

Acute Care Nursing Research

Q1 2013

Purpose

- Request was made to research Acute Care RN workflows to identify challenges nurses experience
- Primary focus was to identify where Mobile Devices could be used to improve the workflow (but research was not limited to mobility)
- Observations were for inpatient nursing areas, although we did observe a couple of Oncology clinics, EDs and Surgery Areas since their workflow is similar
- Primarily observed RNs. Some research about ancillary staff (PAs, LPNs, NPs and Patient Care Techs) was also collected.

We have...

- Completed 10 site visits
- Shadowed roughly 100 medical professionals (RN, PT, RT, PCA, etc.)
- Observed the environment in a wide variety of units, including: ICU, ED, Labor & Delivery, Medical Surgical, Infusion Clinic, Out-patient Clinic, Behavioral Health, ICU Step down, Telemetry, Cluster, Pediatric ED, etc.

Methods/Approach

- Kick-off - 2 hour meeting with the nursing executives/nursing staff to understand what nurses see as their most important tasks and needs in a mobile product
- Observation and Interview - follow and watch nurses doing their work to collect data like the following:
 - Common workflows
 - Current equipment usage
 - Inefficiencies/Difficulties with current workflows
 - Communication methods between providers
- Wrap-up Meeting (optional) - walk through common observations and review next steps

Methods/Approach

- 2 Allscripts UX team members attended each site visit
- Data was collected in 2 worksheets:
 - Workflows
 - Nurse's Name
 - Activity and Where
 - Steps
 - Tools
 - Comments
 - Interview questions
 - What, if any, devices do you use on a daily basis at work and at home?
 - What are the tasks that you complete most often?
 - What are the steps?
 - How do you pass information between yourself and other providers?
 - What is working well in your current workflows?
 - What is not working well in your current workflows?
 - How often are you interrupted and how do you know where you left off?
 - What is the best form factor for a mobile nursing device (iPad, iPad mini, iPhone)?
- Researchers were instructed to “write down everything you see, hear, think...”

Research Sites

- Cancer Treatment Centers of America (CTCA)
- Santa Barbara Cottage Hospital
- University of California Irvine (UCI)
- Baylor Healthcare System
- Abington Memorial Hospital
- Robert Wood Johnson Health System (RWJ)
- Children's Hospital of Alabama
- University of Kentucky Healthcare (UK)
- Maimonides Medical Center
- Memorial Sloan-Kettering Cancer Center (MSKCC)

Next Steps Communicated to Sites

- Compile feedback from all research sites
- Generate requirements
- Create application design
- Gather more feedback
 - Design reviews with participating sites
 - Usability testing with participating sites
 - Design iteration based on feedback from sites
- Develop the application based on feedback and refined requirements

Analyzing the Research

We collected...

- 1,100 observations about nurses
 - Observations include requests, quotes, comments and things we observed related to how nurses work
- 874 Learnings to keep in mind when designing
 - Learnings are items that will aid in design such as demographics of the nurses and what is important to them
- 377 Specific workflows
 - Workflows are step by step workflows observed during the shift
 - Some are the same workflows collected at multiple sites and with multiple nurses (example-medication administration)

Analyzing the data

- 3-day “deep-dive” meeting in Raleigh– May 15th -17th
 - Included participants from the UX team and the BAs from the Mobility team
- Looked at and evaluated observation data item by item
- Walked through and categorized Learnings
- Created key primary User Profiles
- Brainstormed solutions to High Priority themes
- Started Epics and User Stories

Observation Themes

Theme Creation

- UX team went through observations prior to meeting and identified high level themes
 - Common thread in comments and observations
 - High-level problem (not a solution)
 - Created as data was reviewed
 - Theme set was created after roughly 200 data points were reviewed
- Individual observations were then printed out and re-categorized into sub-themes during the session
- The sub-themes were used for brainstorming later in the session

I don't want to do the same thing multiple times

- Want digital over paper, paper is inefficient
- Need faster access to information
- Status is important
- Need an up to date ToDo list
- Want mobile access to “the brain” (or cheat sheet)
- Have to trust it will be available
- Waste time transferring from paper to EMR
- Feedback about charts, flowsheets, orders, patient info and meds in the EMR
- Navigating within the EMR has challenges
- Need automatic charting of activities
- Need access to the EMR from where I am
- One stop for charting
- One stop documenting for an activity (don't go through multiple screens to do something)
- Inefficient to not copy forward



"I shouldn't have to enter this information (when something was started). It should be smarter than me."

"These flow sheets need to fill themselves out! As you do your checklist it should build the note."

Fixed charting locations causes inefficiencies and delays - computers only in certain locations

- Technology challenges with workstations
- Charting Issues
- Medication Administration Issues
- Workstations on Wheels too cumbersome
- Limited access- lack of workstations
- Always available access (no computer available where working)



"You so often get interrupted and if you leave, the computer might not be available when you get back"

"Can't bring carts in the room. They are enormous!"

"We tried to roam with the WOWs but they shut down a lot"

Need for aggregation of patient information that reflects needs of your current role/task (only what I need when I need it)

- View needs to change based on task (surgery, huddle, get up to speed on patient info, handoff, med admin, facility admin, verbal report to doc, treatment plans, bloodwork, rapid response, orders)
- Want aggregation to be complete (all the info you need for the task)
- Aggregating the data helps me to process and understand patients
- Aggregate the reference information
- Good basis to document from (start with some "given" information and then add to it)



"It is easier to find information or tell the patient story with paper"

"It's hard to find things in SCM."

"I don't like to float. I like to be efficient. Too much of my day is floating looking for information, etc."

"If I had to page a doctor I need that info"

Need for aggregation of the to-dos and completed items for each patient

- Give a sense of completion (tell me when it's done, show me what I did or was done)
- Reminders (let me know when something is supposed to happen, alarms, flag, etc.)
- Alert aggregation management
- Planning (tell me what I have now or in the future- my daily schedule specific or general time frames, team to -dos, continuation of care schedule, make me aware of changes)
- Workflow (tell me what I need to be doing)



"It's hard to know what is missing (or was missed) at the change of shift."

"Nurses want to know, what do I need to do today?"

"It would be great to be able to generate a list of things that need to be done for the next shift so it's easy to hand off"

"I double check the orders before I do anything to make sure nothing has changed"

I should be able to document quick tasks at the time of completion

- Order changes and completion
 - Task set-up
 - Integration with other systems (monitors, etc)
 - Task completion (worklist)
 - Preparation for report
 - Dictation
 - Flowsheet time savings (auto-population)
 - Patient Education
 - Mobile Device preferences
 - Multiple Data Points
- (in multiple categories)
- Electronic Brain/Cheat Sheet
 - Medication Administration
 - Supply Management
 - Timely charting for flowsheets (too many boxes, pop-ups, etc)
 - New feature requests
 - Point of care testing
 - Capture Images



"It's not unusual for documentation to take hours from time evaluated."

"I used mnemonic devices to remember things that happened today to note later."

"It would be ideal for me if the things I do could chart themselves (raise bedrails)."

"Patient and families like to talk so I would get disrupted documenting for long in the patient's room."

Let me know when I have something to do wherever I am

- Tell me where my patient is
- Make me aware of any special needs of my patient
- Custom reminder creation and management
- Let me know the level of urgency
- Let me know when my patient's vitals are out of range
- Let me know about new orders or changes to orders
- Tell me the right time to give a med, etc
- Let me know its coming and give me a view into the Discharge process
- Let me know about medication updates and changes
- Let me know if the patient needs me



"I can't do anything without a doctor order. I can't give an eye drop without it. So I'm constantly hounding [people]"

Help me find the people I need to communicate with

- Reliability
- Help me find a specific person
- Direct me to the right person/role
- One device for multiple modes of communication
- Help people find me
- Help me to know the status of the person that I am looking for (are they onsite, off, on-call, etc)



"Nurses are assigned phones so each day we get a paper list of numbers."

"It would be great if I had easy access to the physician contact information."

"Nurses are more likely to ask someone they know a question (on the hall) instead of someone elsewhere."

"I have to let the residents know that this call is important if they aren't picking up. Want to ensure that the call gets picked up."

I only do this because I must. Please help me do it quickly as possible

- Document thoroughly and accurately
- Accurately enter on data on behalf of others
- Validate before acting
- Document more efficiently
- Get quick access to patient record
- Reduce my workload by pulling/pushing info from other systems
- Quick access to required information



"I would prefer the Dr. fill out the discharge instructions. I have to go into the system and try to figure out what the patient is being treated for."

"Changed the time on an order since the physician entered it wrong."

"No one looks at the plan of care notes. Want it done automatically."

"I spend all that time entering 3 different temperatures into the system."

Help me effectively manage the mobile devices

- Reliability is key
- Sanitation
- Mobile Accessories (cases, holsters, chargers, battery life extenders, etc.)
- Theft/Security
- Form Factor/device size
- Tracking/security
- Policies around mobile devices
- Data Integration
- Shared Devices



"Have to consider where you will put a mobile device. We wash our hands a lot."

"I am scared to carry a mobile device but love the idea of having a computer on me."

"How do you keep track of them? Won't they get stolen?"

"Isolation patients- need to wear gown and gloves (and sometimes masks) to go in. Keep a stethoscope in the room. How would we handle mobile in that environment? Would need a sleeve or jacket maybe?"

When I get interrupted (or try to do multiple things at once) help me to remember what I was doing

- Manage incoming communications from others (nurses, physicians, etc)
- Remember where I left off
- Prioritize my work
- Alert me when I need to do something
- Relay information effectively to others
- Manage incoming tasks from the day
- Manage communications from patients and families
- Manage incoming communications from devices and instruments



"[The phones] NEVER STOP RINGING!"

"Now I don't remember what medication I was on."

"I keep track of where I was by jotting it down on a scrap of paper"

"If I get blocking alerts it CAN'T erase what I was working on at the time."

Help me to communicate with less disruption

- Set Preferences for how people can contact me
- Show status when unavailable to talk
- Match outgoing communication with a person or situation
- Prioritize messages and tasks
- Get communications acknowledgements
- Document more efficiently
- Communicate with someone no matter where I am



"You have to answer the phone when it rings so you are talking to a patient, the phone rings and you have to answer. Patients do not like that and it breaks up what you are trying to do"

"but they NEVER STOP RINGING!"

I want peace of mind that my part of the task workflow is complete

- Items that hurt peace of mind (system lacks completeness, increased cognitive load- remember items yourself)
- Others are limited to what they can order (nurses can only do so much before the MD has to sign off)
- Safety (automated follow-up, reminders, patient monitoring)
- Personal task completeness
- Confidentiality
- Peace of mind example



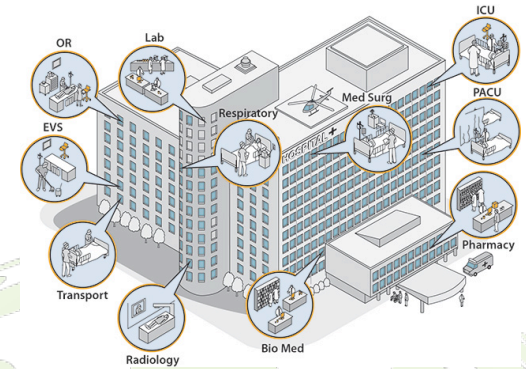
"I would like to have a check list of everything I need to do for a patient."

"I review documentation to see if 'Pay check' nurses did everything they were supposed to do."

"I would like to know where the patient is in the process."

I want a view of where everyone is (staff and patients) that relates to the care of my patients

- Department
- Staff
- Learning
- Patient



"You have the phone with you until you report to the next nurse so there is no way to find the next nurse because you still have the phone."

"A map [of the dept] would be really cool"

"It would be great to log in at a unit and be able to call or find a specialty or role, not necessarily a specific person"

Help me to develop and maintain the patient-provider relationship

- Alert me when patients need me
- Communicate with physicians
- Communicate with patient families
- Spend more time with patients
- Learn about my patients
- Remind me where I have left off
- Document when/where I want
- Educate my patients
- Focus on my patient
- Gain/keep patient trust
- Manage my tasks based on patient status
- Help me translate with patients



"I like to keep notes about personal things the patients have told me so I can form a relationship with them"

"During report we talk with the patients, not about them"

"I'm always educating patients"

"I have had to explain to patients that the phone is used for work and is not a personal phone."

Help me to communicate effectively and in the appropriate manner

- Reliability that device/system will work
- Regulation compliance
- Transfer of communication between different modes
- Allow me to update/supplement information
- Allow me to track verbal communication
- One device for multiple modes of communication
- Direct me to the correct resource for questions/problems



"How can I easily answer the question of 'who am I contacting?' and 'how should I contact them?'"

"Urgency and the recipient's preferences should dictate how message is sent"

Help me handle errors effectively

- Resolve errors caused by the system
- Resolve errors caused by me
- Continue to work and resolve errors from external/environmental factors
- Resolve errors caused by others
- Continue to work while system is down/unavailable
- Decision making and resource help



“When something goes wrong, what should I do?”

*“Who do I contact?
How do I resolve the problem?”*

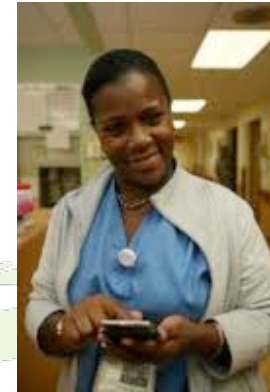
Learning Themes

Learnings Evaluation

- While going through observations the UX team categorized learnings and identified high level themes
- Further grouping was done during the evaluation sessions in Raleigh within the context of a mobile product
- Learnings should be used while designing to ensure the needs of the nurses are met

Nurses use technology- for the most part

- Many nurses have an iPhone or smart phone they use at home
- While all the nurses said they weren't supposed to use their phones at work, many used their phones for work related items (translation, calculations, etc)
- Most want to carry a device in their pocket (instead of in their hands)
- Commonly use Instagram, email, IM, calculators, shopping, and Fun Stuff on their phones or computers at home
- A few nurses do not have a smart phone and do not have a desire to get one



"Want an 'All in One' solution. Don't make me move around to use different devices"

"Translation is used all the time. 'That's the best of it'"

"I am so challenged when it comes to the computer"

"I use an iPhone at home, mostly for calls. It is more complicated than I need."

Primary Communication is still talking

- Communication is primarily through telephone or physically tracking people down
- Will often walk to a workroom to find the physicians if they are on the unit
- Some hospitals are piloting phone programs such as Vocera or Voalte. There are mixed reviews on these
 - Helpful to reduce paging and running to the phone
 - Constantly interrupts me while I am in the room trying to do something
 - Don't always work



"I prefer face to face contact"

"Vocera is helpful sometimes but we have had trouble with it in the past. They don't get taken care of and get hit accidentally"

"I Like the IP phones, but they break easily"

Nurses are still reliant on paper

- Every hospital has a different set of features installed resulting in a mix of paper and SCM
- Many print out medication lists at the beginning of the day and keep it up to date manually throughout the shift
- Many sites have some notes/flowsheets in SCM and some on paper. Many physicians are still doing notes on paper
- Nurses are still carrying cheat sheets/brains and binders around for all their patients. Often leave them places as they are running around.



"We still have a lot of paper"

"I wish everyone was on the same page. Some people are in the computer while others are not (physicians)"

"Can't wait until everyone is in SCM"

Speed and Efficiency are Key

- Love anything that makes things quicker such as Acronym Expansion, Copy Forward, Device Integration, etc
- Always do multiple things in a room. Rarely go in and do one thing
- Would consider time savers such as dictation but only in the right environment
- Find lots of redundancy in SCM
- Systems errors and slow performance drive them crazy
- Feel some things they do are not utilized



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"I'm all for anything that would make our lives easier. There are so many places we have to go to get things"

"I would be surprised if doctors looked at the nurse's assessments"

"Oh my goodness! That is so annoying. I'm just trying to get into the system"

Nurses are never empty handed~

- Lots of carrying things from place to place. Very rarely empty handed
- Nurses carry:
 - Clipboards
 - Med lists
 - BP cuff
 - Stethoscope around neck
 - Wristwatch
 - iPhone in cover
 - Pen
 - Alcohol prep pads
 - And other miscellaneous items
- Often leaves clipboard or binder around and forgets where it is
- Nurse is carrying clipboard around with the consent form on it while the patient goes to the bathroom



"I'm all for anything that would make our lives easier. There are so many places we have to go to get things"

"Have to carry a lot of stuff in my pockets so an iPad wouldn't fit in there"

"Have you seen my binder?"

Nursing workflow is unpredictable

- Nurses can't always predict the next task they will do. At any point in time, every part of the application needs to be 1 click away
- Staffing can make or break a day
- The charge nurse seems to fill in where needed on the unit
- Workflows are patient dependent - "Everyone has their own report"
- Nurses maintain ToDo lists and cheat sheets to help them track work appropriately



"We've learned to make do with what we have"

"We wear lots of hats since the department is understaffed"

"Took about 30 minutes to get a patient all set back up after returning from surgery"

Report is moving to the bedside

- Many hospitals are moving to bedside report (where change of shift report occurs in the patient rooms). This has been met with mixed reviews from the nurses
- Most of the hospitals have implemented or were implementing bedside report with mixed level of success
- Many will give report outside of the rooms and then go in to introduce each other and talk about the plan of care for the patient
- Report format most commonly SBAR (Situation, Background, Assessment, Recommendation) or SOAP
- Some sites will use Clinical Summary or the Clinical Data Viewer for report



"'Transparency' is a big shift in the field of nursing. Letting the patients know what you think about them and what you're doing is new to nurses and will take some getting use to"

"It was to improve patient satisfaction scores mostly"

User Profiles

User Profiles

- As a part of the research we identified primary and secondary users of a nursing mobility app
- Primary users include:
 - Med Surg/Telemetry Nurses
 - Critical Care Nurses
 - Behavioral Health Nurses
- Secondary users include:
 - ED Nurses
 - Surgical nurses (PACU, OR, etc)
 - Nurse Practitioners
 - Roving nurses (wound care, pain management nurses)
 - Patient Care Technicians
 - Therapists (Respiratory, PT, OT, etc)
- Primary users were divided between teams and a profile and collage created for each user