Portfolio

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Portfolio

## Patient safety

Mistaken or false identification of the patients in the healthcare system across the globe is not a new incident. Numerous people have undergone such occurrences, and it is experienced in the United States daily at the hands of a wide spectrum of people, ranging from the paramedics to the top-notch surgeons.

More often than not, the nurses, who are chiefly involved in the assessment and observation of the patients, unintentionally give rise to such a situation which leads to grave consequences (Kelly, 2009). The nurses cannot be solely blamed as well, given their tough schedules and long hours spent in the trauma filled atmosphere of the hospitals.

Patient identification methods have always been debated upon as wrongly designed or prone to mistakes. Mainly these errors are on the part of the hospital administration and staff, who to save an ample amount of time can miscommunicate, resulting in the incorrect identification of the patients. Respondents in a survey believe that the correct patient identification is vital to the integrity of any organisation, as a recent incident which took place in Florida, a 56-year old woman who was taken for someone else was billed a whopping amount of money which led to her suing the hospital administration.

After a thorough analysis of the case study in consideration, the areas of concern which pose a threat to the well-being of the patients are as follows:

### Medication errors: These errors can happen due to intermingled patient labels, data entry errors, extra reliance on the verbal affirmation of the names of the patients, mixing up the administration records of medication and many other factors. Inaccuracies in the birth dates of the elderly patients due to batched records, clothing or any type of attire which disguises the identity, and any type of cultural stigma associated with wearing a wristband can result in such kinds of errors.

### Transfusion errors: Absence of a central database system in the hospital management, cases of identity theft, non-compliance with the protocols whereby the patients remove the wristband before or after the surgery can lead to incorrect blood or fluid transfusion among the patients.

### Testing errors: A two-sample policy of blood sampling for blood-typing can also be a factor for errors in patient identity. This is an important step during the procedures of pathology, and extreme care is needed to avoid such errors. If a specimen is tested, keeping in view another patient, all the future health care of the aid patient can be put into jeopardy. Similarly, labelling of the laboratory specimen by the non-personnel or outsiders may also lead to confusions about patient identification.

### Infant discharged to the wrong families: Discharging of infants to the wrong families and incorrect administration of breast milk to infants are incidents which have been reported voluntarily by the nurses on call. This was largely due to wrongful handling of the infants right after birth and the infants not wearing the wristbands on account of being prone to skin infections and the imminent danger of hurting themselves with the paper in the wristband.

Below are some of the best practices and processes within the boundaries of the hospital, which can aid in the lowering of such incidents:

1. A biometric platform for patient identification
2. Implementation of automated systems
3. Encouragement of labelling of all the containers used to collect the specimen
4. Questioning laboratory results if consistency is not found with the patient’s clinical history
5. Repeated checks and balances on the computer database to avoid multiple entries of the same patient

The artefact used for the broader understanding of patient safety in this portfolio is a United States patent named as, 'System and method for monitoring medication prescriptions using biometric identification and verification (Washington, DC: U.S. Patent and Trademark Office. Patent No. U.S. Patent No. 8,335,697, 2012).

In this patent, an innovative system is introduced for cross-referencing and correctly matching the patients with a range of physicians and pharmacies. Biometric data of the patients is used, collecting and matching data across three tiers. Data of the patients are matched with the prescribing physician, the healthcare facilities which the patient availed, and finally with the nursing home if the patient required one. The data is collected and stored in the central databases and then matched with the pharmacies, which dispense the patients' medications. All this is done with meticulous detail to prevent the medication and prescription errors.

## Tracking and traceability

Traceability is perceived as the identification and correct interpretation of the information related to a product in the healthcare system. In the jargon of healthcare services, this can be roughly translated as the precision in the identification of a patient and his/her medication. The goal of all these efforts is a reduction in the adverse events in the hospitals and the insurance of the patient safety.

Medical products and services cannot be tracked throughout the never-ending supply chain to the patients as it would require the exhaustion of huge amounts of resources including time and human capital, therefore tracking and traceability should be the chief focus of the healthcare domain and many countries have already adopted these practices (Chui, 2017).

In many states, healthcare has currently assumed the status of a good/service which can be consumed and if one view from the lens of the healthcare consumer body, he/she can assume that just like any other service, the healthcare goods and services can also be traced to all the patients.

Many widely recognized technologies, e.g. artificial intelligence, big data, and biometric identification, can play a pivotal role in tracking and tracing the patient activities, all in real-time. The use of unique identification can be a primary source for ensuring patient identification and safety.

Within the hospitals, initially the data capture technologies can be implemented, and then in the next phase, complex technologies like big data and artificial intelligence can be employed to develop an exceptional framework of traceability.

The artefact used in this module is a published study about consumer perceptions about smart healthcare products (Mou, 2018). The results deduced great willingness by the patients regarding the usage of smart products which saved a lot of time and increased product quality.

### Importance of this process from an environmental aspect

In the current era of awareness about the depleting natural resources, patients are quite concerned about the origins of the healthcare products and services that they avail. Tracking and traceability, in this regard, can provide a lot of granular data to the customers from source and beyond. Assets companies can track their products, optimize their processes and largely bring a positive impact on the social and environmental situations in real-time. The consumer body at large and specifically patients in the healthcare will finally be able to understand the effects and repercussions of their purchasing decisions.

This will also increase the efficiency and transparency of the hospital’s management to a great extent, thereby contributing to the circular economy.

### Methods used

Some of the newly introduced methods used for tracking and traceability are mentioned as follows:

#### Sterilization management tool – Besco’s SteMaTo

This software manages and optimizes all the tools in the sterilization department, making all the surgical processes smoother and more efficient. It uses Software as a Service (SaaS), the most innovative cloud computing deployment model and enables any hospital or a healthcare institute to invest in the safety of its patients. Integration and management of all the tools and equipment get stored in the database of the software, and everything gets its disposal. This chiefly assists in reducing the turnaround time of instruments in the hospital and surgery rooms for the patients. Besco's SteMaTo also guarantees the timely availability of surgical instruments for the scheduled interventions at all times.

Viewed from an environmental aspect, this saves a lot of potable water which is used for the repetitive washing of the surgical instruments.

#### Hospital wheelchair tracking

Day-to-day, operational and logistical inefficiencies can go unnoticed. Problems in inventory management, for instance, the disappearance of wheelchairs in the hospitals can cause a lot of disruptions for the hospital's budget allocated for the inventory assets. There have been more than 200 reports of losses in the available number of wheelchairs per year. This results in a significant lack of transportation options for patients. In two to three incidents, disabled people were found dragging themselves due to the unavailability of a wheelchair. Indoor mapping and positioning is a recent technology introduced to track the wheelchairs in the hospitals and this tracking tool never lets a wheelchair out of the site of the central server where all the porters are positioned. One or two hospitals, which tried and tested this process, are extremely satisfied with the mechanism and ensured to use it continually.

#### Patient tracking program – Sharp Chula Vista

Speeding up the process of bed turnover, Sharp Chula Vista lets the hospital management to admit an increasing number of patients as the software removes the tracking tags from the discharged patients effective immediately on their departure from the hospital. It has profoundly increased the flow of patients in the facilities where it was used.

### Impact on the patients if methods not followed properly

If these processes are not followed adequately, resulting adversities can be a source of apprehension for the patients. There can be a potential loss of assets and surgical equipment, adding to the loss of patients from any healthcare facility, further intensifying the suffering of the patients.

## Surgical risks

One of the biggest preoperative risks in the surgical setting is the anemic patients with hemoglobin levels below the range. These can lead to many complications during and after the surgery, including unavailability of sufficient blood units, wrong transfusion, and possible organ damage. Preoperative anemia leads to decreased quality of life among patients requiring or undergoing surgery.

The artefact used in this module is a study conducted for two years to investigate the incidence of anemia in patients requiring surgical intervention and the possible complications and frequency of multiple transfusions after the procedure (Browning, 2012)

### Mitigation of this risk

To mitigate this risk, an online blood and organ transplant portal can be launched which connects everyone undergoing surgery, including their attendees in the hospital. Cross-referencing between the blood types will be duly done in the portal. This can also link all the blood banks across the country to make the system effective and streamlined.

## Intra and post-operative patient safety

During the laparoscopic surgeries and procedures, analgesics along with regional anesthesia have completely revolutionized the anesthetic regime, replacing the need for general anesthesia.

The artefact which illustrates this fact is a study which probes into the mortality rates as a result of anesthetic administration. (Petty, 2002)

In a post-operative surgical setting, due diligence must be shown in administering the patient with one of the three categories of anesthesia mentioned below in case of emergency with the correct usage of adjuncts for pain management.

## Categories of anesthesia

There are three primary categories of anesthesia, and their usage depends on several distinct factors such as the type and length of the surgery, the general health of the patient and finally the decision is done on the preferred, mutual choice of the patient and the physician.

### Local anesthesia

To assist in minor procedures and surgeries, such as vasectomies or breast biopsies, local anesthesia is used. If there is a procedure to be done on the left hand of a patient, the local anesthesia can numb merely the left hand without affecting the rest of the patient's body. It can be administered through an injection or topically, through the application of a cream or spray.

### Regional anesthesia

For an extensive and majorly invasive surgery, regional anesthesia is used which most of the times involves administration on the lower parts of the body. Examples can include, operation on the lower limbs, prostate surgeries and caesarian sections.

The most common and frequently used types of regional anesthesia are epidurals and the spinal anesthesia. Epidurals are used in the course of childbirth when long-term relief from pain is needed by the mother.

### General anesthesia

This is the most thorough form of anesthesia, rending the patient fully unconscious within seconds of administration and the patient has no stretch of memory upon gaining consciousness. This is availed during those procedures or surgeries where no other option can be adopted or if the patient has a preference to remain asleep during the surgery due to a given number of reasons.

## Adjuncts and their uses

#### Muscle relaxants

Muscle relaxants have found boundless usefulness concerning anesthetic administration. The skeletal muscle relaxants aid in blocking the painful nerve impulses, resulting in relaxation. These are used mainly in dentistry with local anesthesia, owing to the intense pain caused by the nerve irritation.

#### Analgesics

Regional administration of analgesics as adjuncts to anesthesia in the period after the surgery or procedure has been reported to be quite beneficial for the pain management of the patients. These can be used in many ways, i.e. drugs, oral or rectal administration or intravenous administration.

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