



**EHR TRAINING IN  
1/8th THE TIME**  
with 19% higher proficiency

Case Study at [uhealth](#)

**amplifire**  
When Learning Matters

## EXECUTIVE SUMMARY

### PROBLEM

With the robust nature of the EHR systems like Epic and Cerner comes complexity and a steep learning curve for providers.

### THE STUDY

426 providers at UHealth learned about their EHR in the Amplifire platform. The goal was to discover if an online training experience could reduce costs while equaling or exceeding the effectiveness of a classroom.

### RISK REVEALED

- 41% of learners initially had confidently held misinformation (CHM)
- 38% of learners initially had CHM on the topic of *Chart Search*
- 36% of learners initially had CHM on the topic of *Patient Portal*

### DETECTED AND CORRECTED

- 2,684 instances of confidently held misinformation
- 4,601 instances of uncertainty

### TRAINING OUTCOMES

- 56% less time in training
- \$1.45 million in savings
- Provider satisfaction was 86%
- Proficiency gains increased at a 19% higher rate than classroom training

## PROBLEM

### The robust nature of the EHR systems means a steep learning curve



EHRs hold the medical records of most US patients



All of the top-ranked hospitals use an EHR

“

Technology-related adverse events can be associated with all components of a comprehensive technology system. These unintended adverse events typically stem from human-machine interfaces.

—The Joint Commission

”

Learning to operate an EHR system is complex. They manage patient history, clinician activity, and billing cycle. They use large quantities of patient data to improve care through historical patterns that signify a likely diagnosis. And they coordinate care and sound warnings of probable adverse events.

With those complex abilities, mastery of the software does not come easily. Yet EHR platforms are core to hospital operations such that clinicians have little choice but to master their user interface and workflow procedures.

Trying to master an EHR in the traditional classroom setting takes clinicians away from patients and reduces productivity and billable hours. Hence, reducing EHR training time through online eLearning holds great potential for cutting costs. Furthermore, if online training could lead to increased productivity as well, additional financial and performance benefits would accrue.

## STUDY DESIGN

### 426 Providers at UCHealth

426 inpatient and outpatient providers received an Amplifire course in three modules covering the topic of operating the EHR system.

Module 1: *Clinical Review*

Module 2: *Orders and In Basket*

Module 3: *Notes, Letters, and Documentation*

UCHealth wanted to eliminate classroom training and adopt virtual training methods. They chose the online Amplifire platform for EHR training for one year (and continue to do so). UCHealth then analyzed time saved for providers who trained online and also compared their EHR proficiency with providers who learned in the classroom.

Research indicates that user ratings on quality of training are the single greatest predictor of overall Electronic Health Record (EHR) user experience.<sup>1</sup> These findings are leading health systems to re-invest in innovative training approaches.

Amplifire developed the EHR training Library in conjunction with UCHealth to help physicians, nurses, and technicians effectively navigate the patient record workflow, reduce onboarding and training time, and optimize use of their EHR system.

1. Longhurst, et al. "Local Investment in Training Drives Electronic Health Record User Satisfaction" *Applied Clinical Informatics*, vol 10., no. 2, 2019, pp. 331-335.

# AMPLIFIRE

## How It Works

Amplifire first measures and classifies a clinician's knowledge:

**Confidently Held Misinformation:** When a learner is sure they are right, but they are actually wrong.

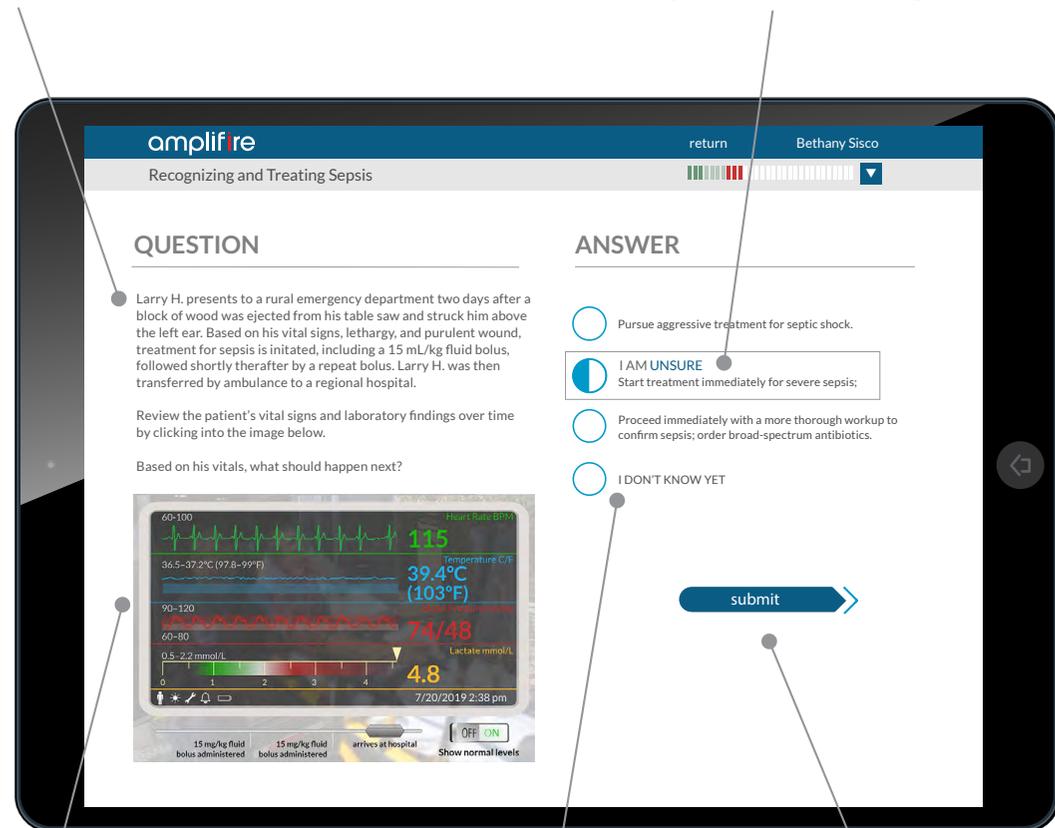
**Uncertainty:** When a learner is unsure about their knowledge.

**Proficiency:** When a learner is both confident and correct.

Once knowledge is categorized this way, the platform uses triggers from cognitive science to activate learning. It automatically customizes the course in real time for each learner, leading them to rapid proficiency across all topics.

Asking questions is a trigger that causes retrieval, curiosity, and attention in the brain; all drivers of lasting memory.<sup>1</sup>

Asking about confidence causes metacognition (thinking about one's thinking), which drives long-term memory.<sup>1</sup>



Interactives simulate real-life situations. Here, the learner manipulates the monitor and analyzes vitals in a patient's room before answering question.

Learners can be honest about their knowledge, helping create the emotional state of "alert," which is optimal for learning.<sup>2</sup>

Feedback will be delayed by a few minutes. This *spacing* boosts the durability of the learning.<sup>3</sup>

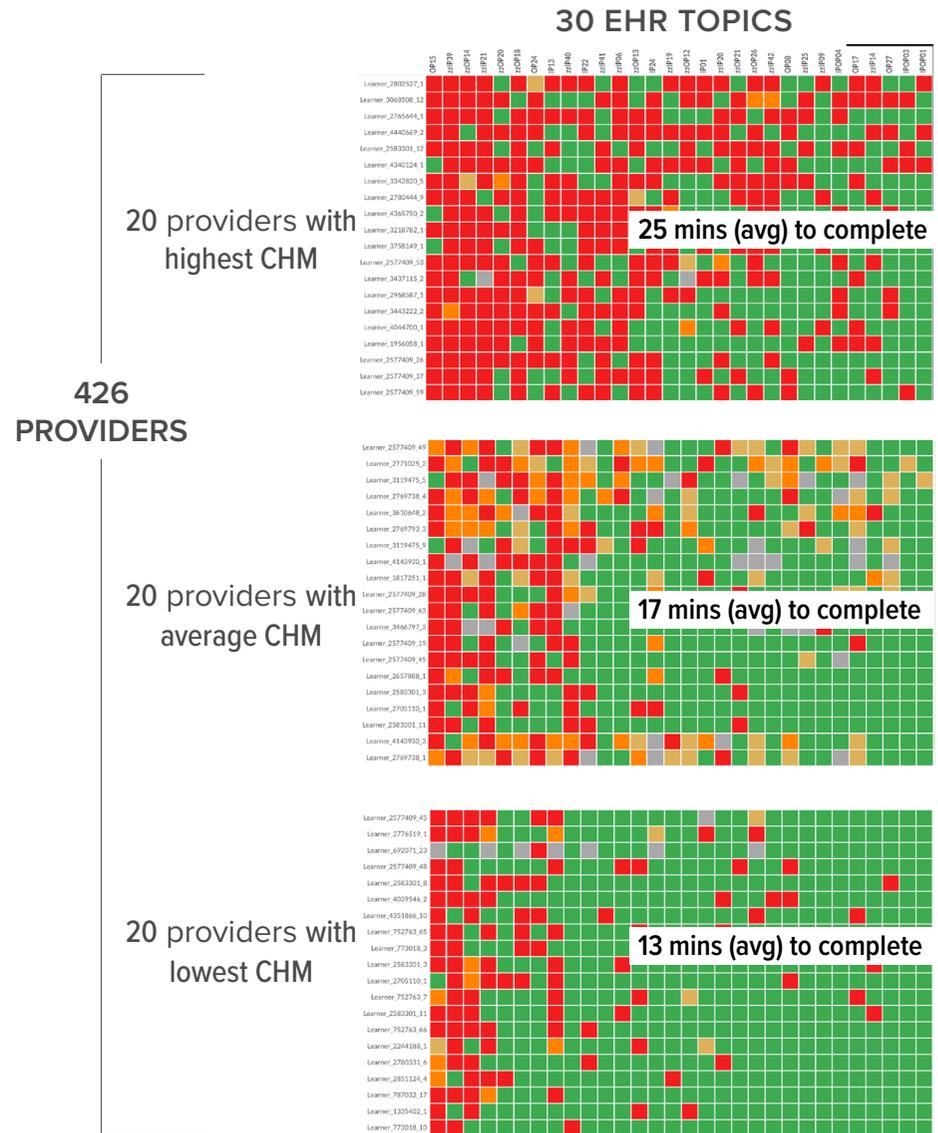
# INITIAL KNOWLEDGE VARIATION

(prior to learning)

These heatmaps from Amplifire’s reporting dashboard show providers sorted by their confidently held misinformation (CHM).

426 providers generated 12,780 data points.

- 2,684 instances of confidently held misinformation were corrected
- 4,601 instances of uncertainty were corrected
- 5,495 instances of proficiency
- The most initially misinformed providers spent an average of 25 minutes in the platform, while those who were proficient spent only 13 minutes.
- By the end of the course, 100% of the providers were proficient (both confident and correct) on all the material.



## KNOWLEDGE / LEARNING / INTERVENTION

When providers began Amplifire, they were either confidently misinformed or uncertain on over half of the material.

Fortunately, the cool colors of the middle heatmap show that **learning** was automatic for most providers, meaning that these issues were quickly corrected.

But sometimes providers **struggled** to master a topic. In those rare cases, despite being presented with the needed information, proficiency failed to emerge. Clinicians may struggle due to temporary on-the-job distractions, or they may be dealing with acute or chronic personal issues.

For the 19 providers who struggled to learn on multiple topics, Amplifire generated individual action plans in its reporting dashboard. Administrators and educators used these plans for at-the-elbow consultations.

### Initial Knowledge

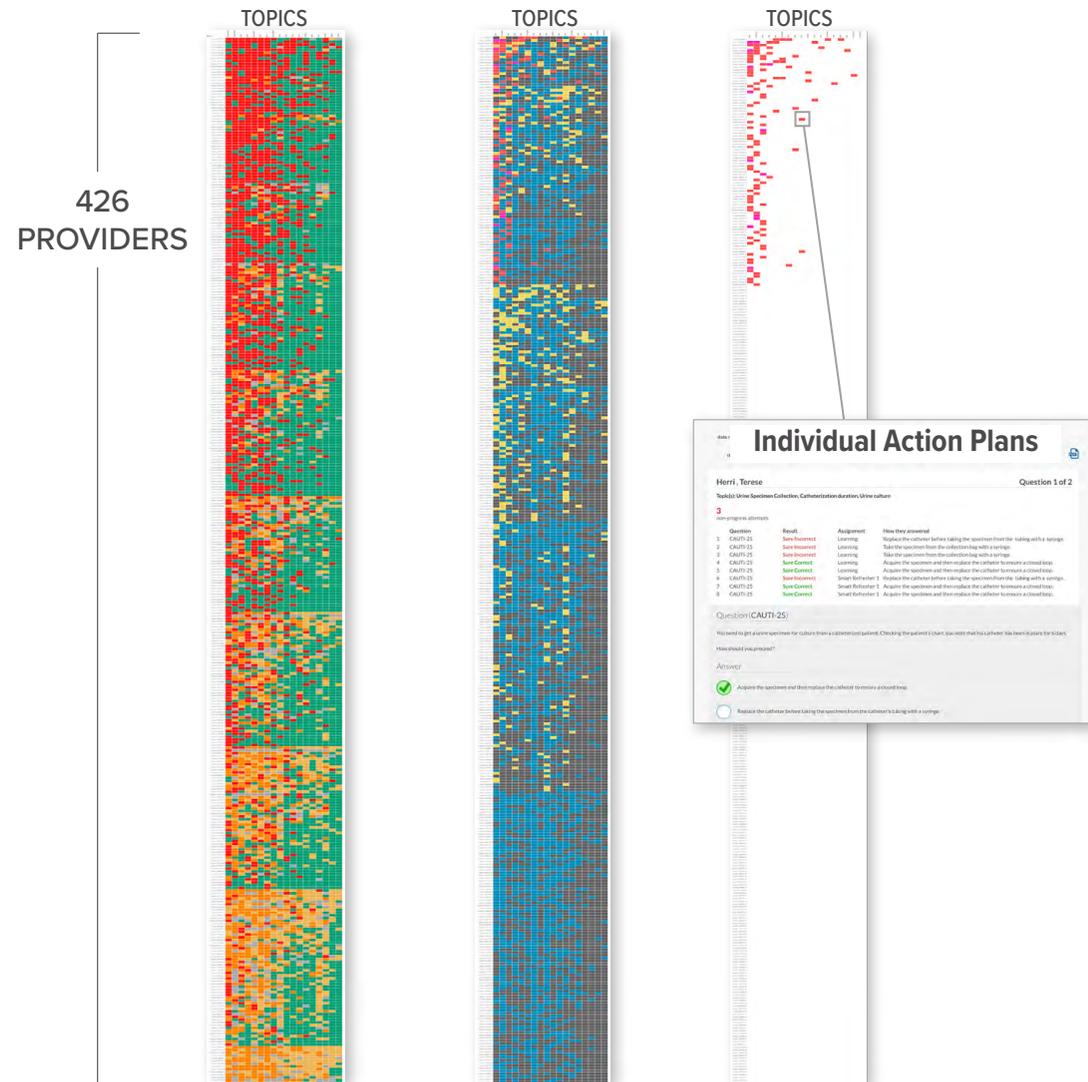
- 21% Misinformation
- 36% Uncertainty
- 43% Proficiency

### Learning

- 51% Knew it
- 42% Learned it
- 7% Struggle

### Intervene

- 19 Providers



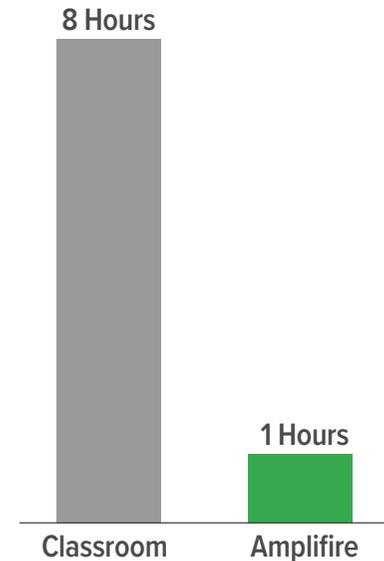
## RESULT 1

### Time in training decreased by 87.5%, saving \$1.45 million

New physicians invariably come to training with a wide range of experience. To prevent beginners from slowing down more proficient providers, UCHHealth broke up trainees into two groups: experienced and novice.

Before Amplifire, as seen to the right, the average classroom training time across these two cohorts was about 8 hours. With Amplifire, that fell to an average of slightly more than 1 hour.

Based on clinician salaries, the time savings translated into \$1.45 million in annual savings.



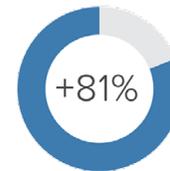
## RESULT 2

### Clinician satisfaction was high without a classroom

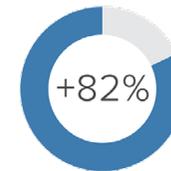
UCHealth reported that “We’ve had great comments and feedback on the new training like, “This is fun!” and “Can I take this again?” The CMIO reported that, “Never in the history of training has someone said this.”

81% of users said the course covered EHR skills relevant to their role, while 82% said that Amplifire’s unique question and answer format helped them learn strong EHR Skills. 86% agreed that they enjoyed the experience.

Covered EHR skills relevant to my role.



Helped me learn strong EHR skills.



I enjoyed the experience.



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*Highly engaging and unique.*

*Great use of my training time.*

*Self paced, kind of fun actually.*

*Can I do that again?*

## RESULT 3

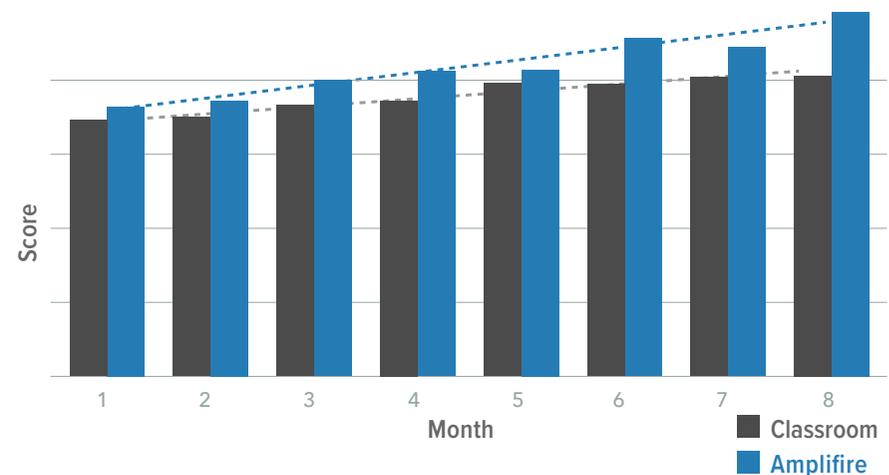
### Online learning was more effective than the classroom

At UCHealth, proficiency in the EHR is measured with the built-in proficiency analysis tool. The EHR training team at UCHealth was initially perplexed that proficiency for Amplifire learners increased over the following eight months at a faster rate when compared with learners who had trained in the classroom.

Research into this data is ongoing, but the neuroscientist, Dan Schacter at Harvard, believes this result is because Amplifire gives clinicians a more robust mental schema with which to integrate their ongoing experiences in the EHR. Over time, the Amplifire-based schema compounds into EHR proficiency that grows at a faster rate than proficiency based on mental schemas originating in the classroom.

#### PROFICIENCY INCREASE

- Measured with the EHR's proficiency tool
- Proficiency scores rise over-time at a faster rate than classroom training
- In 8 months, proficiency was 19% higher with Amplifire



## Comments from Informatics Officers

“ If you look at our training time before Amplifire the combined inpatient/outpatient provider time was four to eight hours. Now, training is essentially down to a half-hour to an hour, and that dramatic decrease is in classroom time.

—CT Linn, MD, FACP, FAMIA,  
UCHealth, Chief Medical Informatics Officer

If we were able to get them through the Amplifire module rather than get them through the classroom, it's a \$1.45 million cost savings The numbers we are seeing here are conservative. We are actually seeing much greater ROI than \$1.45 Million. ”

—Steve Hess, UCHealth,  
UCHealth, Chief Information Officer

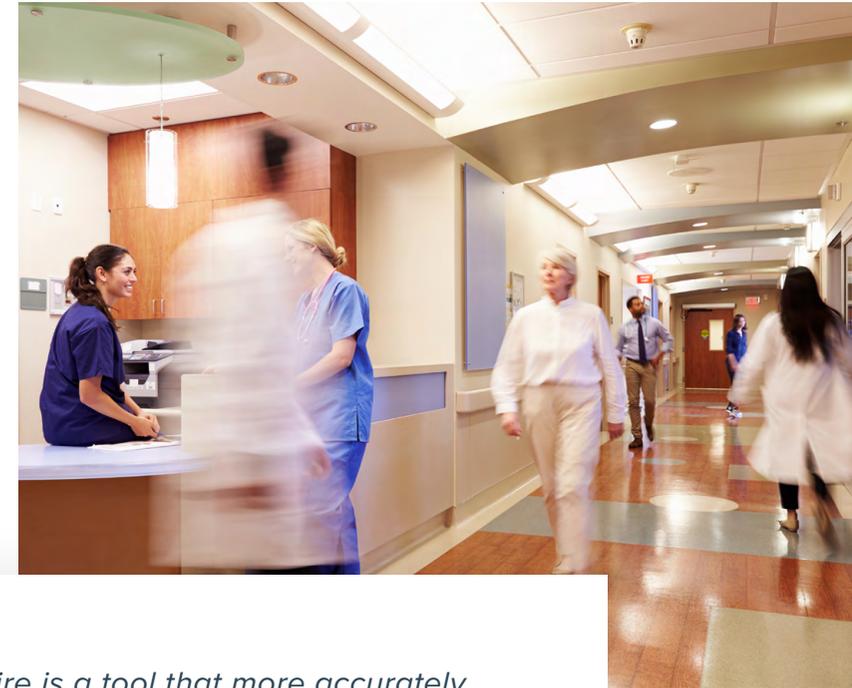
## ABOUT AMPLIFIRE

Empirical data shows that caregivers in every healthcare organization possess knowledge gaps, doubts, and medical misconceptions. The Amplifire learning platform tackles these issues using discoveries from cognitive science and algorithms that adapt evidence-based content to the needs of each individual caregiver.

Healthcare organizations embrace Amplifire as a change management tool that transforms training from a rote activity, where administrators can only hope for results, into a strategic activity that delivers measurably better outcomes. Popular course libraries include:

- Clinical Safety and Quality
- Compliance
- EHR
- Obstetrics
- Opioids
- Pediatrics
- Revenue Cycle Management
- Safe Surgery

With more than three billion learner interactions, Amplifire continues to harness scientific research, advanced analytic techniques, and artificial intelligence. Learners experience a faster, more engaging path to proficiency so they can attain their highest potential.



*“ Amplifire is a tool that more accurately, completely, and rapidly loads complex clinical knowledge into expert minds. It gives us not only the ability to transmit knowledge, but the ability to measure how well we transmitted it and how well it stuck. ”*

— **Brent James, MD**

Clinical Professor at the Clinical Excellence Research Center at Stanford University

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When Learning Matters

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