# Solution Development Plan

**Solution: Riverbend Hospital**

**Owner(s): Jack Cahill, Max Potter, Tara Graeve**

**Date: 9/23/2020**

**Change Log:**

|  |  |  |
| --- | --- | --- |
| **Who** | **When** | **What** |
| **Owners** | **9/23/2020** | **Interviewed Riverbend Executives** |
| **Owners** | **9/23/2020** | **Created the executive summary** |
| **Jack / Max** | **9/23/2020** | **Interviewed two health care professionals** |
| **Owners** | **9/23/2020** | **Finished business requirements and IP** |
| **Owners** | **9/24/2020** | **Revised Summary and IPs** |

**Executive Summary**

Implementing a data warehouse for Riverbend Hospital would greatly improve **four areas of focus** that we believe are paramount to a hospital’s success. The first area of focus for a data warehouse would be for the population or community centered around the hospital. By analyzing medical informatics of people around the hospital we would be able to answer and better prepare for environmental or behavioral impacts around the community.

The second area of focus is to the individual patients. A data warehouse can identify which treatments are more effective to patients with a similar medical history. Through better accuracy in prescribing medication, Riverbend would spend less money on prescriptions and reduce their footprint in antibiotic resistance.

The third area of focus is the providers or caregivers in the hospital. Riverbend has a variety of staff and it is important to understand how effective they are. Through analyzing data regarding a patient’s recovery time, satisfaction levels, medication effectiveness, and other factors, Riverbend could determine which part of their staff is most effective, and which part needs more training.

The last area of focus is the organizational level of the hospital. Varying injuries and illness occur with greater frequency during months or seasons of the year. If Riverbend is able to analyze and begin to predict the type of cases they might see next, they will be better equipped to treat a patient. This includes important facility restrictions such as number of beds and types of beds. A data warehouse would allow Riverbend to perform with great organization and be better at anticipating the needs of their patients and community as a whole.

**Business Requirements**

**Hospital Operations Manager**

How do patients with similar medical histories and conditions respond and recover to certain treatments during different years, across different demographics, different providers, and different medications? And how much do the medical costs differ between alternative treatments?

***Reason****: Let’s say there are two patients with a similar medical history and chronic condition. If one of the patients is responding quite well to a specific treatment it would behoove the hospital to treat the second patient the same way (due to their similarity in medical history). With this sort of medical informatics, treatments would be much more effective generating favorable outcomes for providers and patients alike. In addition, usage of antibiotics will be reduced as the trial and error phase of finding the right antibiotic would be shortened. Therefore, the spread of antibiotic resistance would be slowed, and the hospital could be recognized for their excellence in the community.*

**Hospital Facility Manager**

Which patients should be allocated to nicer beds? There is a need to estimate how long a patient will be in the hospital, along with their demographics (age in particular), medical history (with an emphasis on bruising susceptibility and circulatory system complications), and urgency of visit so people don’t wake up with bed sores and become dissatisfied with the hospital.

***Reason****: After an interview with a healthcare professional, we learned that bed sores are a massive liability as they are totally preventable, yet a common disruption in a patient's visit brings about great dissatisfaction and potential lawsuits. Therefore, we want to focus on people that are more susceptible to getting them to mitigate this issue.*

**Healthcare Consultant**

What is the average staff retention rate over the course of the year, how much does financial incentive contribute to retention rate, and what area of specialty is at high risk of an imbalance in staffing VS patient onboarding?

***Reason****: Healthcare consultants are hired to inspect the inner working of hospitals, and to give healthcare executives a peace of mind that everything is up to code. Therefore, because the quality of doctors as well as the quantity of healthcare professionals are a large factor for the “level” of care that the hospital is awarded, a consultant should be acutely aware of the price to retain key members of staff, and what specific wards or areas of the hospital are at a greater risk of under/overstaffing in peak times of the year.*

**Healthcare Chief Executive Officer**

What is the perceived revenue that the hospital incurs based on the treatments that they offer, the services conducted and the pills they prescribe over the course of annual quarters? Is the hospital financially stable? And if not, what departments are irresponsibly allocating services and treatments at the hospital’s expense?

***Reason****: A Healthcare CEO is largely concentrated on the profits that the hospital experiences. It is not necessarily the focus of the CEO to concern themselves with treatments that they offer, but rather the profitability of said treatments and the proper allocation of resources to maintain a high standard, lean operation costs, and profitable medical partnerships (i.e. prescription providers).*

**Chief Healthcare Operations Officer**

What is the rate or frequency of illnesses within the community per month, season and year, based on patient demographics, and treatment type?

***Reason****: If the hospital is able to determine certain community behaviors or environmental factors (i.e. there are a lot of smokers or there is a wildfire generating massive amounts of smoke) the hospital will be able to better predict which types of treatment are necessary (i.e. lung complications or asthma flare ups). In addition, if the hospital is better equipped to handle community needs, they will be more favored amongst the community.*

**Information Package(s)**

**Information Subject: Treatment**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Date | Patient Demographics | Prescription | Staff | Treatment |
| Year | First Name | Medicine Type | First Name | Treatment # |
| Quarter | Last Name | Normal Dosage | Last Name | Treatment Comments |
| Month | Email | Dosage Prescribed | Department |  |
| Date | DOB | Medicine Cost | Date hired |  |
| Day of Week | Patient Notes |  | Specialty |  |
| Day of Month | Address/City/Zip |  | Date Awarded |  |
| Season |  |  |  |  |
| Holiday Flag |  |  |  |  |

Facts: Total cost of treatment, total cost of medicine, total time spent on patient by staff

**Information Subject: Facility (Beds)**

|  |  |  |  |
| --- | --- | --- | --- |
| Date | Patient Demographics | Beds | Reason to Visit |
| Year | First Name | Bed Type | Treatment Type |
| Quarter | Last Name | Bed Availability | Patients Notes |
| Month | Email | Bed Description | Medicine Comments |
| Date | DOB |  |  |
| Day of Week | Medical History |  |  |
| Day of Month | Address/City/Zip |  |  |
| Season |  |  |  |
| Holiday Flag |  |  |  |

Facts: What were they diagnosed with, how long will they be in the hospital for, what is their age, how prone is the bed to “Bed Sores”, how static the patient will be

**Information Subject: Providers**

|  |  |  |  |
| --- | --- | --- | --- |
| Date | Treatment | Ward | Staff |
| Year | Treatment Number | Ward Type | Staff First Name |
| Quarter | Treatment Date | Ward Specialty | Staff Last Name |
| Month | Treatment Comments | Staff Specialty | Ward Dept Assigned |
| Date | actual Charge |  | Date Hired |
| Day of Week |  |  | Hospital Title |
| Day of Month |  |  | Salary |
| Season |  |  | Wage Rate |
| Holiday Flag |  |  | Specialty title |

Facts: Number of patients per staff, number of successes/failures per specialty, number of successes/failures per ward, cost per ward vs. revenue per ward

**Information Subject: Prescriptions**

|  |  |  |  |
| --- | --- | --- | --- |
| Date | Prescription | Staff | Treatment |
| Year | Medicine Scientific Name | First Name | Treatment # |
| Quarter | Normal Dosage | Last Name | Treatment Comments |
| Month | Dosage Prescribed | Department | Actual charge of treatment |
| Date | Medicine Cost | Date hired | Service Charge |
| Day of week | Quantity Stock | Specialty |  |
| Day of Month | Milligram | Date Awarded |  |
| Season | Medicine Common Name |  |  |
| Holiday Flag |  |  |  |

Facts: Total measure of medication prescribed, Difference between recommended dosage and actual dosage, how much is left in stock, total cost of medicine, total revenue of medicine

**Information Subject: Illness**

|  |  |  |  |
| --- | --- | --- | --- |
| Date | Prescription | Patient Demographics | Treatment |
| Year | Medicine Scientific Name | First Name | Treatment # |
| Quarter | Normal Dosage | Last Name | Treatment Comments |
| Month | Dosage Prescribed | Email | Actual charge of treatment |
| Date | Medicine Cost | DOB | Service Charge |
| Day of week | Quantity Stock | Medical History |  |
| Day of Month | Milligram | Address/City/Zip |  |
| Season | Medicine Common Name |  |  |
| Holiday Flag | Medicine comments |  |  |

Facts: Rate / frequency of illness on a time dimension, recovery per type of treatment, patient success rate, cost of service and treatment vs expenses.