

SPOTLIGHT ON IMPROVEMENT

Spotlight on Improvement tells real stories of health care providers and systems improving the quality of care they deliver. Our goal is to spark ideas that will improve health care quality in Washington state.



Virginia Mason

Reducing inappropriate antibiotic prescribing in primary care

BACKGROUND

Virginia Mason Hospital was co-founded by three medical doctors in 1920 and was named after two of their daughters. Starting with only six physician offices, today Virginia Mason employs more than 460 multispecialty physicians and has grown to more than eight clinics in Western Washington as well as an acute care hospital licensed for 336 beds.¹ Virginia Mason has also received national attention for their approach to quality improvement through lean principles and innovation.²

PROBLEM

The inappropriate and overuse of antibiotics in the United States has led to a serious public health threat, including development of drug-resistant infections which kill at least 23,000 adults and children each year. Treatment of antibiotic-resistant infections costs an estimated \$20 billion each year.³

According to the American Academy of Family Physicians and the American Academy of Allergy, Asthma & Immunology, antibiotics are prescribed for more than 80 percent of outpatient visits for acute sinusitis, despite the fact that viral infections cause the majority of acute rhinosinusitis and only 0.5-2 percent progress to bacterial infections.^{4,5}

¹ www.virginiamason.org/AboutVirginiaMason

² www.virginiamasoninstitute.org/

³ <http://consumerhealthchoices.org/wpcontent/uploads/2014/02/ChoosingWiselyAntibioticsRoundup.pdf>

⁴ www.choosingwisely.org/doctor-patient-lists/american-academy-of-family-physicians/

⁵ www.choosingwisely.org/doctor-patient-lists/american-academy-of-allergy-asthma-immunology/

In 2011, within the Virginia Mason Department of Primary Care, antibiotics were being prescribed inappropriately for cases of acute bronchitis 82 percent of the time, and visits for upper respiratory infection syndromes led to prescription of antibiotics 56 percent of the time.

SOLUTION

Dr. Kim Pittenger, a family practice physician and director of primary care quality improvement, used existing process improvement methods, such as value stream mapping and 5S (sort, straighten, shine, standardize and sustain) methodologies, to develop an intervention to reduce inappropriate antibiotic use by primary care providers at Virginia Mason. Implementing the project in 2011, the intervention included a multi-pronged approach:

1. **Academic detailing and standard workflow.** A team of experts at Virginia Mason reviewed best evidence for management of upper respiratory tract infections and developed a standardized clinic workflow for upper respiratory infections, including an electronic medical record template that is completed by both a medical assistant and primary care provider.
2. **Measurement and transparent reporting.** Using billing and prescribing data collected via the electronic medical record, the analytics team created a year-to-year antibiotic prescribing report that identified inappropriate antibiotic prescribing patterns for each primary care provider that is internally shared every year. The data was used to identify both positive and negative outliers and to collectively develop strategies to reduce inappropriate antibiotic prescribing behavior.
3. **Symptom support and virtual care.** Starting in April 2012, the team developed a registered nurse (RN) phone call protocol in which patients calling in to request a visit for symptoms suggestive of upper respiratory infection are offered a phone call by a registered nurse to help manage symptoms without visiting the primary care provider. After only six months of offering this extra care service, about half of the patients chose the nurse phone call.

RESULTS

As you can see in figure one, the results are impressive. Virginia Mason was able to decrease their antibiotic prescribing by half, from 41.8 percent in January 2011 to

RELATED CHOOSING WISELY RECOMMENDATIONS:

American Academy of Family Physicians

(AAFP): Don't routinely prescribe antibiotics for acute mild-to-moderate sinusitis unless symptoms last for seven or more days OR symptoms worsen after initial clinical improvement.

American Academy of Allergy, Asthma &

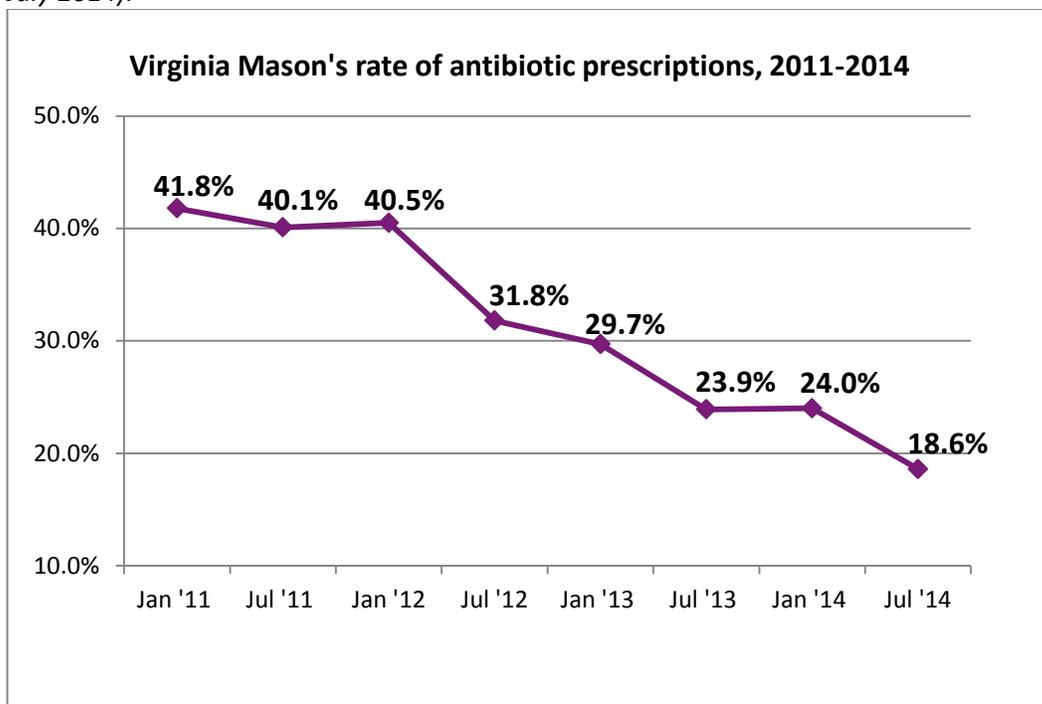
Immunology: Don't order sinus computed tomography (CT) or indiscriminately prescribe antibiotics for uncomplicated acute rhinosinusitis.

American Academy of Pediatrics:

Antibiotics should not be used for apparent viral respiratory illnesses (sinusitis, pharyngitis, bronchitis).

18.6 percent as of July 2014. The prescriptions tracked in this study include the antibiotics common for upper respiratory infections, such as azithromycin, amoxicillin, amoxicillin Clavulanate, Trimethoprim/sulfamethoxazole, ciprofloxacin and doxycycline. Interestingly, further chart review showed that approximately 90 percent of antibiotics prescribed for acute cough symptoms were azithromycin alone.

Figure 1. Results from Virginia Mason primary care quality improvement efforts to reduce antibiotic prescriptions across eight regional medical centers (January 2011 to July 2014).



CHALLENGES

- During the project, primary care providers started to reduce billing codes for bronchitis as they realized that they were being measured on antibiotic prescription rates for this diagnosis. The measurement team responded by changing denominator metrics to include viral upper respiratory infections, cough and sinusitis.
- Current limitations of data analysis cannot capture the clinical context in which antibiotics are being prescribed. For instance, patients who initially present with symptoms suggestive of a viral illness may develop a bacterial infection that warrants antibiotics. Another example is that

current billing codes for sinusitis do not distinguish viral versus bacterial sinusitis that may warrant antibiotic treatment.

- In 2014, the Department of Primary Care implemented a 24/7 RN triage phone service run by an outside organization. The nurses had to be trained how to use the RN phone care tool for upper respiratory infections. This may have led to deviation from the standard workflow for upper respiratory infections during the onboarding process.

KEYS TO SUCCESS

- **Use process and quality improvement tools familiar to the organization to achieve change.** Virginia Mason uses a quality improvement framework called the Virginia Mason Production System (VMPS) to improve quality while reducing costs. The team leading this project used VMPS methods to create and implement its intervention.
- **Engage the entire team to achieve desired outcomes.** Changing provider behavior is difficult, but can be achieved in part by changing workflow for the staff that makes it easy for providers to do the right thing.
- **Continuous measurement and transparency.** Knowing that the intervention will be measured and transparently shared in a supportive, continuous learning format can help change provider behavior, foster peer-to-peer sharing of best practices and support sustainability.

FOR MORE INFORMATION, CONTACT:

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ABOUT THE ALLIANCE

The Washington Health Alliance brings together those who give, get and pay for health care to create a high-quality, affordable system for the people of Washington state. The Alliance is a nonprofit, nonpartisan organization that shares the most reliable data on health care quality and value in the state to help providers, patients, employers and union trusts make better decisions about health care. Through innovative strategies and initiatives, we help the entire health care system—from exam room to board room—focus on improving quality and value. We are committed to being the catalyst for change for the health care system in Washington. The Alliance is one of 16 organizations that are part of the Robert Wood Johnson Foundation's Aligning Forces for Quality (AF4Q) initiative.

www.wahealthalliance.org | www.wacommunitycheckup.org

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