Solving the Problem of EHR Usability

Usability is a key concern among nephrologists evaluating and using an Electronic Health Record (EHR) software system. It is an industry-wide concern as well with 90% of physicians citing their concern about EHR software usability, with workflow being the top usability pain point.1 Further, 44% said EHR systems are not designed with physicians in mind, and 15% said they believe EHR systems somewhat or significantly worsen patient care.2

“NINETY PERCENT of physicians have expressed concern about EHR usability.”

Physicians want EHRs with workflows that are quick and easy to use and Falcon EHR’s physician end-users are no different. They hold us accountable for providing an EHR product that is extremely usable by nephrologists.

In order to respond to our end-users’ desire for a more usable nephrology-specific EHR, Falcon EHR™ undertook the effort to understand software usability concepts, set usability goals, benchmark usability metrics across key workflows, and report out on results.
USABILITY FOCUS

In order to implement a usability improvement program within Falcon EHR, we needed to fully understand and commit to usability concepts throughout our organization. We aspired to establish a company culture based on shared ownership of usability and user experience, with all areas of the business focused on the concepts and how they could help with the process.

“WE ASPIRED TO ESTABLISH a company culture based on shared ownership of usability and user experience…”

To begin the Usability Project, we held Usability Summits with major departments within the organization. We tailored the presentation to include usability education, a brainstorm on how individual teams could help us achieve our usability goals, and a hands-on usability exercise.

BAD USABILITY IS COSTLY!

The teams learned that there are serious costs associated with poor usability such as:

- Significant help desk cost investment
- Majority of internal resources focused on fixing system issues, rather than adding new product features
- Time-consuming, complicated training for new users
- Low user productivity, ultimately leading to low user satisfaction
- Customer losses
- Lowered team morale

REDESIGN VERSUS TWEAKING

The teams learned that software industry usability experts recommend making small changes (tweaks) to solve user software problems, rather than investing in costly full-module redesigns.

Tweaking has many benefits over redesign:

- Costs less
- Requires less work
- Can be done sooner
- More likely to come to fruition
- Less likely to “break” other parts of the application

Redesign has additional issues:

- Redesign can frustrate end-users
- Redesign is complex
- Redesign involves more internal resources

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BRINGING THE TEAM TOGETHER ON USABILITY

After learning about usability concepts, the Falcon EHR teams brainstormed how they could improve Falcon EHR’s usability. They also discussed how cross-functional organizations would need to come together to make the Usability Project a success for our end-users. We outlined and published, company-wide, the following ways to help, by department:

Product
- Own and direct the Usability Project
- Baseline and benchmark key Falcon EHR application areas and report improvement metrics monthly
- Ensure usability testing on high-impact user interface projects
- Standardize application design

Development
- Be hyper-mindful of application performance and quality
- Gather Falcon EHR performance metrics and benchmarking and report these results monthly
- Hold teams accountable for usability benchmarking and testing via the development lifecycle project plan and release management checklist
- Manage the reaction and resolution of usability concerns in a more structured, priority-driven manner

Client Services
- Recruit a variety of user types for usability benchmarking and testing
- Document and aggregate user feedback
- Constantly communicate to the user base about any strides we have made to improve usability for the installed base of customers so that they can see progress
- Constantly assess the satisfaction of our user base to understand the impact of usability

Marketing and Sales
- Help promote usability internally and externally
- Seek out comparisons in the market for Falcon EHR to constantly review and measure ourselves against

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Setting Usability Goals

The next step was to set clear and measurable usability goals that would move the needle in the eyes of our end-users, with the ultimate goal being to make it easy and efficient for our end-users to complete their workflows in our software. We defined categories for usability measurements and set a percent improvement goal for each:

1. Performance – screen loading times across 17 scenarios
   a. Goal: 5% improvement per release

2. Efficiency - aggregated user task times for 13 scenarios
   a. Goal: 10% improvement per release

3. Effectiveness - aggregated user error count for 13 scenarios
   a. Goal: 10% improvement per release

4. Satisfaction – aggregated user satisfaction rating for 13 scenarios
   a. Goal: 5% improvement per release

Benchmarking

Workflow Usability

In order to accurately measure usability improvements, prioritize problem areas, and focus our usability tweaking efforts, we had to first set baselines for our current workflows. Based on user interviews and usage metrics, we selected scenarios specific to a nephrologist’s core EHR workflow to continuously measure and improve upon:

- Completing a Superbill
- Starting a dialysis note
- Completing a laboratory order
- Creating an e-prescription
- Documenting a dialysis visit
- Approving interfaced laboratory results
- Approving pharmacy refill requests

For each of these scenarios we recruited physicians and their office staff to participate in Usability Benchmarking Sessions. During these individual sessions, we tested task times, counted errors, and measured user satisfaction. We aggregated the numbers across scenarios and published our Usability Baseline. The Usability Baseline served as starting point from which to measure improvement with each Falcon EHR software release.

During the Usability Benchmarking Sessions, we were able to not only gather baseline measurements, but also to see specific problem areas within the scenario workflows. For example, while testing three scenarios for completing a Superbill, we immediately noticed several areas of concern. One area of concern was that the time to complete a Superbill doubled when a physician had to add an additional procedure to the bill. This gave us not only a basis on which to improve task times, error rates, and satisfaction, but a specific area on which to focus our initial improvement efforts.

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PERFORMANCE

In addition to benchmarking usability for common workflow scenarios, we also focused on application performance metrics. We selected common areas of the application in which data is retrieved and displayed that are critical for a physician to review while providing patient care, such as note templates, allergies, and medications. We also focused on the office staff’s data-heavy interactions with the system, including patient demographic information and practice schedules. To set our baselines, we timed how long it took for data on each area to load.

As we generated our baselines, we noticed some trends that were not surprising, such as the correlation between page loading speeds and the amount of data recorded on a page. There were other results that were unexpected. For example, page loading times were faster in some areas of the country than others. Most significantly, there were noticeable latency issues that correlated with the distance from the location of the hosted application.

PROMISING RESULTS

WORKFLOW USABILITY

Superbill
After we established baseline usability across our 13 scenarios we implemented a policy of testing the usability metrics after each new product release. Our first areas of focus were the Superbill scenarios. One month after the product release that included Superbill-specific usability improvements, our benchmarks were promising. Average task time, for example, was improved by an amazing 73% and the error rate was improved by 6%. Our customers also noticed our focus on usability; as one customer stated, “The latest release was one of the best you all have done; it saved our practice a lot of time.”

73% Superbill task time improvement
6% Superbill error rate improvement
221% Dialysis notes task time improvement
30% Page loading speed improvement

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Next we focused on a workflow that was unique, but highly important, to our nephrology-specific user-base: starting a dialysis note, chair-side, in a dialysis center. In order to improve this workflow we built a new dialysis dashboard to allow physicians the ability to review their patients’ real-time dialysis shift schedules on a worklist. Because Falcon EHR is a wholly-owned subsidiary of DaVita HealthCare Partners Inc., a dialysis provider, we were able to tightly integrate with the DaVita® dialysis center scheduling database. However, the improvements extend beyond DaVita® dialysis center patients to the management of non-DaVita dialysis patient schedules so that all dialysis patient notes can be initiated from the same dashboard. Further, the new module provided the ability for physicians to review the patients’ monthly visits completed and still to complete.

During initial benchmarking we noted that the process to initiate a dialysis note could take up to 8 clicks, depending on where the user was within the application. Our customers were delighted when the new process reduced most workflows to single-click note initiation. When we re-tested the scenario using one-click note initiation, the task time for initiating a dialysis note improved 221%. Again, our customers noticed our efforts and provided much positive feedback such as, “The verdict is in. You really do have a winner. Not only is it easy to use, but the dashboard itself almost looks like a video game. It actually delivers a child-like incentive to [complete all dialysis rounds] by the end of the month.” Another physician said, “It makes it very, very simple for me to do what I do. It’s working out fantastically.”

“IT MAKES IT very, very simple for me to do what I do. It’s working out fantastically.” -Falcon EHR Physician User

PERFORMANCE

During our baseline testing, we noticed that the application speed was slower in certain areas of the country, so we immediately investigated and implemented a solution. We chose to work with a Content Delivery Network vendor that specialized in providing server load balancing to improve the delivery of content over the internet to all customers, but most especially to customers in areas seeing poor performance.

We also saw compromised performance for all end-users accessing screens that contained significant amounts of patient data. To improve performance in those application areas, we tweaked the system to retrieve less data by default. For example, instead of automatically pre-loading 2 months of a physician’s office schedule data, we now load only 1 week of data automatically (more than 1 week of data can still be easily accessed and loaded on demand). We also implemented a more sophisticated caching logic for other types of patient data such as allergies, medications, demographics, and notes to significantly reduce the screen loading times.

After implementing the Content Delivery Network, adjusting the types and amounts of data to automatically load, and building more caching logic, we saw improvements that surpassed our 5% per release improvement goal. With just the caching improvement project alone, we saw page load times improve 5 times over the original baselines. So far we have improved the overall performance by 30%, and, as we implement more caching and smart auto-loading, we expect to see consistent incremental improvements with each product release.
ABOUT FALCON EHR

Falcon EHR is the certified, innovative choice for a nephrology-focused EHR that will help physicians track and manage their CKD and ESRD patients. Through a hosted, Web-based EHR system, physicians have access to critical patient data from any computer or iPad, whenever and wherever they have internet connectivity. Falcon EHR adds value to physician practices by streamlining operations with its easy-to-use interface.

The Falcon EHR solution offers many ways to improve operations. By utilizing innovative technology, Falcon EHR helps prepare physician practices to qualify for stimulus package benefits by meeting meaningful use requirements.

To learn more about Falcon EHR, contact us at **1-877-99-FALCON**. Visit us on the internet at [www.FalconEHR.com](http://www.FalconEHR.com)

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