**Project Summary**

**Project Name:** Implementation of solution to reduce drug abuse among patients who are prescribed controlled substances for pain management after orthopedic surgeries.

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**Team number: 5**

**Project overview**

After certain surgeries, prescribing opioids is inevitable due to the amount of pain patients suffer from after the surgery. In such cases, it is possible that patients can abuse the use of such controlled substances even after they are healed. Our aim is to monitor patients which have been prescribed controlled substances by our hospital doctors after the surgery to prevent them from abusing such substances. To do this, we started the ‘controlled substance monitoring project’ for the orthopedic department of our ABC hospital. In this project, we enrolled the discharged orthopedic patients who were treated with opioids for pain management.

**Our solution:**

We provided them wearables which were integrated with our hospital EHR. These wearables monitored their vitals and notified their caregivers if the patient had sudden changes in their vitals due to the excessive use of controlled substance. Additionally, as a part of this project, we collected consents for random drug testing and conducted such tests to prevent the patients from falling in the trap of drug abuse. Also, patients had the option of consulting virtually with the psychiatry department which could help them handle depression due to pain and thus prevent drug abuse.

This project is a revenue generator for the hospitals as it keeps the patient engaged with the hospital even after discharge through random drug testing, virtual consultation, and wearables. This project is our attempt to solve the opioid crisis. Hence, it would bring great brand value to our hospital and enhance our brand identity which in turn will attract more patients to the hospital. Our aim is to expand this project across the hospital in various departments. Selecting orthopedic department was a pilot to study the success of this initiative to implement it across the hospital. Our goal was to collect and study the vitals, test results and logs of virtual consultation of the patients enrolled to this project. During the budgeting of the project, the estimated project cost was 230,441.67 USD. Our project timeline was 09/10/2021 to 12/10/2021.

**Project Initiation**

The initiation phase primarily consisted of creating the project proposal document and completing of requirements gathering which involved getting inputs from stakeholders and defining user and functional requirements. This phase set the tone for the entire project and gave an idea to everyone, what the project was all about and what we needed to achieve. Through user requirements, we derived the functional requirements, and these requirements helped the development team to design the solution. Completion of requirements was the stage gate to proceed to the next phase. The complete set of requirements determined the items which were in scope, and which were out of scope. Designing became easy due to requirements gathering and thus added a lot of value. The stakeholders for this project were ABC hospital executives i.e., the managing director, board members, project sponsor, technical teams (development team, business analyst, testing team), the project team – Health-Tech, end users i.e., vitals monitoring team, psychiatry department, lab technicians and data analysts. ABC hospital was the sponsor for this project as this was an internal hospital project, and the board had appointed a board member as project sponsor representing the hospital. The criteria for identifying the stakeholders were the teams which could rapidly develop and implement this project and sponsor identification was done by the board such that they could drive the project and create financial success for the hospital.

**Project monitor and control**

The deliverables as a part of monitor and control were overall project management, conducting regular status meetings, controlling project risks, conducting change control by creating change control document, evaluating scope, approving change if any and implementing change. Monitoring and controlling the project ensured that there were no delays, there was no scope creep by inclusion of out-of-scope items. Also, through monitoring and controlling we ensured that we have the right mitigation strategies for potential risks of the project. We monitored the progress of the project through regular status reports. We went through a well-defined change control process so that we could implement only those changes which were approved. We prioritized risks based on the likelihood of their occurrence, detectability, and probability. Monitoring and controlling helped us keep the project on track and make it a success. Minor changes to the design, minor delays in the timeline and cost variances up to 15 % were acceptable monitoring and control variances.

**Project planning**

Creating scope statement, work breakdown structure, project budget (detailed estimates), work plan, communication plan, risk analysis document identifying discharged patients to be enrolled to our project and planning wearable purchase (getting quotations and vendor selection) were the deliverables for the project planning phase. The planning phase helped us decide how we wanted to accomplish what we decided in the initiation phase. All these documents set the tone for the actual execution of the project and made it easier for the project team to implement the solution. Identifying scope of the project helped in not overcommitting. Work breakdown structure and work plan gave the teams an idea about the tasks which were to be accomplished as a part of the project. Communication plan helped in setting expectations about regular meetings and gave confidence to the sponsor and clients that the project shall be a success. Estimated budget gave us an idea about the cost limits we could not exceed. Risk analysis helped in identifying project risks, prioritizing them, and coming up with mitigation strategies. Planning which patients to be enrolled helped actual enrollment during execution. Identifying vendors helped in keeping some of them on standby and selecting the one offering best quality and price. We used Microsoft Office, project management software and the project team as tools and resources for this phase. Creating all the said documents, identifying patients and vendors were the stage gates for proceeding to the execution phase. This phase was extremely valuable as it created a base for the execution phase. 11% of the total time was used for planning phase.

**Project execution**

Enrolling patients, wearables procurement and storage, design document creation, build, unit testing, systems integration testing, deployment, user acceptance testing, user training, application support, data collection, data analysis and data interpretation were the deliverables for the execution phase. Actually building the solution, testing whether it is working or not, identifying bugs if any, deploying solution for usage by end users, helping the end users and deriving insights from the data was the purpose of the project execution deliverables. Identifying if the proposed solution works or not, knowing if it could be applied across the hospital was done through project execution and hence it added value to the project. Project execution involved using tools like software for building the solution, testing the solution and data analysis. This phase involved usage of development, testing, project teams, data analysts. These were the human resources for the project. Accomplishing all the said tasks were the stage gates for proceeding to the closing phase. The last task before proceeding to the closing was data interpretation. 81 % of the total time was used for project execution.

**Project closing**

Evaluating the project’s potential for hospital wide expansion, creating lessons learned document, creating project summary, gaining formal acceptance, and archiving documents were the deliverables for the project closing phase. The success of this project decided if we can implement this solution to other department of the hospital which prescribe controlled substances. Evaluating if we were successful in controlling drug abuse was the identifier for future expansion. Lessons learned document would help us in the future for similar projects and even during expansion. Project summary gives all the stakeholders an idea about the gist of the project, what was planned and achieved. Formal acceptance helped in officially closing the project and archiving documents will help in audits and for future reference. Approvals from the project sponsor and hospital board are required for closing the project. This phase used tools like Microsoft Office for formal presentation and SharePoint for creating repository for archival. The main human resources used for this project was the project team. Formal presentation of the project and engagement of stakeholders like sponsor and hospital board was involved in this phase. Formal closure adds value as it helps in taking the next steps and moving on to the expansion of this project. 7% of the total time was used for formal closure of our project. The project fulfilled its original goals like controlling drug abuse among discharged patients through the implementation of the proposed solution. We learned that it is important to define the scope properly in the beginning, get everyone on the same page, have end user engagement since the beginning of the project, have vendors on standby, do proper market research for vendor selection, create guideline documents, and give sufficient time for UAT. Monitoring patients after they are prescribed controlled substances is vital for handling the opioid crises. Through this project we gained the knowledge of how we can control drug abuse.