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It's every manager's dream! A complete, legible, organized patient chart at her fingertips! At my institution, a team with representation from physicians, clinical engineering, nursing and midwifery made the decision to purchase an integrated electronic fetal monitoring and computerized charting system making this dream a reality. Since the inception of our computerized patient record over 3 years ago, I have often been asked, "Would you ever go back to paper?" The short answer to that is a hearty "No". The long answer, however, is much less concise and begins with "No, but…"
My story starts here…

WANTED! System Administrator for computerized patient record. Must possess a current RN license. Clinical knowledge required. Demonstrated leadership skills mandatory along with the ability to create extensive education and training programs. Also must know everything there is to know about network engineering, or at least close to it and be able to install and configure hardware such as memory, mice, lightpens, CT5's, XLR cables, network cards and possess a thorough knowledge of SQL Server operations as well as PCAnywhere. May be asked to edit the system registry, come up with innovative work arounds, be responsible for every protocol ever made at the institution, take the credit for purchasing the system (not really credit) and be a public relations whiz who can talk users into using the system effectively, efficiently and without whining. Or, at least, without throwing anything at the workstations. Willing to work hundreds of hours every week for many months. Also will be forced to troubleshoot any other unit device that contains a computer chip or an electrical cord and who enjoys waking up at 0200 to provide support during system downtime. Other duties as assigned.

Okay, I may be exaggerating slightly especially considering there was never a job description available. My colleague and I were offered the job as system administrators with the understanding that this would be a temporary reassignment lasting approximately 3-6 months at which time we would be expected to return to giving patient care as staff nurses, our starting point. Four and a half years later, we are still providing support for the computerized record! As mentioned before, there was no job description available for this position and I'm not sure that I would have applied had I known what was in store. Yet, the education I've received from serving the software, hardware and end-users has been an invaluable, unique one and perhaps will prepare you for your next position.

"Clinical knowledge required".

Challenges were around each twist and turn of our road. We have a system that is protocol based which assists the user in adhering to hospital standards. With this in mind, our customizing began with a multidisciplinary team consisting of attending physicians, midwives, residents, nurses, secretaries and ad hoc members of the healthcare team such as anesthesiologists, social workers and dieticians among others. In these early morning and evening sessions, we reviewed the departmental protocols and implemented certain restraints in the system (i.e. making it more difficult to order a drug to which the patient had a documented allergy). It seemed up front that hospital protocols would not need to be edited, however, we found many differing opinions, some evidenced based, some not, which resulted in modifications. These meetings went on for months, sometimes becoming heated as learned opinions were shared but perhaps not welcomed. It was interesting to see the disparity between what the provider thinks is necessary and what the nurse actually does (usually

much more than the provider imagines). Many hours were also devoted to designing specific fields within the system. Trying to marry the computer requirements with the practical applications (i.e. considering the actual nursing care that is occurring while required documentation is ongoing) is difficult to this day. Because my colleague and I had strong clinical backgrounds, we brought many realistic issues to light, some as simple as lengthening the timeout for computer log in (a short timeout makes it difficult for the nurse to perform nursing care and document if she has to log into the computer every other minute) to more complex issues of practice. It is my firm belief that the easier the documentation piece is, the better the nursing care will become. Having someone who has actually done this patient care is a very valuable commodity from a training and development aspect. There were many times the users did not sense or appreciate the representation they had and this was a difficult feeling for me to adjust to. It was also amazing to encounter numerous people from fringe departments who offered strong input for our customization. I quickly learned that everyone has an opinion and is willing to share it. I developed the ability to listen attentively to the same issues repeatedly and this became another vital skill added to the mix.

"Demonstrated leadership skills mandatory along with the ability to create extensive education and training protocols."
As we neared our "go live" date, we created a classroom with 20 workstations and set up scheduled sessions for our hand picked group of Superusers. We chose these Superusers based on several criteria which included eagerness to participate, excellent clinical skills and a demonstrated proclivity for forward thinking to foster a successful implementation. The Superusers helped to train the users and the System Administrators trained the providers and residents. Our vendors provided the educational

lead with structured classes and learning tools that were helpful. We also made sure that basic computer skills were in place, directing virgin computer users to free Windows classes, as some of our staff had never even used an ATM. Because of home stretch technical difficulties (part of our product was not ready for our original go live date) we had a gap between the bulk of training and the actual system use. This created the problem of user amnesia, somewhat corrected by intense focus by our Superusers to support the actual go live and walking users through more difficult charting fields.

The hospital hired a team of consultants who were to assist us in this project. We found little value in this other than assurance we were on the right track. This also provided us with the opportunity to increase our paperwork requirements by 100%. Another valuable skill acquired.

"Willing to work hundreds of hours every week for many months".

As is usual with computer systems and best laid plans, our "go live" date changed several times while we waited for a product which interfaced with our fetal monitoring software. "Go live" was anticlimactic as such as we gradually added new admissions only to our computerized record database, not eager to mix paper and electronic charts for an individual patient. We used Superusers to provide additional support to the staff nurses and chalked up many hours above and beyond our contracted ones. With the support of our manager, we were able to buffer the staff nursing numbers in anticipation of the upward swing on the learning curve. This proved to be absolutely necessary and helped us capture good documentation during our initial weeks. Of course, without institutional support to allow for budgetary variances during this period, it would not have been possible to do

this. The support from our primary vendor (we use two software programs that interfaced) was provided on site for 2 weeks and intermittently on site for several more weeks, with 24 hour call availability. Our secondary software (for the electronic fetal monitor tracing information) was supported by phone but because of some difficulties, a representative was sent on site to collect data. In order to give the "big picture" for that vendor, we recorded a videotape showing our nursing station layout, server room, certain equipment and certain personnel as well as a quick overview of our unique interfaced product so the technicians could learn it's function in order to understand some of our calls. It was an exhausting, emotionally and physically draining time; one that did not end quickly but thankfully did eventually end!

"**Demonstrated leadership skills mandatory along with the ability to create extensive education and training procedures.**" As a resource nurse on our LDRP unit, I had experience with patient assignments and team leading. As an active member of the unit based Education Committee, I had developed educational programs and led a beta trial for a computerized patient record (not selected as our permanent software). I had an inkling (albeit a tiny one!) what was in store. My colleague had also led a beta trial and her product became our primary one.

Recognizing problems with certain fields and protocols, we worked closely with the vendor to improve upon and adjust the software design. Although problems could be fixed with this fine-tuning, the turnaround time was not immediate and we had to be creative and develop other fixes for several things. One of our biggest difficulties was the lack of interfaces with our hospital systems causing our nurses to enter certain orders in duplicate. Every patient's name has to be entered in our system as well as by the Admissions Clerk into the Hospital System. This

allows for errors in spelling of the patient's name, medical record and account numbers. This will be corrected eventually with an ADT interface which has been in development for many months. Having a limited number of workstations is restrictive and in our area (LDRP & Postpartum), it would have been optimal to provide a workstation in each patient room. One of the smartest purchases we made was to acquire a laptop PC for the on call System Administrator to dial in and perform system maintenance on the weekend as well as the ability to troubleshoot any system failures. Prior to this, the on call person would drive to the hospital and this delay in transit resulted in considerably longer downtime. Our efficiency increased tremendously with this addition. We learned as well that our data volume required greater memory on our servers and had this been anticipated, we could have avoided serious service interruptions.

"Take the credit for purchasing the system (not really credit) and be a public relations whiz who can talk users into using the system effectively, efficiently and without whining. Or, at least, without throwing anything at the workstations. "

During this, our initiation period, my colleague and I worked hard at the public relations aspect of this project, helping frazzled nurses find the areas they needed to find in the charts and soothing attendings' ruffled feathers at this enormous change. We were very fortunate to have the full support of our unit manager as well as both the Chairman and Chief of Obstetrics who reinforced some of the lesser champions of the system. Our manager assured us additional staffing of Superusers during the first few months to complement our continuously alarming pagers. At times, it did feel like we were soldiers in the frontlines and I was very glad to have my colleague to share the ups and downs of this experience. Soon we were able to add a 3rd system administrator who worked in a temporary capacity to help us

through this overwhelming time. There were many users resistant to this change but as time progressed, this number dwindled to a few. I viewed this position as an opportunity to make the system better for the end users. Unfortunately, some users did not share my vision. There were those who conveyed a feeling that my colleague and I couldn't possibly be working as hard as they. This was a difficult theme to swallow as I had personally never worked harder in my life! I also loved my sleep and this was suddenly routinely interrupted when I was on call. There are still users who throw disparaging comments our way and learning to ignore them has been most difficult. I will freely admit that I do not always offer the best reply to these situations but I do try to contain my anger and hurt. One of my best nursing friends told me she was very proud of how I had mixed my love of nursing with my strength in computer skills and sentiments such as this have kept me strong. I don't want to make this a monumental point, but I have always had troubling understanding why we are not always supportive of changes or progression in nursing careers. Personally, if I were not a system administrator for our product, I would hope that someone would represent me who had a similar nursing background.

"Also must know everything there is to know about network engineering, or at least close to it and be able to install hardware such as memory, mice, lightpens, CT5's, XLR cables, network cards"

A basic lesson I learned was that everyone has an opinion even if they only use the patient record once or twice per year. There have been peripheral users who have insisted lightpens are the solution to their computer problems. As computers become more pervasive in our society, more experts are born and each and every one is willing to share this expertise. This lesson has been reinforced several times over the last several years. Many other

lessons have followed, including this seasoned staff nurse learning to work not only through the institution's political network, but also with vendors who aren't necessarily able to fix what I want them to.

My colleague and I took Networking classes and a system administration class that added to our knowledge, however, the bulk of our expertise came from the "learn by the seat of your pants" college. It was quite an experience to work closely with Information Systems personnel, both from vendors and our institution. A very different type of person than a nurse, they all had special quirks and nuances that we learned to deal with. Information Systems specialists have either very high or very low expectations of their users and have little patience for lack of knowledge thereof. This seems to be a ubiquitous problem as I noted it came in different forms from both the vendors as well as our own IS Department. Some very unpleasant and surprising encounters were had, however, and we quickly realized that we needed to learn certain troubleshooting skills to enhance the success of our system. Our biomedical engineers helped bridge the communication gaps and gave us several lessons in the technical aspects of the system. Our primary vendor also provided us with instruction; however, the frustration level was evident at times when we just couldn't get it right. I always thought of the analogy of inserting an IV catheter or drawing blood off an arterial line as something I knew that they didn't. I would imagine performing CPR on certain engineers…or not. Somehow it always made me feel a little better to remember my strong nursing skills.

"May be asked to edit the system registry "

We pulled ourselves up by our bootstraps, took very deep breaths and dove in head first, clicking here and typing there, following

our instructions. Most of the time everything worked fine. I will repeat…Most of the time.
We've learned about the importance of tape backups, what it means to "bounce the machine" (restart the computer or server) and how unreliable even brand spanking new hardware can be. I know where the electrical closets are; I know what a "rack" is and I understand how the data can travel over the wire to the server database and back again to the workstation. VPN, DNS, PDC, and BDC are abbreviations I can define easily now--I really can.

"Also will be forced to troubleshoot any other unit device that contains a computer chip or at least an electrical cord and who enjoys waking up at 0200 to provide support during system downtime."
The most common solutions to the calls I receive now can be summarized into two categories—one is to call the vendor to restart or repair one of the software programs, the other is to plug something in. I am not kidding. Probably 90% of the calls received now are the result of a cable that has fallen out of the wall or is just not connected. The users are busy, doing patient care and at times don't thoroughly troubleshoot. They have become dependent on our availability. That's okay with me as the work they are doing is far more urgent than the computer piece. I do hold the concern that one day our positions will be obsolete and they will be left to their own "devices". Any other equipment that is even near a computer is often associated with us as its keeper. We have several other systems in our hospital including the HIS, ADT, Paging, Pyxis pharmacy, Pyxis supply, Infant Security, and Nurse Call Bells. There are also the Telemetry boxes, the infant warmers and cautery machines, all that I am now frequently asked questions about. Interesting phenomenon.

"Other duties as assigned."

In this category I would include site visits from other hospitals looking to purchase either the software we have or inquiring how we made our choices. I have also done research to support certain protocols and research to eliminate certain procedures. Discovering how our hospital charges for medications and reimbursement issues have opened my eyes to the big picture. We've become a warehouse for many ideas that are bounced about the unit, coming from managers, nursing, clerical staff, ancillary staff, residents and providers. We are viewed as safe territory—we are not vested totally in these ideas and have some knowledge and background. We are not decision makers or deal breakers and we are happy to offer our opinions on certain initiatives. This is a very special place to be as we have an inside track to the progression of our unit.

As time has passed, our system gets better, easier to use and more popular among the staff. We cannot call our system a "paperless" record as our Medical Records department does require a large portion of the chart to be printed after each patient is discharged. It is however, easy to read and has been applauded by the Joint Commission Surveyor as "cutting edge". Having our fetal monitoring strips contained as a part of the electronic chart has been a wonderful plus, giving us quick, easy access to these previously often misplaced or mislabeled strips of paper. We still have room for improvement; speed is an issue that should be solved by new hardware purchases. I wish there were on site support from our vendors. I also wish everything worked perfectly all the time. Our fetal monitoring software stops recording fairly regularly and we are planning to replace it with another vendor's product. I'm not sure this will be a smooth transition, however, but hope that I will be passing the baton to another unsuspecting nurse by that time. Had I known then what I know now, I probably would not have "applied" for this job.

Having said that, I am now a much richer person in computer knowledge, administrative skills, leadership skills and have apparently broadened my scope to incorporate these experiences into my writing. I have also learned to exercise a great deal of caution before I say "yes" to any project.

Would I want to return to paper charts? I still say the quick answer is a resounding "No!"