

# The George Washington University Medical Faculty Associates

## ***Enhancing Patient Care with Welch Allyn Spot Vital Signs® Interfaced with Allscripts™ Electronic Health Record***

The George Washington University Medical Faculty Associates collects consistent, error-free vital signs for all patients and captures the information in its Electronic Health Records (EHRs), delivering higher quality, integrated care and enhanced clinical efficiency.

### ***The Customer***

Nonprofit, academic multispecialty medical group  
275 physicians  
41 medical specialties  
425,000 patients annually  
75 Welch Allyn Spot Vital Signs devices  
Allscripts TouchWorks™ EHR

The George Washington University Medical Faculty Associates (MFA) is the largest and most comprehensive physician practice in our nation's capitol that is conveniently housed in one building. MFA's 275 physicians in 41 medical specialties serve over 425,000 patients each year, including many national leaders. Formerly an unincorporated part of The George Washington University School of Medicine, nonprofit MFA separated from the university in 2000 but continues as a world-class physician training ground, with 400 residents overseen by MFA's physician faculty.

*"The biggest advantage of using the Welch Allyn devices in combination with the TouchWorks EHR is the speed and consistency with which vitals get entered into the clinical record. That allows us to make point-of-care decisions based on current and past vitals that we can see right away, which translates into more accurate, higher quality patient care."*

*– Ryan G. Bosch, MD, FACP, Director, Division of General Internal Medicine and Associate Professor of Medicine, The George Washington University Medical Faculty Associates.*

### ***The Challenge***

#### **Time-Tested but Inefficient Vitals Capture Methods**

Before deploying 75 Welch Allyn Spot Vital Signs devices in March 2004, MFA's Department of Medicine relied on its staff medical assistants (MAs) to manually collect vital signs from patients. The group's MAs used oscillometric blood pressure gauges, stethoscopes and a small number of thermometers they shared with other MAs and nurses in the department. After taking measurements, they wrote the results on paper and hand-

delivered them to the patient's physician. The physician then entered the data into the patient's medical record.

This time-tested method has been used reliably by clinicians across the globe for nearly 100 years. It worked reasonably well for MFA but had drawbacks including problems keeping track of equipment, and the possibility of error in recording and transmitting the data to physicians.

## **Equipment Tracking Problems**

Medical assistants often wasted valuable time tracking down one or more pieces of vitals equipment while the patient waited. Blood pressure cuffs, stethoscopes and especially thermometers were commonly misplaced or in use by other MAs or nurses. While each exam room was outfitted with a wall-mounted blood pressure machine, thermometers were relatively rare.

An August 2004 study of vitals measurement techniques at MFA found that, due to equipment tracking issues, only 56% of patients had their temperature taken. Pulse measurements also fell by the wayside in favor of shorter visits. The patient's pulse was taken only in 11% of the encounters observed, meaning only about one in 10 patients had their heart rates measured.

Overall, MFA's frequent equipment tracking issues can add minutes to a process that takes just 78 seconds.

## **Lost in Translation**

Another problem with the old method for capturing vital signs stemmed from the practice of recording and transmitting the metrics on paper. The MAs typically recorded vitals on a paper "progress note," though occasionally a "sticky note" or stray piece of paper served the purpose. Dr. Ryan Bosch, director of the Division of General Internal Medicine and Associate Professor of Medicine, said physicians sometimes forgot or lost this vital piece of paper. In that case, they would either spend valuable time searching for the paper, or record the vitals from memory in the chart (for example, "VSS," or "vital signs stable").

Further contributing to the inefficiency of the old system, many physicians habitually repeated the blood pressure test to double check its accuracy, Dr. Bosch recalled. In an era of increasingly brief patient encounters, this duplication of tasks meant MFA's physicians had less time to spend communicating with patients.

## **Missing the EHR Train**

Drawbacks in MFA's old method of collecting and recording vital signs became especially apparent when, in January 2003, the Department of Medicine rolled out the TouchWorks™ Electronic Health Record (EHR) from Allscripts.

Within less than a month, the relationship of MFA's physicians to patient clinical data was dramatically transformed. The mobile, web-based TouchWorks EHR enabled clinicians to access the entire clinical record instantly from anywhere in the *multi*-story clinic, from the affiliated GWU Medical Center, even from home.

The EHR offered exciting new opportunities for improving patient care. Peer-reviewed, academic studies had already demonstrated TouchWorks' ability to help physicians enhance their productivity and reduce costs. A TouchWorks implementation at Central Utah Clinic, for instance, saved the physicians group \$1 million in its first year of operation. Dr. Bosch knew the EHR not only could save MFA money but also provide his physicians a bird's-eye view of how patients' vital signs changed over time. That capability promised to improve diagnoses and clinical outcomes for MFA's patients.

But the EHR's ability to deliver enhanced care through vitals tracking required one important change. Vital signs would need to be captured in digital format—not manually—to ensure that consistent, reliable data was loaded into the EHR.

## ***The Solution***

### **A Winning Team: Welch Allyn and Allscripts**

The Spot Vital Signs devices provided by Welch Allyn appealed to MFA because of their history of success and the company's willingness to integrate the devices with the TouchWorks EHR. Clinicians in 90 countries use Welch Allyn technology to easily and cost-effectively acquire and manage patient-centered biometric data. MFA marked the first integration of Welch Allyn's technology with Allscripts' EHR.

The Welch Allyn solution rose above the competition because it offered everything MFA wanted in one package. The mobile, 4.5-pound Spot Vital Signs device captures every key biometric—noninvasive blood pressure, pulse rate, mean arterial pressure (MAP) and body temperature. Several of the units in use at MFA have the additional capability of measuring pulse oximetry (blood-oxygen level), a metric used in treating patients with lung disease. The device accomplishes all of this in a matter of seconds. The SureTemp digital thermometer, for instance, can take a patient's body temperature in four seconds—many times faster than the older thermometers, which required up to 30 seconds. An entire biometric “photo” of the patient takes just half a minute—far less time than manual methods require.

The Welch Allyn devices transmit their biometrics to the EHR through a simple mechanism. Each of the department's 75 exam rooms is equipped with a Spot Vital Signs device and a TouchWorks workstation. The Welch Allyn device is connected to an

infrared port that, in turn, is mounted beside the infrared port on the TouchWorks computer. With the click of a mouse, the biometrics are uploaded into the EHR and automatically populated in the appropriate section of the patient's medical record.

## ***The Benefits***

### **Speed and Reliability**

The overwhelming speed and reliability of the Welch Allyn devices—plus the ease of having one in every exam room—quickly delivered two benefits to MFA: faster vitals collection and more comprehensive, consistent, reliable numbers for the EHR to crunch.

The speed of the Welch Allyn solution was verified by time-motion studies conducted before and after the Spot Vital Signs devices were installed. Results indicate the devices reduced by 11% the amount of time MAs previously spent collecting vitals from patients. In cases in which the MA had to track down a missing piece of equipment, the Welch Allyn devices reduced encounter time by at least a minute.

This impressive time savings did not take into consideration the time saved by physicians thanks to the interface with TouchWorks, which freed them from hand-entering biometrics in the medical record. Dr. Bosch estimated the Welch Allyn-TouchWorks interface saves physicians a minimum of 20 seconds per patient encounter—a significant figure when factored across an entire work week.

Working in tandem with the TouchWorks EHR, the Welch Allyn devices also significantly reduced the possibility for human error. By automating the capture and recording of patient vitals, the devices minimized the chance that an MA or physician would record the wrong number. And by ensuring that every vital sign was collected for every patient—rather than temperature and pulse for some but not others—the Welch Allyn devices ensured a comprehensive view of vitals across the patient population. Both factors are key to leveraging the EHR to deliver care improvements.

*“Previously, physicians frequently complained about the accuracy of a medical assistant’s blood pressure readings. They had questions and sometimes those were well-founded. But now there’s absolutely no room for question by the physician because there’s no human interpretation. The Welch Allyn devices make vitals collection much more reliable and accurate.”*

*- Arlene Bright, TouchWorks Clinical Trainer, GWU Medical Faculty Associates.*

### **A “Big Picture” View of Patient Vitals**

A critical capability of the TouchWorks EHR is its Flowsheet, which enables physicians to instantly display a spreadsheet of each patient's clinical results, such as laboratory tests. By making digital biometrics available in the EHR, the Welch Allyn devices enable

MFA's physicians to see how a patient's current vital signs compare to past measurements.

That big-picture view has improved physicians' ability to spot clinically significant problems and respond quickly.

"The vital signs are simply vital," said Dr. Bosch. "If any one of them is abnormal, as a clinician you've got to explain why right away. It could be from a bad heart rhythm, an arrhythmia. It could be from extreme dehydration, which causes low blood pressure. It could be a pulmonary embolus—a blood clot going to the lung—or an infection causing a high fever. By having instant access to the patient's past trends, you're able to better discern what's new and what's not, and that knowledge will affect how you treat the patient that day."

Before implementing the Welch Allyn-Allscripts solution, MFA's physicians had to conduct lengthy searches of the medical record to find vitals trend data. "I still would have looked that up in the old days but it would have been a lot harder to find," said Dr. Bosch. "And it might have meant that I was doing it at night, as homework, and calling the patient the next day rather than spotting it right away."

*"We wanted to populate the EHR with patient biometrics, and what better way than electronically feeding it into the system by the push of a button rather than having somebody retype it. So the tight integration with Allscripts really helped us make the decision to go with Welch Allyn. We didn't even look at other vendors once we found out that Welch Allyn was willing to integrate with Allscripts."*  
- Praveen Toteja, Chief Information Officer, GWU Medical Faculty Associates.

### **Trouble-Free, All-In-One Performance**

On top of its other benefits, the Welch Allyn Spot Vital Signs device has proven to be virtually trouble-free. The older, wall-mounted blood pressure machines needed frequent repairs, but just one of the 75 Welch Allyn devices installed at MFA has required repairs. That's a remarkable performance record for any medical device, Toteja said.

Moreover, the devices have significantly simplified vitals equipment issues by combining the BP gauge, thermometer, stethoscope and pulse oximeter into one sleek, digital package.

"In the old days we only had a few thermometers, so we were constantly running around saying 'When you're done with that, I need it,'" said Shirley Overman, RN, MSN, manager of Internal Medicine/Specialty Practices at MFA. "That doesn't happen now because it's all one unit and it's all bolted down, so your equipment is always right there. It's a lot quicker with the Spot devices than it was manually, and I think it has improved the accuracy."

Using the devices has also proven to be so simple that MFA has not had to provide formal staff training. "It's a no-brainer," said Toteja. "The devices are basically a lot

easier to use than the old methods for taking vitals. It's been a great success.”

## **Enabling Clinical Trials Income**

Thanks to the Welch Allyn-Allscripts interface, MFA is now better able to participate in clinical research trials, which can enhance patient care and generate income for the practice. With patient vitals that are consistently measured and digitally recorded, MFA can almost instantly produce a list of patients matching unique study protocols. That gives the group a big step up on other organizations when it comes to participating in studies of low blood pressure, arrhythmia, or other vitals-centric medical conditions.

Praveen Toteja is Chief Information Officer for MFA. He expects the Welch Allyn-Allscripts interface will “definitely help us take on more clinical research.” The new capability, Toteja added, is “like intelligent search on the fly. It's just going to be phenomenal for research purposes because now we can gather all this information and do clinical trials much more easily, and it's never been feasible before.”

## **On the Horizon**

Now that the Welch Allyn-Allscripts interface has reaped solid results for MFA, the two companies are actively developing interface capabilities for several more Welch Allyn monitoring devices. Soon, MFA will be able to choose from devices including: resting electrocardiogram (ECG), stress-testing ECG, ambulatory blood pressure monitoring for hypertension screening, spirometry and Holter monitoring (continuous ECG).

Each new Welch Allyn device will capture digital biometrics and interface with the Allscripts EHR to give MFA's physicians an ever-expanding view of the patient's health.

## ***Metrics***

### **Significant Savings in Time and Money**

An analysis of the formal time-motion study conducted at MFA indicates the practice is saving nearly \$140,000 annually thanks to the Welch Allyn-Allscripts solution.

Savings were calculated based on the amount of time saved by medical assistants and physicians who used the solution to capture vitals and document the results in the EHR. Of the 425,000 patients seen each year at MFA, some 225,000 are treated by physicians in the Department of Medicine. Against this large pool of patients, the seemingly minor time-savings of nine seconds per patient documented with the Welch Allyn-Allscripts solution looms larger (562.5 hours/year). In fact, based on the average salary of MAs in the Washington DC area, MFA is saving more than \$8,000 a year from MA time-savings alone (see chart). This figure would undoubtedly increase if it included time saved by reductions in equipment tracking.

Savings on physician salaries are, predictably, much higher. Based on Dr. Bosch’s estimate of 20 seconds per encounter saved by physicians using the Welch Allyn-Allscripts solution, MFA is saving \$131,250 per year in physician pay for time spent documenting vitals (see chart). Physician pay is based on the median annual cash compensation (base salary plus bonuses) for internists and specialists in the Capitol region.

Of course, it’s impossible to attribute a one-to-one correspondence to time saved and salaries unspent. But the equation is a fair estimate of the dollar-value to MFA of freeing up clinical resources to focus on other revenue-generating patient services. When measured over the seven year expected life-span of the Spot Vitals Signs devices, these savings amount to a direct financial benefit of \$974,862—far exceeding the cost of implementation.

***Financial savings from the Welch Allyn-Allscripts solution***

Digital vitals capture and upload into HER	Time Savings/Encounter (average)	Times Savings/Year (225,000 patients)	Compensation (avg. based on Washington DC median salaries)	Total Value of Time Savings
Medical Assistants	9 seconds	562.5 hours	\$14.25/hour	\$8,016
Physicians	20 seconds	1250 hours	\$105/hour	\$131,250
Reduction of Cost				\$139,266