroed in on a simple idea: sitting at the bedside.

The team put together evidence-based recommendations that asked nurses and clinical technicians on the adult medical oncology unit to sit at each patient’s bedside at least once per shift as well as during admission and discharge. In addition, nurses and clinical technicians were encouraged to use active listening techniques, including paying attention to body language and eye contact.

After implementing the new protocol, the team conducted a staff survey. Most staff felt comfortable sitting at the bedside, but the survey identified some environmental barriers, such as lack of available chairs in the room or difficulty sitting with patients who are in isolation for infection prevention. Nurses and clinical technicians both reported that it was easier to make a personal connection with patients and that patients appreciated the perceived extra attention. The program allowed staff to work on patient interaction skills separately from direct patient care-related skills.

The impact was dramatic. Patient experience rating of nursing communication jumped from 58 percent immediately preceding the intervention to 93 percent immediately after the intervention, and scores stayed in the high 80 to low 90 percent range for the rest of the study.
period. Even more exciting, scores in related areas – communication about medications, staff responsiveness, pain management, and overall rating – all improved as well. Taking the time to sit and connect with each patient translated to a more positive experience and better outcomes.

Safe Passages Program – 2015 Iams Merit Citation
Inova Fairfax Medical Campus, Department of Obstetrics and Gynecology

During childbirth, minor vaginal tears are a fairly common occurrence. However, when tears (called perineal lacerations) are severe, and particularly when those tears involve the anal sphincter, up to half of patients will suffer long-term consequences, including fecal incontinence. Perineal lacerations are challenging to avoid because they can be caused by a host of factors.

The department of obstetrics and gynecology at Inova Fairfax Medical Campus wanted to reduce the occurrence of perineal lacerations. Department leaders identified a method called “Safe Passages,” which was developed by M. Bardett Fausett, MD. The team set about adapting the method for Inova.

At the end of 2014, the department invited Dr. Fausett to present the safe passages program at a department-wide grand rounds. He also conducted an exercise at the hospital’s OB/GYN simulation lab. The next step was to train individual labor, delivery and recovery nursing staff and OB physicians on the safe passages program. The team combined safe passages simulation training with postpartum hemorrhage training, and over 300 participants completed the simulation training.

In addition to being the program name, “Safe Passages” is an acronym for the steps necessary to reduce the risk of perineal lacerations. Some components apply to the physician delivering the newborn, such as guidance for how to control delivery of the head and how to angle an episiotomy, if one becomes necessary. Other steps apply to nurses, such as positioning the mother’s body and legs differently during crowning and applying warm compresses to the perineum during labor.

The team is proud of the multidisciplinary approach Safe Passages takes, involving all team members and using multiple strategies. Communication in the delivery room is key, and the culture has shifted toward teamwork as a result.
Simulation training occurred throughout 2015, and perineal lacerations (as measured by the relevant PSIs) have decreased steadily. As a result of its success, Inova’s Safe Passages program will be expanding from Inova Fairfax Medical Campus to other Inova hospitals. The program is also being introduced to patients during prenatal classes and hospital visits, so that patients can understand the program’s benefits and help to reduce perineal lacerations even further.

**Standing Down for Safety – 2015 Iams merit citation**
**Inova Fair Oaks Hospital**

In 2014 and 2015, Inova Fair Oaks Hospital demonstrated its commitment to high reliability culture and patient safety by doing something hospitals rarely, if ever, do: stopping all work in the operating rooms (OR) for the purpose of team-wide safety training. The idea came out of an examination of other high reliability industries. From manufacturing to aviation, it’s necessary from time to time to stop work (halt the assembly line, ground the planes) to address safety.

The hospital had a series of adverse events occur in the OR over the past twelve months, and while patient harm was minimal, they required a closer look at the culture of safety in the operating room. The team conducted a root cause analysis and found that team members did not always feel comfortable speaking up and that a critical safety component – the surgical pause – was not consistently observed. Hospital leaders planned the surgical stand-down for safety to begin the process of changing culture and improving teamwork in the operating room.

All staff from perioperative services came to the Safety Stand Down, to talk about high reliability, teamwork, communication and stopping the line. The staff heard from an airline captain on high reliability and the importance of speaking up in the face of uncertainty. Perioperative staff, from surgeons and anesthesiologists to nurses and technicians, renewed a commitment to the OR’s safety culture, including safety practices as well as communication techniques.

The team emphasized two strategies in particular. First, the team began teaching the TeamSTEPPS tools, which provided skills related to situation monitoring and mutual support. An important part of this was the “stop the line” tool that clarified behavioral expectations and provided a framework for any team member to speak up in the face of uncertainty. Second, the team implemented a staff-driven surgical pause tool. During the surgical pause before each procedure, each team member must stop work and give full attention to the team.

Everyone at Inova Fair Oaks Hospital is proud that the OR has had no serious safety events since August, 2014. The team celebrates the great catches that have occurred because a team
member stopped the line, and surgical pause compliance increased from 67 percent to over 95 percent. The Safety Stand Down was so successful, and so well received, that the hospital has now made it an annual event to reinforce and strengthen the OR’s safety culture.

Systemwide improvement projects

*PSI-12*

In 2015, Inova focused on PSI-12 with particular energy, as PSI-12 represented the majority of the PSIs that occurred at Inova. Many hospitals struggle to minimize venous thromboembolism (VTE) rates, which is one reason why the PSI-90 composite weights it so heavily.

Inova’s PSI-12 reduction strategy revolves around assessing individualized patient risk, as every patient undergoing the same surgical procedure does not have the same risk for venous thromboembolism. The PSI reduction team developed individualized patient risk assessment to enhance the understanding of both patients and provider staff about the patient’s unique risk for venous thromboembolism, to help them in developing risk-based treatment plans for each patient.

The team found that decreased mobilization as well poor sequential compression device (SCD) compliance contributed to increased PSI 12 rates.

The team used evidence-based guidelines to create and embed risk-based order sets and interventions for VTE prophylaxis. After studying the options, Caprini risk assessment was selected as the appropriate risk assessment tool for surgical patients. It was built into the workflow for pre-surgical services for elective patients as well made available in the physician navigator for non-elective patients. The Caprini risk assessment results were made available to both nursing and medical staff in EPIC so that they could use patient-specific risk for patient education, leading to increased compliance.

Additional focus areas were:

- Developing an RN/provider education plan for improved SCD compliance
- Placing a greater emphasis on postoperative mobilization of patients
- Standardizing RN mobility documentation to allow for better communication among providers and allow extraction of data for analytics.
We look forward to sharing further PSI-12 results in future reports, as we continue focusing on reducing the number of patients who develop VTEs.

*C. difficile*

In 2015 Inova began work to improve the clinical decision making abilities for patients with *C. difficile* (C.diff). Inova put processes into place to improve identification and testing of patients who may have C.diff infection and place those patients on isolation precautions more quickly. This improves safety for the other surrounding patients. Additionally, Inova made improvements to C.diff treatment order sets. This was designed to ensure patients with C.diff infection receive the best treatment possible.

*CAUTI*

One of the most important ways to reduce the risk of CAUTI is to put urinary catheters in only when they are medically necessary and remove them as soon as they are no longer needed. In 2015, Inova continued work to improve this process. Inova standardized the list of approved indications for a urinary catheter and updated the process to empower nursing staff to remove urinary catheters when they are no longer indicated.
Section 4: Process Measures

Core measures “perfect care” performance

This section presents each Inova facility’s performance over the past three years in delivering “perfect care.” To understand “perfect care,” we must first understand core measures.

Core measures have been developed by CMS and The Joint Commission to assess a hospital’s quality by tracking how consistently it delivers the recommended treatment for some of the most common, highest cost conditions. Core measures are the criteria, composed of a certain set of actions, or process of care, that widely accepted principles of evidence-based medicine have shown to be effective in treating a patient with a given diagnosis. CMS and The Joint Commission are responsible for ensuring that core measures are up-to-date and represent evidence-based medical and surgical best practices. CMS evaluates a hospital’s performance based on each individual measure. Core measures represent the standard of care that every patient should expect to receive.

In contrast, “perfect care” is an internal yardstick developed by Inova that asks whether each patient received all of the appropriate care for their condition. Because “perfect care” is an all-or-nothing measure, it represents a higher bar. In other words, if the hospital does not complete every component correctly, that patient does not count toward “perfect care” totals. Note: if a patient is assessed for a core measure component but does not receive it because it was medically inappropriate for that individual, that core measure component is not counted as a “perfect care” failure.

As an example, assuming all of the surgical care indicators were appropriate for a particular patient, “perfect care” means that this patient received an antibiotic one hour prior to the surgery and the patient’s urinary catheter was removed within two days after surgery. This patient received 100 percent of the recommended process of care for surgical care – “perfect care.”
Overall “perfect care” performance

For the third year running, Inova improved its systemwide overall “perfect care” percentage. As detailed in Chart 25, the system achieved a 98 percent overall “perfect care” performance in 2015.

Charts 26 to 28 also show the percentage of patients who received “perfect care” for each of three core measure sets: surgical care (SCIP), stroke care and blood clot prevention and treatment (VTE). This contrasts to previous years’ quality reports, in which Inova reported “perfect care” data for heart attack, heart failure, and pneumonia. CMS discontinued these measures in 2015, redirecting its focus to the outcomes-focused measures reviewed earlier in this report. Because “perfect care” derives from core measures data, Inova has discontinued “perfect care” reporting for these categories.

The overall “perfect care” measure is composed of SCIP data from January to September (CMS discontinued reporting in October), VTE, stroke and one perinatal measure (early elective deliveries).

Please note: higher percentages are better for perfect care.

Chart 25: Percentage of Patients with Overall "Perfect Care"
“Perfect care” for surgical care

There are two components to the surgical care core measure, focusing on how a hospital takes the appropriate steps to prevent complications, such as infections and blood clots, in surgical patients. It tracks the percentage of surgical patients:

- who were **given an antibiotic at the right time** (within one hour before surgery) to help prevent infection and
- whose **urinary catheters were removed** within two days after surgery to reduce the risk of infection,

As Chart 26 depicts, Inova provided “perfect care” to 98 percent of surgical patients in 2015 (January through October). Four of five Inova hospitals matched or increased their “perfect care” percentages relative to 2014 levels.

Please note: higher percentages are better for perfect care.

![Chart 26: Percentage of Patients with Surgical Care "Perfect Care"](image-url)

- Inova Alexandria: 96%, 97%, 98%
- Inova Fairfax: 90%, 97%, 99%
- Inova Fair Oaks: 96%, 99%
- Inova Loudoun: 91%, 96%, 95%
- Inova Mount Vernon: 98%, 99%, 99%
- Inova System: 99%, 98%, 97%, 93%
“Perfect care” for stroke care

Inova added stroke care core measures in 2014. The CMS core measure set for stroke has eight elements that measure the percentage of stroke patients who:

- received treatment to keep blood clots from forming in the body within two days of arriving at the hospital,
- received a prescription before discharge for medicine known to prevent blood clot-related complications,
- had a type of irregular heartbeat and were given a prescription for a “blood thinner” at discharge,
- got medicine to break up a blood clot less than three hours after symptoms started,
- received medicine to prevent complications caused by blood clots within two days of arriving at the hospital,
- had high cholesterol upon arriving and received a prescription for cholesterol-lowering medication at discharge,
- who received written information about stroke care and prevention, or whose caregiver received the same information, and
- who were evaluated for rehabilitation services.

Because stroke core measures data were reported beginning in 2014, only two years of data are available for “perfect care” calculations. The 2015 systemwide percentage was 95 percent of patients received “perfect care” (see Chart 27).

Please note: higher percentages are better for perfect care.

<table>
<thead>
<tr>
<th>Chart 27: Percentage of Patients with Stroke</th>
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<tbody>
<tr>
<td>&quot;Perfect Care&quot;</td>
</tr>
<tr>
<td>Inova Alexandria</td>
</tr>
<tr>
<td>Inova Fairfax</td>
</tr>
<tr>
<td>Inova Fair Oaks</td>
</tr>
<tr>
<td>Inova Loudoun</td>
</tr>
<tr>
<td>Inova Mount Vernon</td>
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<tr>
<td>Inova System</td>
</tr>
<tr>
<td>2014 2015</td>
</tr>
<tr>
<td>95% 92%</td>
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<tr>
<td>94% 96%</td>
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</tr>
<tr>
<td>96% 91%</td>
</tr>
<tr>
<td>96% 95%</td>
</tr>
</tbody>
</table>
“Perfect care” for VTE care

The blood clot prevention and treatment core measure has five components. The first two sets of data track steps taken to prevent blood clots in admitted patients and measure the percentage of patients who:

- receive treatment to prevent blood clots on the day of or day after hospital admission or surgery and
- receive treatment to prevent blood clots on the day of or day after admission to the intensive care unit (ICU).

The other three components focus on proper treatment of patients who have developed blood clots. Two of them measure the percentage of:

- patients who develop blood clots and are subsequently given the proper treatment, which includes administering two overlapping anticoagulant medications (commonly known as “blood thinners”); and
- patients with blood clots who were discharged on a blood thinner medicine and received written instructions about that medicine.

The final component of the blood clot prevention and treatment core measure is a negative measure, where lower scores represent better performance. It measures the percentage of:

- patients who developed a blood clot while in the hospital and who did not get treatment that could have prevented it.

Chart 28 shows Inova’s “perfect care” scores for 2014 and 2015. Four out of five hospitals improved their percentages, and the systemwide percentage was 98 percent.
Please note: higher percentages are better for perfect care.

Individual core measures performance

The following three categories are presented in terms of individual core measures components rather than “perfect care” scores. The perinatal care category incorporates measures applicable to both mothers and newborns. Because of these different definitions within the category, it cannot be rolled into a single “perfect care” score. For the children’s asthma care and vaccine preventive care categories, the core measure set consists of a single measure. Because there is only one element in the core measure set, there is no need to calculate “perfect care.”

Perinatal care

In 2014, perinatal care became a required core measure set for hospitals with at least 1,100 births per year. The Joint Commission began by requiring hospitals to report one measure (early elective delivery). In 2015, five measures are reported.
Charts 29 through 33 show 2014 and 2015 data for five perinatal core measures at the four Inova hospitals that offer obstetrics services. They measure the percentage of:

- Patients who had elective early deliveries between 37 and 39 weeks’ gestation when it was not medically necessary,
- Patients who delivered by cesarean section,
- Patients at risk of preterm delivery who received antenatal steroids before delivery,
- Newborns who acquired healthcare-associated bloodstream infections and
- Newborns who were fed breast milk exclusively during their entire hospital stay.

To clarify the context for each core measure component, each chart includes a blue arrow indicating whether higher or lower percentages represent better performance.

Please note: lower percentages are better.

**Chart 29: Percentage of newborns whose deliveries were scheduled too early (1 - 3 weeks early), when a scheduled delivery was not medically necessary.**
Please note: lower percentages are better.

![Chart 30: Cesarean Section](chart.png)

<table>
<thead>
<tr>
<th>Location</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inova Alexandria</td>
<td>35%</td>
<td>33%</td>
</tr>
<tr>
<td>Inova Fairfax</td>
<td>40%</td>
<td>39%</td>
</tr>
<tr>
<td>Inova Fair Oaks</td>
<td>31%</td>
<td>34%</td>
</tr>
<tr>
<td>Inova Loudoun</td>
<td>25%</td>
<td>28%</td>
</tr>
</tbody>
</table>
Please note: higher percentages are better.

Chart 31: Antenatal Steroids

Inova Alexandria: 98% (2014), 100% (2015)
Inova Fairfax: 94% (2014), 97% (2015)
Inova Fair Oaks: 100% (2014), 100% (2015)
Inova Loudoun: 94% (2014), 100% (2015)

Please note: lower percentages are better.

Chart 32: Healthcare-Associated Blood Stream Infections in Newborns

Inova Alexandria: 0% (2014), 0% (2015)
Inova Fairfax: 4% (2014), 3% (2015)
Inova Fair Oaks: 0% (2014), 0% (2015)
Inova Loudoun: 7% (2014), 0% (2015)
Please note: higher percentages are better.

Note on Chart 33: In October 2015, CMS changed the definition of “exclusive breast milk feeding.” Previously, there were two exceptions to the exclusive breastfeeding measure: the mother’s medical condition and the mother’s initial feeding plan/choice. As of October 2015, mothers with an initial feeding plan/choice that included formula feeding are not counted as exceptions to the exclusive breast milk feeding measure. As a result, 2015 data is generally lower for this core measure.

Children’s asthma care

To assess the quality of children’s asthma care, Inova collects data in one area:

- the percentage of children and their caregivers who received a home management plan of care document while hospitalized for asthma.

Chart 34 shows Inova Children’s Hospital’s data for this core measure as compared to the national average. Inova Children’s Hospital is the only Inova facility that treats enough children with asthma to provide meaningful data for this measure.
Vaccine preventive care

The vaccine preventive care core measure tracks the percentage of all hospitalized patients who receive important vaccinations. We collect data on the percentage of all hospitalized patients who have been assessed and given influenza vaccination, which can help prevent influenza in the future.

Data for vaccine preventive care are shown in Chart 35. The red dotted line represents the CMS national average and is included for reference purposes.
Inova improvement focus for core measures

Although CMS is shifting its focus away from process-based measures through mechanisms such as value-based purchasing, Inova remains committed to maintaining its high standards for core measures compliance and excellent “perfect care.”
Conclusion

We welcome your questions, comments, and suggestions about this report. To contact the Quality Matters team, please email us through the web link at www.inova.org/contactus.