SURGICAL SITE INFECTIONS: AN INNOVATIVE TECHNOLOGY BASED APPROACH TO TRACK AND MONITOR, IN BELLE VUE CLINIC, KOLKATA

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CAHO
Committed to Safer Healthcare
(An initiative of CAHO Quality Professionals Wing)

MP BIRLA GROUP
BELLE VUE CLINIC

ABOUT THE INSTITUTE

- **Belle Vue Clinic, Kolkata is a 304 bedded multi specialty tertiary care hospital with 9 operation theatres, HDU, ITU, ICCU, CCU, ICU - 1, ICU-2, ICU-3, KT, SCBU, NURSERY, NICU, General Bed, Semi -Private, Private and Suites.**
- **The clinic compares favorably with the world's best medical institutions. The clinic had the first ICCU in the private sector in 1971 and the first centre to start renal transplants in West Bengal.**
- **It was also the first centre in Eastern India conducting tissue typing for Organ Transplantation.**

- **The clinic is not only the pioneer but the trendsetter as well in the area of health care in Eastern India.**

- **With it's commitment to excellence in patient care service, diagnosis as well as prognosis, the clinic since it's inception in 1967, has lived up to their desire.**

INTRODUCTION

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- **Hospital Acquired infections have serious implications on the patient health and the hospital resources .**
- **Despite modern surgical techniques and the use of antibiotic prophylaxis, surgical site infection remains a major cause of morbidity, prolonged hospital stay, and increased health costs.**
- **Surgical Site Infections (SSIs) are defined as infections apparent within 30 days and if prosthetic implant is used, within an year of operative procedure .**
- **SSI accounts for over 20% of all healthcare-associated infections in surgical patients.**

RATIONALE

- **Nowadays patients stay only for few days post operatively in the hospital and follow up is often done on an outdoor doctors chamber basis , hence actual data about SSI is incomplete.**
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- **Our HIC team goal was to monitor all the patients post-surgery for 30 days and those with implants for an year through an innovative technology based idea.**

- **To document actual data , incidence,analysis and implementation of appropriate corrective and preventive action of SSI in our hospital .**

PROBLEM IDENTIFICATION

PROBLEMS

1. **Difficulty in follow up of surgical patients post discharge .**
2. **Lack of monitoring of post-surgical patients .**
3. **Lack of data related to SSI.**
4. **Lack of validated system of patient follow up (post-surgical) and SSI monitoring.**

OBJECTIVES OF THE PROJECT

- **To create a technology based application for sending alerts to patients.**
- **To ensure real time tracking of surgical site infection in all our post-operative patients.**
- **To document monitoring of post-surgery patients even after discharge.**
- **To create a data base of Post-Surgical Patients follow up.**

DURATION OF THE PROJECT

GNATT CHART – PROJECT TIMELINE (1/6/2022-1/8/2022)

QC Cycle	QC Steps	Activities	JUNE 2022		JULY 2022			
			1/6/2022 -8/62022	9/6/2022-30/6/2022	1/7/2022 - 8/7/2022	11/7/2022-14/7/2022	15/7/2022-22/7/2022	23/7/2022 – 31/7/2022
PLAN	1	Problem Identification, analysis						
	2	Planning Solutions						
DO	3	Preparation of Process Flow						
	4	Preparation of Model Design						
	5	Designing the HMIS module by IT						
CHECK	8	Test Run the Module						
ACT	9	Training of HIC team						
	10	Use of the Module						
	11	Monitor the usage and response						
	12	Confirm Sustainability						

METHODOLOGY

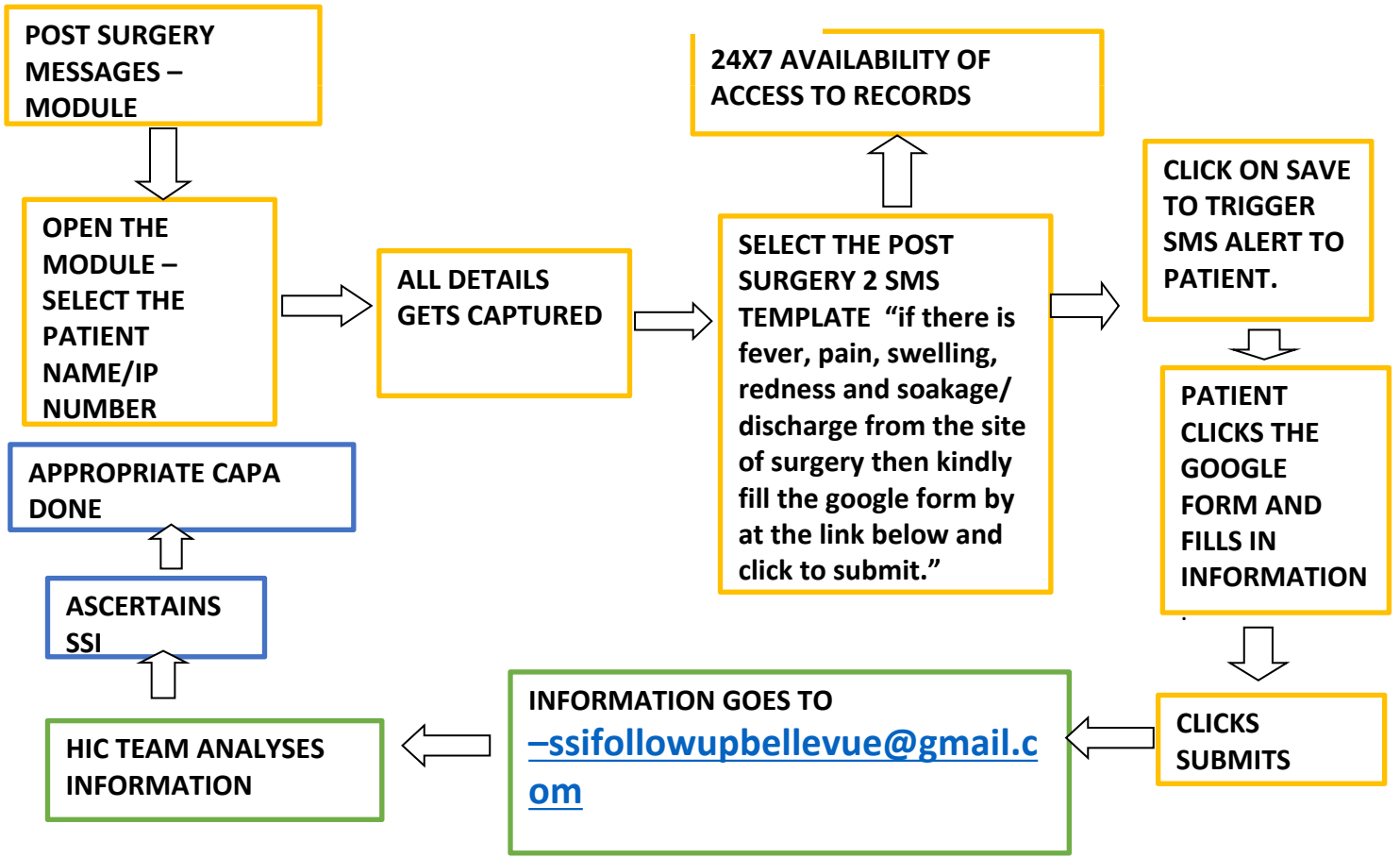
Steps

1. A mobile based application was developed by the computer system department called –"SHIVAM DASHBOARD",
2. All post-surgical patients are sent alerts every seven (7 days)post-surgery, till 1 month.
3. ALL orthopedic PROSTHETIC IMPLANT surgical cases shall be followed up every 7th day till 1 year for any signs of infections.
4. Concise SMS alerts with a link to fill the google form, having all the details for signs and symptoms and submit are sent to ALL such patients.
5. The module is password protected and login details remain with the infection control team only .
6. When patients fills the details in the google form and submits the same it automatically gets forwarded to the email id –ssifollowupbellevue@gmail.com.
7. The details are then analyzed by the infection control department.
8. The data is imported in the excel sheet and saved for reference.

PROCESS FLOW CHART

SHIVAM DASHBOARD (FIG 1)

Process Steps



CONTENT – QUESTIONS

GOOGLE FORM CONTENT

KINDLY FILL THE FOLLOWING CHECKLIST

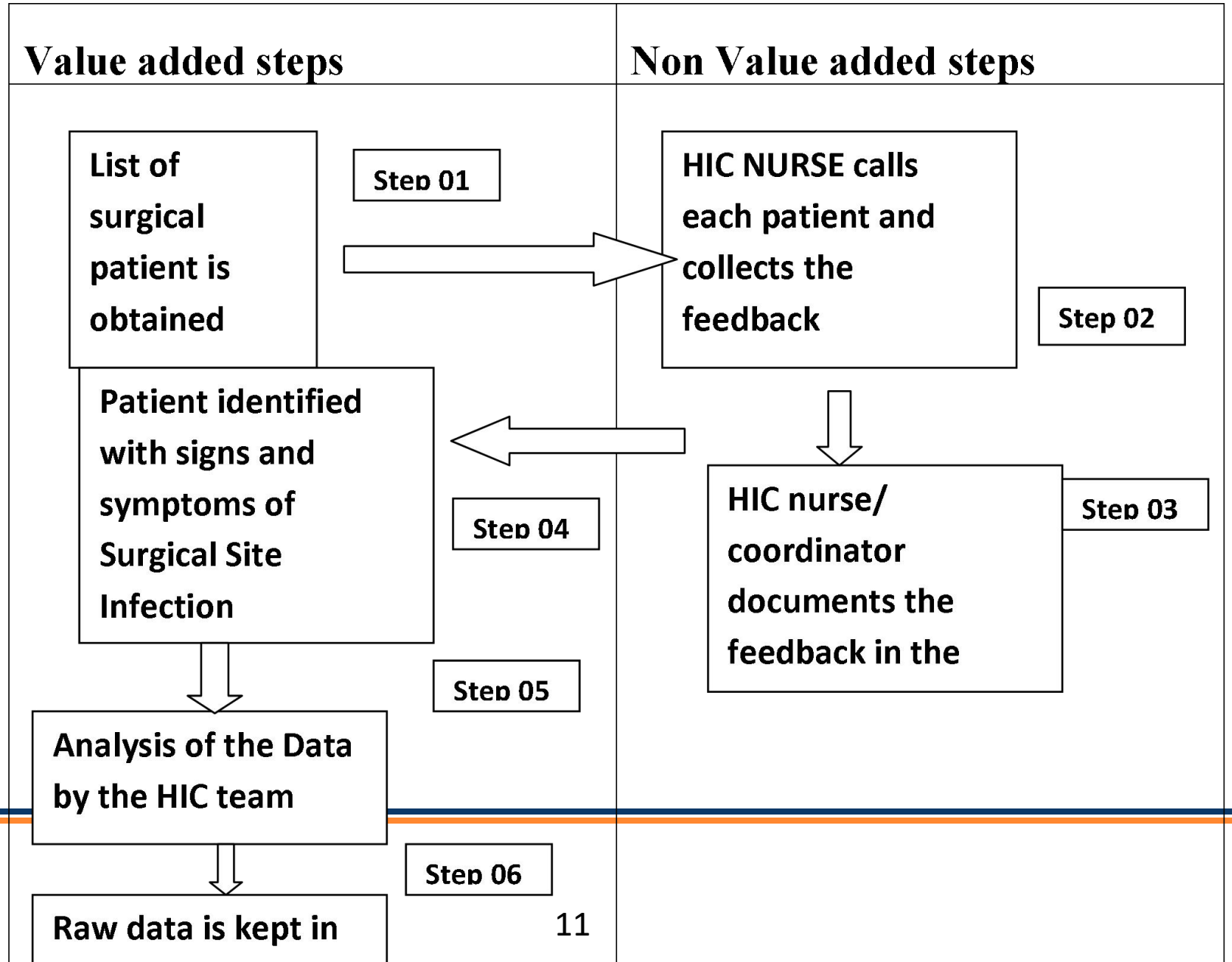
- **DATE OF OPERATIVE PROCEDURE---------- NAME ---------- AGE ---------- DOA ----------**
- **TYPE / NAME OF OPERATION----------**

PLEASE WRITE IN YES OR NO ONLY . IF YES THEN DATE OF SIGNS / SYMPTOMS

- **PURULENT DRAINAGE/ PUS FROM THE INCISION. ----------**
- **CULTURE POSITIVE RESULT (-OBTAINED SPECIMEN FROM THE INCISION)----------**
- **INCREASE IN PAIN SWELLING; ERYTHEMA OR HEAT----------**
- **FEVER (>38°C); ----------**
- **AN ABSCESS OR OTHER EVIDENCE OF INFECTION ON USG / X RAY IMAGING TEST.----------**
- **PURULENT DRAINAGE FROM A DRAIN THAT IS PLACED INTO THE ORGAN/SPACE (FOR EXAMPLE, CLOSED SUCTION DRAINAGE SYSTEM, OPEN DRAIN, T-TUBE DRAIN, CT GUIDED DRAINAGE).**

ROOT CAUSE ANALYSIS

VALUE STREAM MAPPING



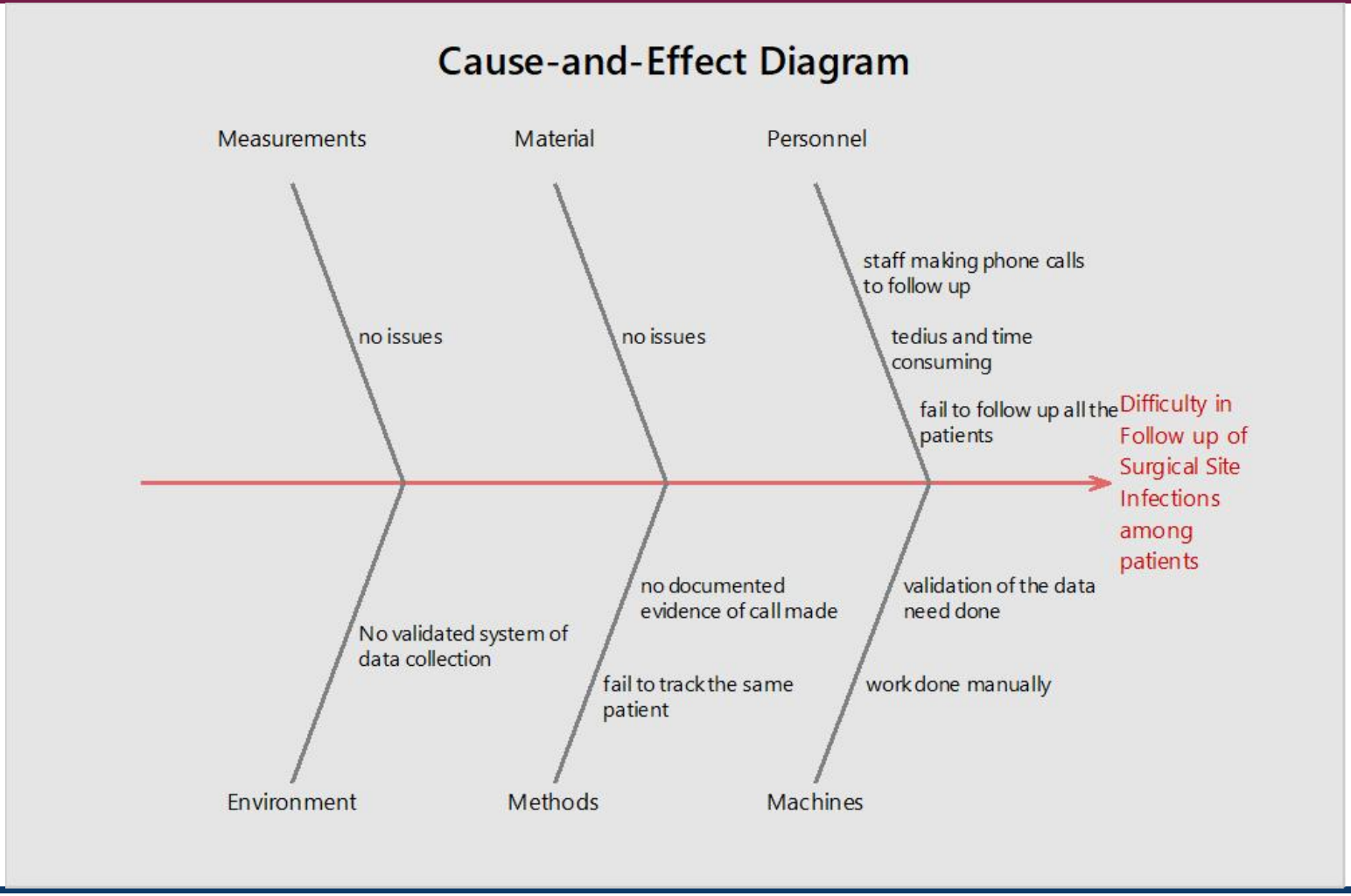
ROOT CAUSE ANALYSIS

ESCAP MODEL

- **E**- Eliminate (non-value added steps – phone calls and feedback documentation in excel)
- **S**- Simplify – the work was simplified with the help of technology to save time and improve recording
- **C**- Step number 02 and 03 were combined and integrated into SMS where the patients can send their details directly to registered email id
- **A** – Automate (HMIS is used to send SMS alerts and digitally tack the post-surgical patients for SSI)
- **P** – Parallel - data validation also get done as data getting captured digitally and fed by patient.

ROOT CAUSE ANALYSIS

CAUSE AND EFFECT



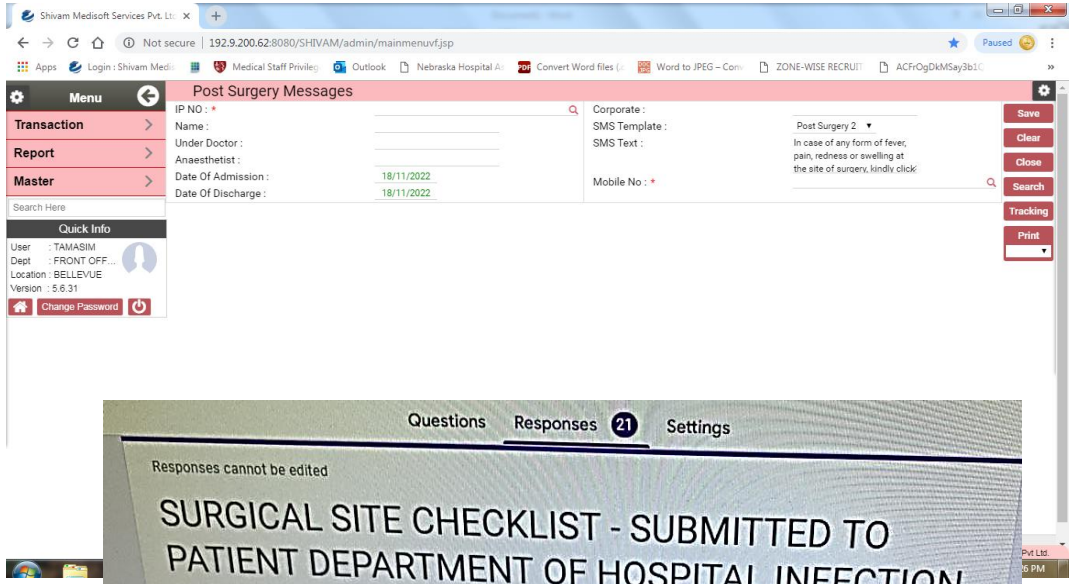
- Staff Making phone call to follow up
- Validation of data not being carried out
- No system to validate the data
- No documented evidence of phone calls

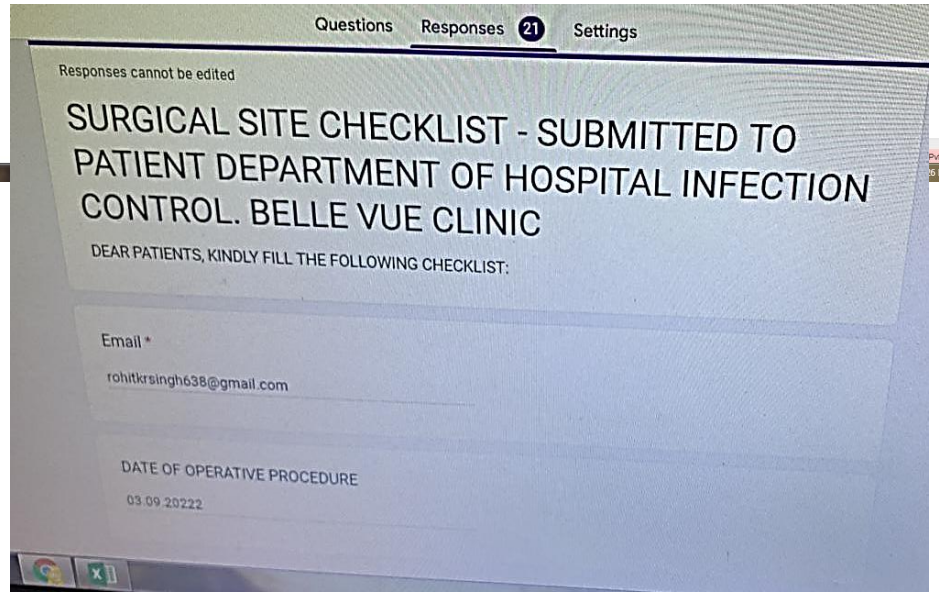
RESULTS AND IMPACT OF INTERVENTION

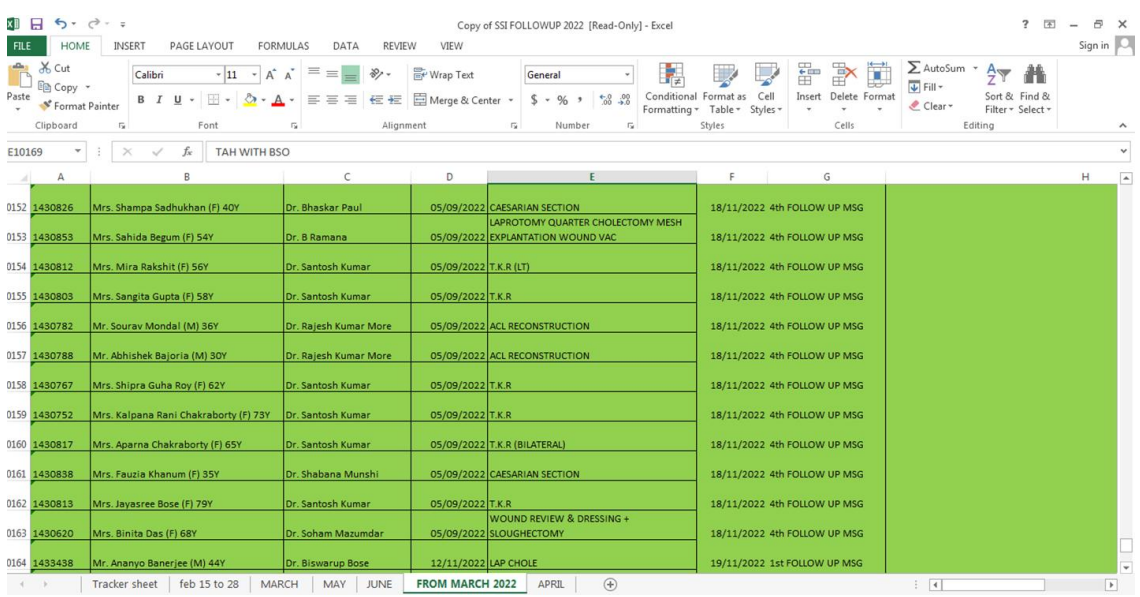
- **Direct Impact**
  - **Effective tracking of the surgical site infections**
  - **This system has saved time**
  - **Effective utilization of Manpower**
  - **Improved data management**

- **Indirect Impact**
  - **Improved Communications**
  - **Improved data validation**
  - **Improved patient satisfaction**
  - **Surgeons involvement**
  - **Knowledge of CSSD staff**

PICTORIAL EVIDENCES OF THE SYSTEM

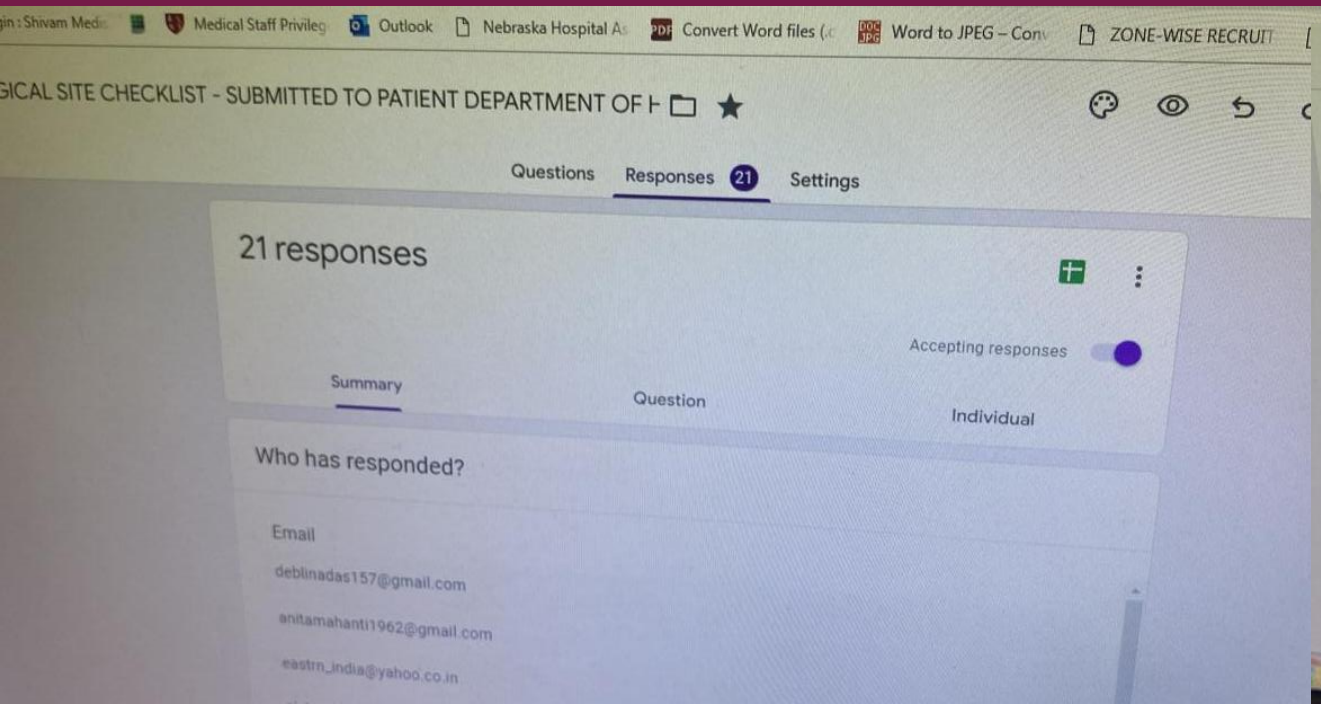


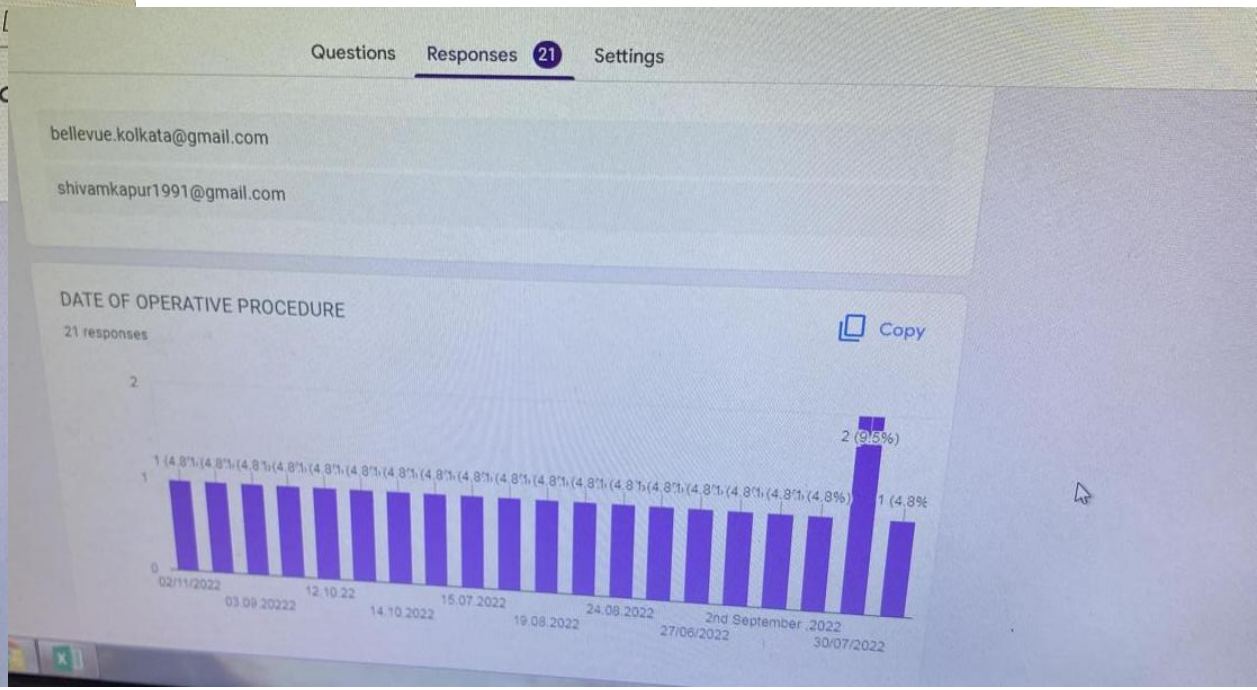




0152	1430826	Mrs. Shampa Sadhukhan (F) 40Y	Dr. Bhaskar Paul	05/09/2022	CAESARIAN SECTION	18/11/2022	4th FOLLOW UP MSG
0153	1430853	Mrs. Sahida Begum (F) 54Y	Dr. B Ramana	05/09/2022	LAPROTOMY QUARTER CHOLECTOMY MESH EXPLANTATION WOUND VAC	18/11/2022	4th FOLLOW UP MSG
0154	1430812	Mrs. Mira Rakshit (F) 56Y	Dr. Santosh Kumar	05/09/2022	T.K.R (LT)	18/11/2022	4th FOLLOW UP MSG
0155	1430803	Mrs. Sangita Gupta (F) 58Y	Dr. Santosh Kumar	05/09/2022	T.K.R	18/11/2022	4th FOLLOW UP MSG
0156	1430782	Mr. Sourav Mondal (M) 36Y	Dr. Rajesh Kumar More	05/09/2022	ACL RECONSTRUCTION	18/11/2022	4th FOLLOW UP MSG
0157	1430788	Mr. Abhishek Bajoria (M) 30Y	Dr. Rajesh Kumar More	05/09/2022	ACL RECONSTRUCTION	18/11/2022	4th FOLLOW UP MSG
0158	1430767	Mrs. Shipra Guha Roy (F) 62Y	Dr. Santosh Kumar	05/09/2022	T.K.R	18/11/2022	4th FOLLOW UP MSG
0159	1430752	Mrs. Kalpana Rani Chakraborty (F) 73Y	Dr. Santosh Kumar	05/09/2022	T.K.R	18/11/2022	4th FOLLOW UP MSG
0160	1430817	Mrs. Aparna Chakraborty (F) 65Y	Dr. Santosh Kumar	05/09/2022	T.K.R (BILATERAL)	18/11/2022	4th FOLLOW UP MSG
0161	1430838	Mrs. Fauzia Khanum (F) 35Y	Dr. Shabana Munshi	05/09/2022	CAESARIAN SECTION	18/11/2022	4th FOLLOW UP MSG
0162	1430813	Mrs. Jayasree Bose (F) 79Y	Dr. Santosh Kumar	05/09/2022	T.K.R	18/11/2022	4th FOLLOW UP MSG
0163	1430620	Mrs. Binita Das (F) 68Y	Dr. Soham Mazumdar	05/09/2022	WOUND REVIEW & DRESSING + SLOUGHECTOMY	18/11/2022	4th FOLLOW UP MSG
0164	1433438	Mr. Ananyo Banerjee (M) 44Y	Dr. Biswarup Bose	12/11/2022	LAP CHOLE	19/11/2022	1st FOLLOW UP MSG

PICTORIAL EVIDENCES OF THE SYSTEM





Conclusion

- **Technology driven SSI tracking and monitoring system has enabled improve patient safety tremendously.**
- **Assessment of the data to reduce the hospital acquired infection rates.**
- **Such system has digitalized the work procedure and hence made the process lean and saved time, man power ,materials and increased efficiency manifold .**
- **A small change in the process step enabled by IT based technology has provided a validated and standardized system to improve and establish Quality Management System, whereby ensuring patient safety as one of patient safety goal.**

Thank You!