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**Supporting workflow in the healthcare system**

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**Introduction**

Workflow and SDLC are considered beneficial in achieving successful patient outcomes in today’s world. Workflow is the sequence of steps performed to achieve specific outcomes. Creating workflow models brings more structure to the project, on the other hand, The systems development life cycle is used to develop and implement information technology offering a road map for the information systems development in a very structured, and methodological way. The purpose of this paper is to discuss the scenario selected, how SDLC is used, and what workflow model is used along with the recommendation of a better workflow model. The paper also covers the role of Nurse Informatics in this scenario.

**Briefly describe the case study you selected.**

I selected Scenario 3, where we have a nurse practitioner by the name of Belle with Dr Berth in an obstetrical office. She started noticing anxiety related to pregnancy and childbirth in new mothers. Their questions were similar even though there was variation in age and experience with children. Belle wanted to develop an educational arena where women could get some medical oversight from Dr Berth’s office, and they could communicate with each other. Belle is not sure how to get started, she wants to develop a workflow model for this. She also wants to have another workflow model if the first one does not work out well.

**Systems development life cycle present in the case.**

The systems development life cycle describes various stages starting from an initial feasibility to completed application of a project. The stages are Analysis, Plan and requirements, Design, development, testing, deployment, and Upkeep and maintenance. (Dane.schultz, 2024). Firstly, analysis is done by evaluating the existing system for any deficiencies, which can be done by conducting interviews with the users of the system and then consulting with the support personnel**.** In the Scenario I have selected, there was no platform where new mothers were able to voice their concerns besides Dr Berth’s office, where every mom might not feel comfortable. Belle noticed this deficiency that falls under the analysis phase of SDLC. Under plan and requirements, new requirements of the system are defined, existing system is to be addressed, with improvement proposals, Belle has addressed the existing system and wanted to develop a project where new moms can communicate with each other. She wants to develop an educational arena for mothers where they could communicate with each other and get some medical advice from Dr Berth’s office that falls under Design. In this step, Plans are laid out regarding the issue. In the Development phase, the new system must be developed and installed, Users need to be trained to use it. Bell has not reached this stage yet because she is not sure how to start, she wants to work on a workflow model and wants another workflow model in hand just in case the first one does not work out well.

There was no testing, Deployment, Upkeep, and maintenance phase. if the system was developed, there would be tests performed by Quality assurance teams, followed by Deployment, where the new system is phased in replacing the old one. Lastly, there will be Upkeep and maintenance, the hardware and software will be replaced to better-fit end-users needs, and Users will be updated about the latest changes and procedures.

**Workflow model that was used. Explain whether this workflow model is a good fit and why.**

The workflow model used in the scenario can be the Sequential model, the most basic workflow model based on a fixed sequence of steps. The same sequence is followed every time the task is completed. In this type of workflow model, the same actions are taken in the same order. (Joanne, 2023) In the scenario, new mothers will ask questions regarding pregnancy and childbirth, and mothers who know the answer will try to help by writing it down, every mom along with Dr. Berth’s office will be able to see it and Dr. Berth’s office will provide additional advice if needed. After getting the answer, the task is completed, this will start all over again, the same steps are followed all over again and it goes on and on.

This model is a good fit because it’s easier to design and maintain in a Doctor’s office. It is faster, there is continuous progress forward, and is also clearly visible when the task starts and when it ends. The style is the same and formatted as a flowchart that will make sure everyone is moving forward with the flow and there are no backward steps.

In this scenario we don’t want to get stuck in one question, as soon as we get the needed information about the question, we want to go with the next question because there can be a lot of questions that need to be answered, therefore we need to do things quickly that can be achieved via sequential workflow.

**How the clinical decision support system impacted workflow in the case.**

Clinical decision support systems are the game-changer in this technology-driven world. There is quick access to information, research time is reduced, that had allowed health care workers to focus on patient care leading to quicker treatments and decreasing administrative workload. Along with this, CDS has helped improve the safety, efficiency, and quality of healthcare. Information can be combined via CDS about the present patient with information regarding previous diagnoses and treatments so that feedback or recommendations can be provided. (Chen et al., 2023)

In this case, CDS will have a positive impact as it will assist new mothers by providing real-time guidance. The alerts, reminders, and resources will help clinicians in Doctor Berth’s office to make better decisions and provide quality care as some moms may not be comfortable expressing their concerns in a doctor’s office compared to an educational arena where everyone is going through the same issue. The alerts from the CDS can be a lifesaver for some mothers because anything might happen to new moms at any time and this can be the middle of the night when the office is not open, they might not have any serious symptoms making them think that they can wait until tomorrow to go to the Doctor office. This type of educational arena can be beneficial if there is a CDS embedded in the program because any red flags the mom expresses will send the alert to on-call clinicians who will contact her personally and give medical insights. CDS tools will provide clinical knowledge targeting new mothers in the workflow.

**Role of the nurse informaticist in the case study and how the role could be beneficial to internal and external customers.**

Nurse informaticist is the nursing specialty in the healthcare workforce that can navigate the challenges when applying new technology to care for a patient. Their background and experience in both medical science and computer science make them the best person to be a part of designing, building, and implementing workflow and technology solutions. Their ability to recognize the challenge and necessity of collecting meaningful data to properly deliver care (Dane, 2024) can be beneficial to patients, healthcare providers, stakeholders, and administrators.

The fundamental theory of biomedical informatics said by Chuck Friedman is that “a person working in partnership with an information resource is somehow ’ better’ than that same person unassisted” (Eisenstein & Butler 2015). Nurse informatics has a crucial role in the case study I have selected, and it can be beneficial to both internal as well as external customers.

Firstly, the person who wants to bring a new system is a Nurse Practioner who will feel comfortable with another person who shares the same interest, Belle still must work on the workflow process, NI can step into this phase of SDLC by Collaborating with others so that requirements for workflow and technology solutions can be defined. According to himms.org, Nurse informaticists can translate the virtual care technical and operational requirements, evaluate the core tools, develop project plans, and implement and support the system. Belle wants additional workflow design if that does not work where NI will analyze gaps in the current state designing new multidisciplinary workflows. Working with nursing informatics enabled the team to leverage the power of the EMR in tracking and supporting new clinical workflows that impact patient outcomes. Creating tools in the electronic ordering and documentation system to facilitate best practices proved a significant boon in achieving the goal (Thompson et.al)

**Recommend an alternative workflow model that could be used in this scenario. Explain how it improves patient safety and/or outcomes**.

Workflow activity changes have a direct impact on patient care, efficiency, and efficacy. The alternative workflow model that can be used in the scenario is Rule-based workflow. In this model, there is still a defined sequence with built-in variations. Branching logic can be implemented between actions and tasks. In the scenario we are mainly dealing with answering questions of the new mothers in an educational arena, one mother’s answer might be different from another and the Doctors’ Office, In this case, the rule-based model can be used, depending on the answers. If there are two different answers, the remainder of the workflow can follow two different branches. If it is the right answer, then they can be advised to listen to that but if it is not the right answer then that group of mothers can be educated by the Doctor’s office on that topic.

If the Doctor’s office finds the answer of a mother is not correct, then they can be educated on that topic. This shows that there is a higher degree of sophistication in this workflow making it easier to ensure effective oversight and transparency. According to ICG consulting, this model can be a powerful tool to boost efficiency, accuracy, and productivity that will benefit both the mothers and healthcare personnel of Dr Berth’s office. This is all about transforming processes to drive better results delivering exceptional patient care and experience.

**Conclusion:**

Both SDLC and Workflow play a crucial role in achieving better outcomes. Workflow is considered the quickest way to brainstorm ideas working with a team, whereas SDLC helps create high-quality products to meet the needs of the organization. It is embedded with risk management to identify potential setbacks and make changes if needed.

**References:**

*Benefits of rules-based Workflow Automation*. ICG Consulting. (2023, September 26).

<https://icgconsulting.com/benefits-of-rules-based-workflow-automation/>

Chen, Z., Liang, N., Zhang, H., Li, H., Yang, Y., Zong, X., Chen, Y., Wang, Y., & Shi, N. (2023, November 28). *Harnessing the power of Clinical Decision Support Systems: Challenges and opportunities*. Open heart.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10685930/#:~:text=Increased%20efficiency%3A%20CDSS%20can%20reduce,information%20and%20automating%20certain%20processes>.

Dane. (2024a, June 14). *Healthcare Information and Management Systems Society*. HIMSS.

<https://www.himss.org/resources/nursing-informatics-key-role-defininhttps://www.himss.org/resources/nursing-informatics-key-role-defining-clinical-workflow-increasing-efficiency-andg-clinical-workflow-increasing-efficiency-and>

Eisenstein, E. L., & Butler, K. A. (2015). [Health informatics-enabled workflow redesign and evaluationLinks to an external site.](https://search.ebscohost.com/login.aspx?direct=true&db=mnh&AN=25676961&site=eds-live&scope=site&authtype=shib&custid=s6527200). *Studies in Health Technology and Informatics*, 208, 131–136. doi:10.3233/978-1-61499-488-6-131

Gillis, A. S. (2019, June 21). *What is systems development life cycle? - definition from whatis.com*. Software Quality.

<https://www.techtarget.com/searchsoftwarequality/definition/systems-development-life-cycle#:~:text=The%20systems%20development%20life%20cycle,technical%20and%20non%2Dtechnical%20systems>.

Thompson, C., Kell, C., Shetty, R., & Banerjee, D. (2016). [Clinical workflow redesign leveraging informatics improves patient outcomesLinks to an external site.](https://go.openathens.net/redirector/waldenu.edu?url=https://www.sciencedirect.com/science/article/pii/S0147956316300863?via%3Dihub). *Heart & Lung: The Journal of Acute and Critical Care*, 45(4), 380–381. doi:10.1016/j.hrtlng.2016.05.025

Joanne. (2023, October 12). *Which workflow process will work best for your organization?*. Gravity Flow.

<https://gravityflow.io/articles/which-workflow-process-will-work-best-for-your-organization/>