**Internship Report**

**IN**

**Max Super Speciality Hospital Patparganj New Delhi**

**(February 1th to April 30th 2014)**

**A STUDY ON**

# Post discharge Surgical Site Infection Surveillance by the means of a telephonic survey in Max Super Speciality Hospital Patparganj

**By**

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**Under the Guidance of**

**Ms. Suparna Pal**

**POST GRADUATE DIPLOMA IN HOSPITAL AND HEALTH MANAGEMENT**

**NEW DELHI**

**2012-2104**


**INTERNATIONAL INSTITUTE OF HEALTH MANAGEMENT RESEARCH, NEW DELHI**

**2014**

## ACKNOWLEDGEMENT

I owe a great debt to all the professionals at one of the leading Hospitals in North India who have distinguished themselves in the fields of health care management for sharing generously their knowledge and time, which inspired me to do my best at this project study.

My heartfelt gratitude to **Dr. Uday Kapur** (Zonal Manager Medical Quality) of the Hospital for showing keen interest in the study and for sharing their views in spite of their busy schedule. It has been my privilege to work under their dynamic supervision at the Hospital.

I express my warm veneration towards **Dr. Ashish Pawar**(Assistant Manager medical Quality), for his valuable guidance throughout the entire course of study right from deciding the topic to its completion.

A note of sincere thanks is due to **Mrs Suparna Pal**, my mentor at IIHMR, New Delhi, without whose valuable guidance this project report would not have been completed successfully.

A special thanks to **Dr. Rohit Binjola**( Assistant Manager) and **Dr. Meenal Chadda**(Trainee Medical Quality) for the constant support and encouragement. This study would not have been possible without their support.

Sincerely

Dr. Lalit Kumar (PT)

PGDHHM (Batch 2012-14)

Roll No.- PG/012/041

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MAX HEALTHCARE
Super Speciality Hospital
A Unit of Balaji Medical & Diagnostic Research Centre

**Dated: May 5th, 2014.**

## TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Dr. Lalit Kumar** has successfully completed internship with us from **6th Feb 2014 to 30thApril 2014** in the department of **Medical Quality**.

During the period of his internship we found him sincere and hardworking.

We wish him all the best for his future.

**For Max Super Speciality Hospital**
**(A Unit of Balaji Medical & Diagnostic Research Centre)**

**Upnivesh Bhardwaj**
**Manager - Human Resource**

**TO WHOMSOEVER MAY CONCERN**

This is to certify that **Dr.Lalit Kumar** student of Post Graduate Diploma in Hospital and Health Management (PGDHM) from International Institute of Health Management Research, New Delhi has undergone internship training at **Max Super Speciality Hospital Partparganj** from 10th January,2014 to 10th April,2014.

The Candidate has successfully carried out the study designated to him during internship training and his approach to the study has been sincere, scientific and analytical.

The Internship is in fulfillment of the course requirements. I wish him all success in all his future endeavors.

Dr. A.K. Agarwal
Dean, Academics and Student Affairs
IIHMR, New Delhi

Ms.Suparna Pal
IIHMR, New Delhi

# Certificate of Approval

The following dissertation titled **Post discharge Surgical Site Infection Surveillance by the means of a telephonic survey in Max Super Speciality Hospital Patparganj** is hereby approved as a certified study in management carried out and presented in a manner satisfactorily to warrant its acceptance as a pre-requisite for the award of **Post- Graduate Diploma in Hospital and Health Management** for which it has been submitted. It is understood that by this approval the undersigned do not necessarily endorse or approve any statement made, opinion expressed or conclusion drawn therein but approve the dissertation only for the purpose it is submitted.

Dissertation Examination Committee for evaluation of dissertation.

| Name | Signature |
| --- | --- |
| Prof AK Agarwal | |
| Prof S Salgaltty | |
| Dr. Suparna Pal | |

## Certificate from Dissertation Advisory Committee

This is to certify that **Dr. Lalit Kumar,** a graduate student of the **Post- Graduate Diploma in Health and Hospital Management** has worked under our guidance and supervision. He/ She is submitting this dissertation titled "**Post discharge Surgical Site Infection Surveillance by the means of a telephonic survey in Max Super Speciality Hospital Patparganj**" in partial fulfillment of the requirements for the award of the **Post- Graduate Diploma in Health and Hospital Management.**

This dissertation has the requisite standard and to the best of our knowledge no part of it has been reproduced from any other dissertation, monograph, report or book.

Ms.Suparna Pal
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IIHMR,New Delhi

Dr. Ashish Pawar
A.M. Medical Quality
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Patparganj

**INTERNATIONAL INSTITUTE OF HEALTH MANAGEMENT RESEARCH, NEW DELHI**

**CERTIFICATE BY SCHOLAR**

This is to certify that the dissertation titled ..Post discharge Surgical site Infection Surveillance by the means of a telephonic Survey. ..... and submitted by (Name) ..Dr. Lalit Kumar ..... Enrollment No. .....P.G/12/104.1..... under the supervision of ...MS. SUPARNA PAL .....

for award of Postgraduate Diploma in Hospital and Health Management of the Institute carried out during the period from ..6th Feb 2014 to ...30th April 2014.....

embodies my original work and has not formed the basis for the award of any degree, diploma associate ship, fellowship, titles in this or any other Institute or other similar institution of higher learning.

Signature

Feedback Form

Name of the Student: Dr. Lalit Kumar

Summer Training Institution: Max Super Specialty Hospital, Patparganj

Area of Summer Training: Medical Quality.

Attendance: 1-Feb-2014 to 30-Apr-2014 on regular basis.

Objective met: ① Internal Audit of PICU, PICU, HDU, CCU and CTVS ICU ② open file audit ③ ER and Radiology waiting time audit ④ Readmission within 15 days and Return to OT

Deliverables: audit.

↳ same as above.

Strengths: ① Punctual, ② Attentive ③ go getter

Suggestions for Improvement: ① communication skill ② In depth analysis

Signature of the Officer incharge (Training)

Dr. Ashish Panwar.
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Date: 5/5/14

Place: Patparganj
New Delhi

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**Chapter: 1**

# INTRODUCTION

## 1.1 Surgical site infection

A surgical site infection, or SSI, is an infection of a wound you got from surgery. It may develop within the first 30 days after surgery. Oftentimes, SSI occurs 5 to 10 days after surgery. SSI may affect either closed wounds or wounds that were left open to heal. It may affect tissues on any level of your body. Infections may develop in superficial (close to the skin) or deep tissues. In more serious cases, SSI may affect body organ(s).

## 1.2 Causes a surgical site infection

Surgical site infections are caused by germs, called bacteria. Different types of bacteria may reach the wound and cause infection. The bacteria may come from your skin or from the environment, such as soil, air, or water. They may come from the object that caused your wound or from tools used during the surgery. They may also come from inside the body, where they normally live without doing harm.

## 1.3 Factors responsible for surgical site infection

The risk of having an SSI depends on different factors. These factors include the following:

- **Diseases:** Diseases, such as diabetes, cancer, and liver, kidney, or lung conditions may slow the healing process. Medical conditions, such as low blood protein may also affect healing.

- **Foreign objects:** Dead tissues and foreign objects, such as glass or metal, present in the wound may delay wound healing. SSI may also be likely if you have an infection on another part of the body, or a skin disease.

- **Poor blood or oxygen supply:** Blood flow may be affected by high blood pressure, and blocked or narrowed blood vessels. This may be a common problem in people who smoke, or have blood vessel problems or heart conditions. Low oxygen supply may be caused by certain blood, heart, and lung diseases.

- **Type of surgery:** Your chances of having SSI is increased when surgery is done on an infected wound. Emergency surgeries on traumatic injuries, and surgeries lasting for 3 hours or longer, also increase your risk. This may also include surgeries done on certain body organs, such as the stomach or intestines (bowels). The risk may be greater if an object pierced through the skin and into an organ. SSI is more likely to occur after an open surgery

than surgery using a scope. Having drains or blood transfusion may increase the chances of bacteria reaching the wound and causing infection.

- **Weak immune system:** The immune system is the part of the body that fights infection. This may be weakened by radiation, poor nutrition, and certain medicines, such as anti-cancer medicines or steroids. Being overweight, or too young or too old, may also decrease your ability to respond to injury.

## 1.4 Signs and symptoms of a surgical site infection?

- A wound that is painful, even though it does not look like it should be.
- High or low body temperature, low blood pressure, or a fast heart beat.
- Increased discharge (blood or other fluid) or pus coming out of the wound. The discharge or pus may have an odd color or a bad smell.
- Increased swelling that goes past the wound area and does not go away after five days. Swollen areas usually look red, feel painful, and feel warm when you touch them.
- Wounds that do not heal or get better with treatment

**The wound healing process**

**The 'normal' wound healing process has been identified as involving three overlapping major phases:**

- inflammation, with cascades of processes that can be further subdivided into early (first 24 hours) and late phases (normally up to 72 hours)
- Regeneration.
- Maturation.

**Pathogenesis of surgical site infection**

The development of an SSI depends on contamination of the wound site at the end of a surgical procedure and specifically relates to the pathogencity and inoculums of microorganisms present, balanced against the host's immune response. The microorganisms that cause SSIs are usually derived from the patient (endogenous infection), being present on their skin or from an opened viscous. Exogenous infection occurs when microorganisms from instruments or the theatre environment contaminate the site at operation, when microorganisms from the environment contaminate a traumatic wound, or when microorganisms gain access to the wound after surgery, before the skin has sealed. Rarely, microorganisms from a distant source of infection, principally

through haematogenous spread, can cause an SSI by attaching to prosthesis or other implant left in an operative site. Practices to prevent SSI are therefore aimed at minimising the number of microorganisms introduced into the operative site, for example by:

- removing microorganisms that normally colonise the skin
- preventing the multiplication of microorganisms at the operative site, for example by using prophylactic antimicrobial therapy
- enhancing the patient's defences against infection, for example by minimising tissue damage and maintaining normothermia
- Preventing access of microorganisms into the incision postoperatively by use of a wound dressings.

## 1.5 TYPES OF A SURGICAL SITE INFECTION (SSI)

### *1. Superficial Incision SSI*

Infection occurs within 30 days after the operation and infection involves only skin or subcutaneous tissue of the incision and at least one of the following:

- Purulent drainage, with or without laboratory confirmation, from the superficial incision.
- Organisms isolated from an aseptically obtained culture of fluid or tissue from the superficial incision.
- At least one of the following signs or symptoms of infection: pain or tenderness, localized swelling, redness, or heat and superficial incision is deliberately opened by surgeon, unless incision is culture-negative.
- Diagnosis of superficial incision SSI by the surgeon or attending physician.

The following do not come under this category:

1. Stitch abscess (minimal inflammation and discharge confined to the points of suture penetration).

2. Infection of an episiotomy or newborn circumcision site.

3. Infected burn wound.

4. Incisional SSI that extends into the fascial and muscle layers .

### *2. Deep Incisional SSI*

Infection occurs within 30 days after the operation if no implant is left in place or within 1 year if implant is in place and the infection appears to be related to the operation and infection involves deep soft tissues (e.g., fascial and muscle layers) of the incision and at least one of the following:

- Purulent drainage from the deep incision but not from the organ/space component of the surgical site.
- A deep incision spontaneously dehisces or is deliberately opened by a surgeon when the patient has at least one of the following signs or symptoms: fever (>38ºC), localized pain, or tenderness, unless site is culture- negative.
- An abscess or other evidence of infection involving the deep incision is found on direct examination, during reoperation, or by histopathologic or radiologic examination.
- Diagnosis of a deep incisional SSI by a surgeon or attending physician.

### *3. Organ/Space SSI*

Infection occurs within 30 days after the operation if no implant is left in place or within 1 year if implant is in place and the infection appears to be related to the operation and infection involves any part of the anatomy (e.g., organs or spaces), other than the incision, which was opened or manipulated during an operation and at least one of the following:

1. Purulent drainage from a drain that is placed through a stab wound into the organ/space.

2. Organisms isolated from an aseptically obtained culture of fluid or tissue in the organ/space.

3. An abscess or other evidence of infection involving the organ/space that is found on direct examination, during reoperation, or by histopathology or radiologic examination.

4. Diagnosis of an organ/space SSI by a surgeon or attending physician

## 1.6 Problem Statement

To diagnose the rate of surgical site infection within 30 days amongst the patient who got discharged after surgery from the hospital. . Surgical site infection (SSI) are one of the most important causes of healthcare-associated infections (HCAIs) and infection –related morbidity.

## 1.7 Rationale of the Study

Appropriate wound and dressing care and proper hand hygiene techniques promotes healing and reduces the risk of infection. Providing information and advice on this to people having surgery and their attendents will reduce the risk of them doing something to the wound or dressing that might contaminate the site with microorganisms unnecessarily. If a person develops a surgical site infection, early treatment is essential to prevent the infection getting worse. Providing information on how to recognise problems with a wound and who to contact if they are concerned should lead to prompt treatment for those who need it and reduce infection-related morbidity.

## Chapter: 2

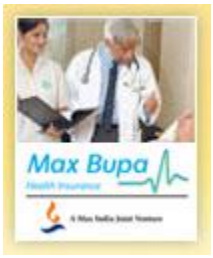
# Hospital Profile

### Origin of MAX

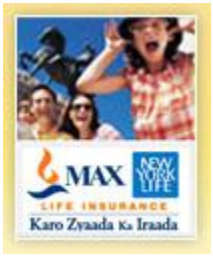
MAX started by having a factory in Mohali where they were manufacturing a special kind of plastics.

In the year 2000 from manufacturing it came into health services where in they came out with the **MAX Healthcare hospital**. They also moved into the **Max New York life** that is the insurance company. Another company which is the part of MAX India group is the **Neeman Medical International** that does lot of research on drugs.

### CORE BUSINESSES:








1) **'Protect Life'** through their Life Insurance subsidiary ***Max New York Life***, a joint venture between Max India and New York Life, a Fortune 100 company

2) **'Care for Life'** through Healthcare company ***Max Healthcare***, a subsidiary of Max India Limited

3**) 'Improve Life'** through Clinical Research business, ***Max Neeman***, a fully owned subsidiary of Max India Limited

4**) 'Enhance Life'** through Health Insurance company, ***Max Bupa Health Insurance***, a joint venture between Max India and Bupa Finance Plc., UK which is set to launch in 2009;

.

5) From its past, Max India continues its interest in ***Speciality Products*** manufacturing for the packaging industry

Presence of Max in Delhi

**Max is supported by various branches of hospitals** with the objective of providing best in class facility, comprehensive care programs, convenience and accessibility.

**1) MHVI - Max Devki Devi Heart & Vascular Institute:**

Max Devki Devi Heart & Vascular Institute (MHVI) provides world class cardiovascular care with a service focus and creates unparalleled standards of medical and service excellence. It is committed to pursuing independent as well as collaborative research in all aspects of cardiology, cardiothoracic and vascular surgery.

**2) MSSH - Max Super Specialty Hospital:**

Max Super Specialty Hospital (MSSH) is a multi-specialty hospital, owned and operated by Max Healthcare Institute Limited (MHIL). MSSH is a 200-bed hospital offering world class medical care, primarily in four super specialties, through dedicated state-of-the-art institutes of Orthopedics & Joint Replacement, Neurosciences, Obstetrics $ Gynecology, and Pediatrics.

**3) Max Hospital Pitampura:**

Max Hospital, Pitampura is ideally located in Pitampura, North Delhi, opposite Netaji Subhash Place Metro Station. Pathology Labs at Max Hospital, Pitampura have been accredited with NABL certification.

**4) Max Hospital Noida:**

The 30-bed secondary care hospital catering to populations of the National Capital Region of NOIDA as well as East Delhi has come into its element. Since launch, it has treated 10,000 patients, of which, 371 are in-patients. It has conducted 234 surgeries and delivered more than 100 babies. Dialysis facilities have also been introduced. The plan is to expand the capacity of this hospital by 20 beds.

5) **Max Medcentre, Panchsheel Park:**

To serve a growing customer base, **MAX MEDCENTRE PANCHSHEEL**, has expanded its in-patient services by adding five new beds. This will take the resident patient facility from 18 beds to 23 beds.

Situated in the South City of Delhi, Max Medcentre, Panchsheel Park (N Block) offers clinical services to out patients, providing in-house diagnostic service facilities.

**7) Max Hospital - Gurgaon**

Positioned about 1.5 km away from NH8 and 6 km from the airport, Max Hospital, Gurgaon is centrally air conditioned with more than 100 beds, two modular operation theatres, a 12-bed ICU and in-house diagnostic service facilities.

**MAX HOSPITALS**

Max Super Specialty Hospital, Saket

Max Super Specialty Hospital (A unit of Devki Devi Foundation), Saket

Max Super Specialty Hospital, Patparganj

Max Hospital, Pitampura

Max Hospital, Noida

Max Multispecialty Centre, Panchsheel Park

Max Hospital, Gurgaon

Max Super Specialty Hospital, Shalimar Bagh, Delhi

Max Super Specialty Hospital, Mohali, Punjab

Max Super Specialty Hospital, Bathinda, Punjab

Founder & Chairman of Max India Limited, Chairman of Max New York Life Insurance Company Limited; Max Healthcare Institute Limited and Max Bupa Health Insurance Company Limited – "**ANALIJIT SINGH**".

CEO of Max Healthcare – "**Dr.Ajay Bakshi**"

**SPECIALTY CENTRES AT MAX HEALTHCARE:**

Max Heart and Vascular Institute

Max Institute of Neuro Sciences

Max Institute of Orthopedics & Joint Replacement Surgery

Max Cancer Centre

Max Institute of Minimal Access, Metabolic & Bariatric Surgery

Max Institute of Obstetrics and Gynecology

Max Institute of Pediatrics

Max Institute of Aesthetic & Reconstructive Surgery

Max Eye Care

Max Dental Care

Department of Mental Health & Behavioral Sciences

Department of Endocrinology, Diabetes and Obesity

Department of ENT

Department of Physiotherapy & Rehabilitation

Physiotherapy and Rehabilitation Department

Department of Nuclear Medicine

# Chapter: 3

# OBJECTIVES &METHODOLOGY

## 3.1 Review of Literature

**A study on SSI after Cesearean section shows that Prospective surveillance of SSI led to better awareness of infectious problems among health care workers and patients. Surveillance contributed to a decrease in nosocomial infections**.(Barbut F et al Aug 2003)

A prospective study of surgical site infections (SSI) after cesarean section was carried out from September 1997 to September 1998 (pilot study) and from January 2000 to August 2003, using the methodology of the American National Nosocomial Infection Surveillance System. Follow up of women was performed by midwives until discharge and during the post-natal visit. Suspected surgical site infections were confirmed by surgeons and infection control practitioners. The microbiological file of each patient was edited 30 days after cesarean section. Risk factors were analyzed using a logistic regression model.

**A study conducted on SSI in Orthopaedic patients in teaching hospital in serbia showed that there is a high incidence of SSI in orthopaedic patients in Serbia**.(VlajinacH et al Feb 2008).

A 6-month prospective cohort study, with 30 days of patient follow-up after surgery, was conducted at the teaching hospital in Belgrade. Data collected on patients' basic demographic data and data on underlying disease status, surgical procedures, preoperative preparation of patients, and antibiotic prophylaxis. The National Nosocomial Infections Surveillance (NNIS) risk index was computed for each patient. Descriptive and logistic regression analyses were performed to determine risk factors for surgical site infections Assessment of 277 patients after operation revealed surgical site infection in 63 patients. In 3 (4.8%) of them, surgical site infections were detected after hospital discharge. The overall incidence rate of surgical site infections was 22.7% (95% confidence interval [95% CI], 17.5-29.1). The incidence increased from 13.2% in clean wounds to 70.0% in dirty wounds. The rates of surgical site infection for the NNIS risk index classes 0 to 3 were 8.1% (13 of 161), 36.4% (32 of 88), 63.0% (17 of 27), and 100% (1 of 1) ($P<0.001$; chi2 test). Multivariate logistic regression analysis identified the following independent risk factors for surgical site infections: greater number of persons in the operating room (odds ratio [OR], 1.28; 95% CI, 1.02-1.60), contaminated or dirty wounds (OR, 12.09; 95% CI, 5.56-26.28), and American Society of Anesthesiologists' (ASA) score >2 (OR, 3.47; 95% CI, 1.51-7.95). In patients who were shaved with a razor, the period of 12 or more hours between shaving and intervention was also an independent risk factor (OR, 2.77; 95% CI, 1.22-6.28).

**A Prospective Two-armed Trial Assessing the Efficacy and Performance of a Silver Dressing Used Postoperatively on High-risk, Clean Surgical Wounds .(Schwartz j,Goss s' et al,July 2007 & Nov 2008).**

A two-armed study was conducted between July 2007 and November 2008 to evaluate the efficacy and ease of use of a postoperative silver dressing. In the first arm of the study, patients undergoing clean general, vascular, orthopedic, and neurosurgical procedures were allocated to receive a postoperative silver dressing (POSD) or a standard dressing of nonstick gauze under a fluid occlusive dressing. Outcome variables included the incidence of antibiotic initiation for SSI, clinical signs of infection, and leukocyte counts. The second arm of the study was a prospective case series designed to evaluate the performance and handling characteristics of the POSD. Onehundred- ninety-nine (199) patients (mean age 59.2 [range 21-94] years) were enrolled in the first arm of the study. Three out of 99 (3%) patients in the POSD and six out of 100 (6%) control group patients received antibiotic therapy for SSI (P = 0.498). Differences in the percentage of patients with clinical signs of infection following surgery also were not statistically significant (POSD: n = 24, 24.2%; control: n = 30, 30%; P = 0.426). In the second arm, 34 out of 36 patients rated the study dressing easy to apply in (94%), and no pain on removal was noted in 38 out of 57 (66.7%) assessments. No patients in the dressing performance cohort developed an SSI.Prospective, randomized, controlled clinical studies with large sample sizes are warranted to evaluate the efficacy and cost-effectiveness of the POSD.

In 1999, the Centers for Disease Control and Prevention (CDC) published guidelines for prevention of SSI that included preoperative recommendations on hair removal, glycemic control, hand and forearm preparation, and antimicrobial prophylaxis, as well as other intraoperative and postoperative recommendations. One recommendation was that hair only be removed when necessary. If removed, the hair should be clipped immediately before the procedure. It was strongly recommended that hyperglycemia should be avoided in the diabetic patient during the perioperative period, and blood glucose levels adequately controlled.

## SUMMARY

Survey of Literature shows that study on SSIs have been done earlier also on the patients who got discharge after the operations and based on these studies I have made my Objectives.

## 3.2 Objectives of the Study

### General Objective

To diagnose the surgical site infections through telephonic Questionnaire amongst the discharged patients from Max Super Speciality Hospital.

### Specific Objectives

- Designing a questionnaire as per the defined criteria to diagnose SSI.
- To take the patient feedback through telephonic questionnaire regarding the site of operation or incision on $7^{th}$ ,$14^{th}$, $21^{st}$ and $28^{th}$ days of surgery perfomed.
- To find out the prevelance rate with the symptoms of SSI after Surgery.

## 3.3 Data and Methodology

**STUDY DESIGN:** Prospective Study.

**STUDY AREA**: Max Super Speciality Hospital.

**STUDY POPULATION**: Patient discharge from Max hospital after discharge**.**

**SOURCES OF DATA:** Primary data collected from the patients who were discharged from the hospital.

**Five specialties were chosen based on the patient volume and complexity of the cases:**

Orthopedics ,Cardiac Surgery ,MAS, Obstetrics & Gynecology ,General Surgery.

**METHOD**: A telephonic interview is done on $7^{th}$ ,$14^{th}$, $21^{st}$ and $28^{th}$ post operative days to the patient .For this telephonic interview, a questionnaire of 8 question is made.

**Mathematical Tool** : 1) Microsoft Excel.

The patients of above mentioned surgical patients will be informed in advance that they will be receiving calls from Hospital to know about the condition of their wound & recovery.

**DETAILED PROCESS FLOW:**

A designated Management Trainee will receive the OT list & discharge list on daily basis.

↓

He/ She will inform the patient at the time of discharge that the patient will receive a call from hospital to know the condition of the wound after discharge

↓

On $7^{th}$, $14^{th}$, $21^{st}$ and $28^{th}$ postoperative days, the patient will be contacted and their feedback will be noted.

↓

In suspected case of SSI, the patient will be request to visit the OPD of concerned surgeon for follow up.

↓

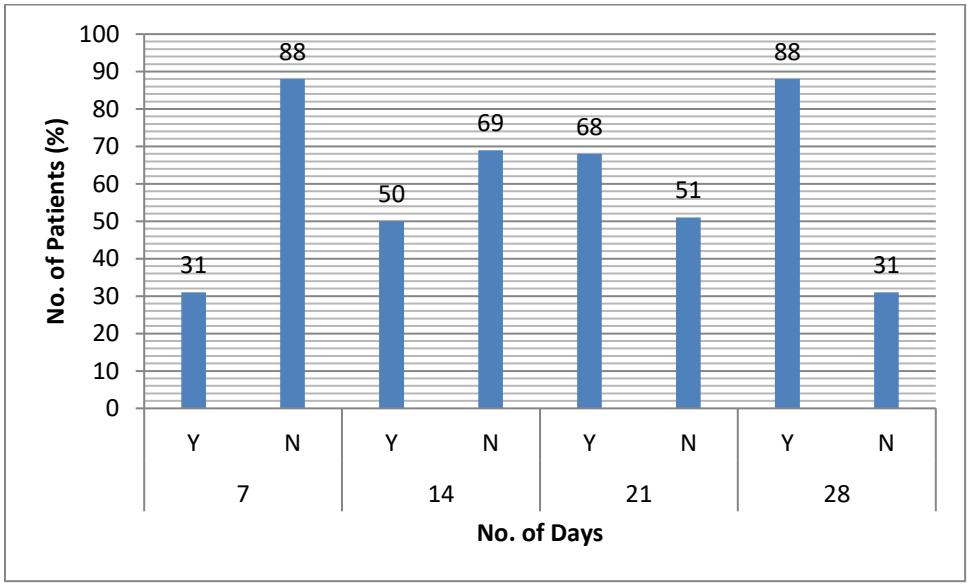
The Concerned surgeon/Microbiologist /wound care nurse will be informed and the further management will be done accordingly.

## Chapter: 4

## Results

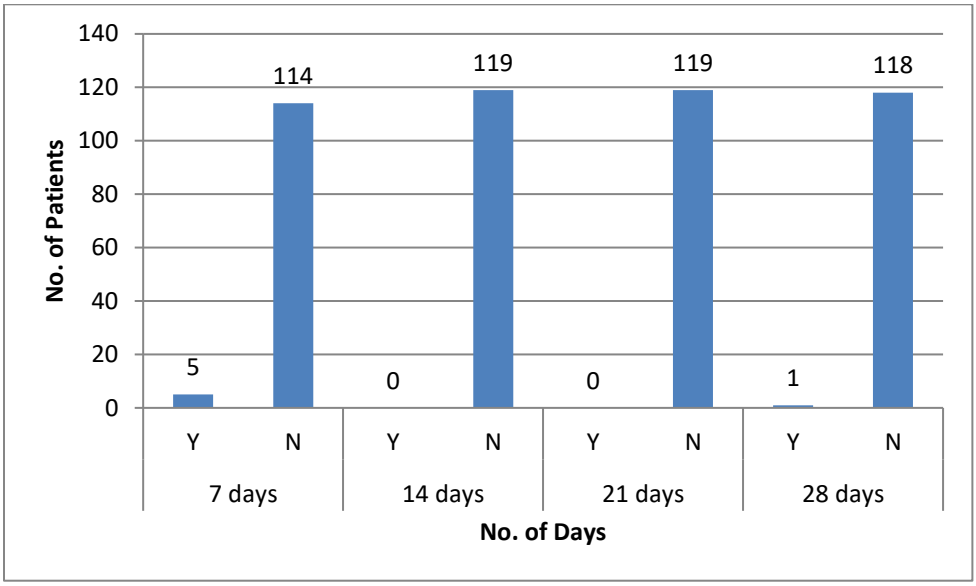
***.Signs and Symptoms*** were observed based on the questions asked from the patients discharged during the course of study. A 7 day follow up data to 28 days follow up data:

**COMPLETE HEALING OF WOUND AFTER DISHARGE**



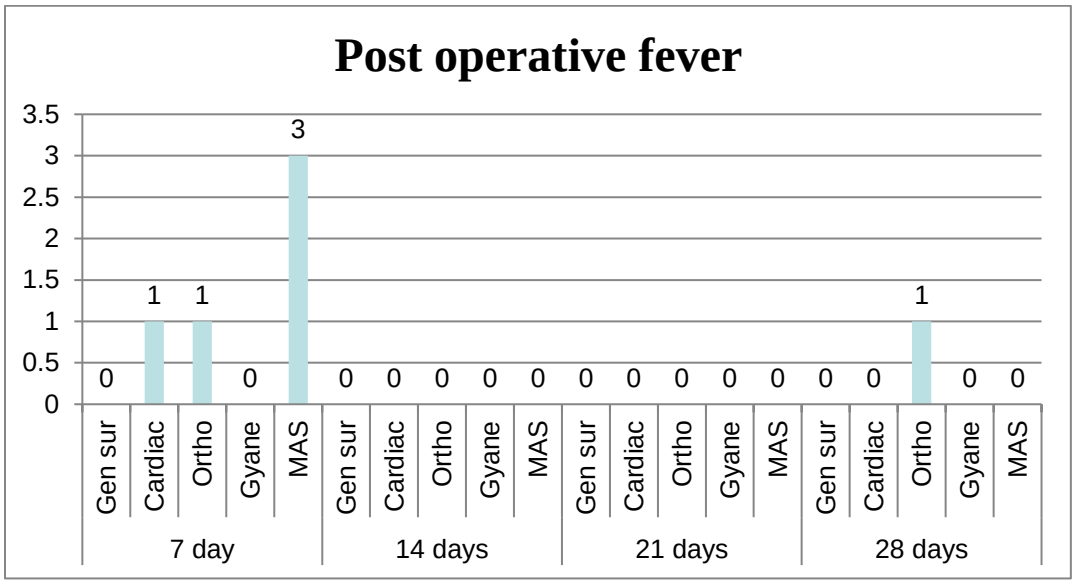

*Total number of patient is 119 out of which in the 1st week 88 patient who said that their wound did not healed completely where as in the 2nd week, the number reduced to 69 and in 3rd week it comes to 51 and in 4th week the number reduced to 31 whose wound did not healed completely.*

## 4.1 SYMPTOMS OF FEVER AFTER DISCHARGE

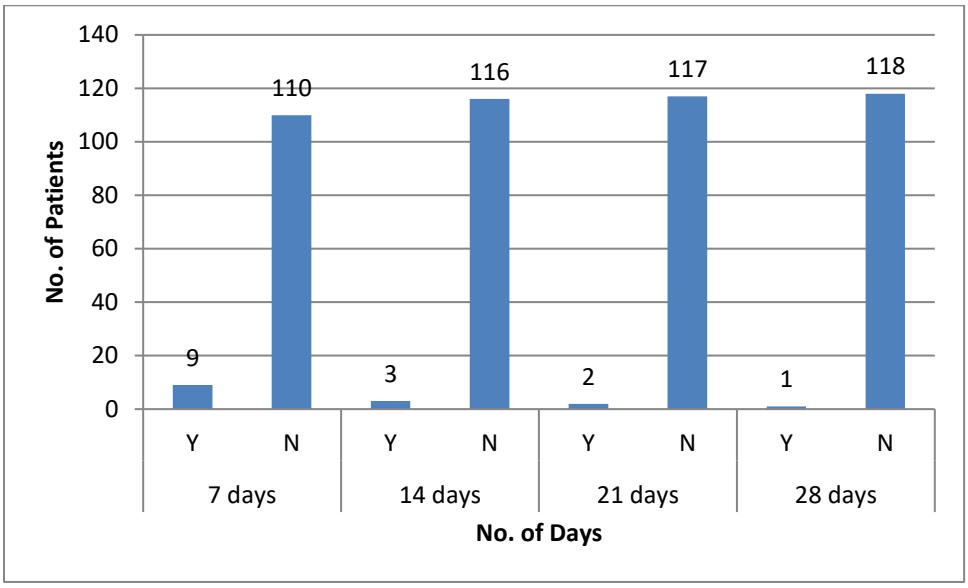



In this case, only **5 patients** had fever after the operation in the **1st week follow up** analysis. Where as **1** patient in the **4th week and detail breakup is given below:-**

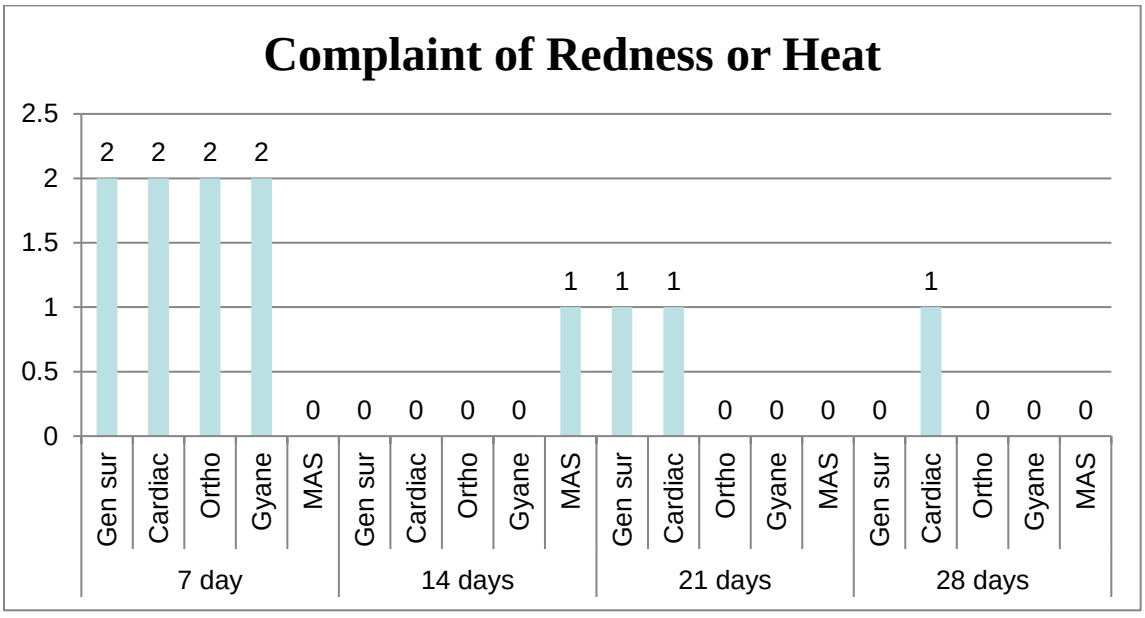
- **3 from MINIMAL ACCESS SURGERIES, 1 from CARDIAC and 1 from ORTHO department and surgeries done was external fixator rem(ortho), 2 lap chole(MAS), lap myomectomy (MAS) and CABG(Cardiac).**



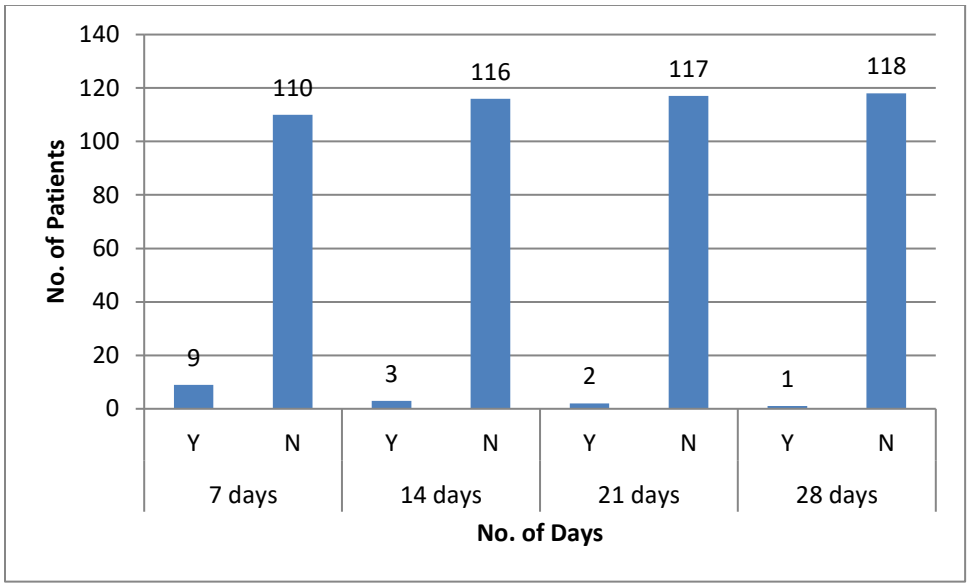
## 4.2 SYMPTOMS OF REDNESS OR HEAT AFTER DISCHARGE



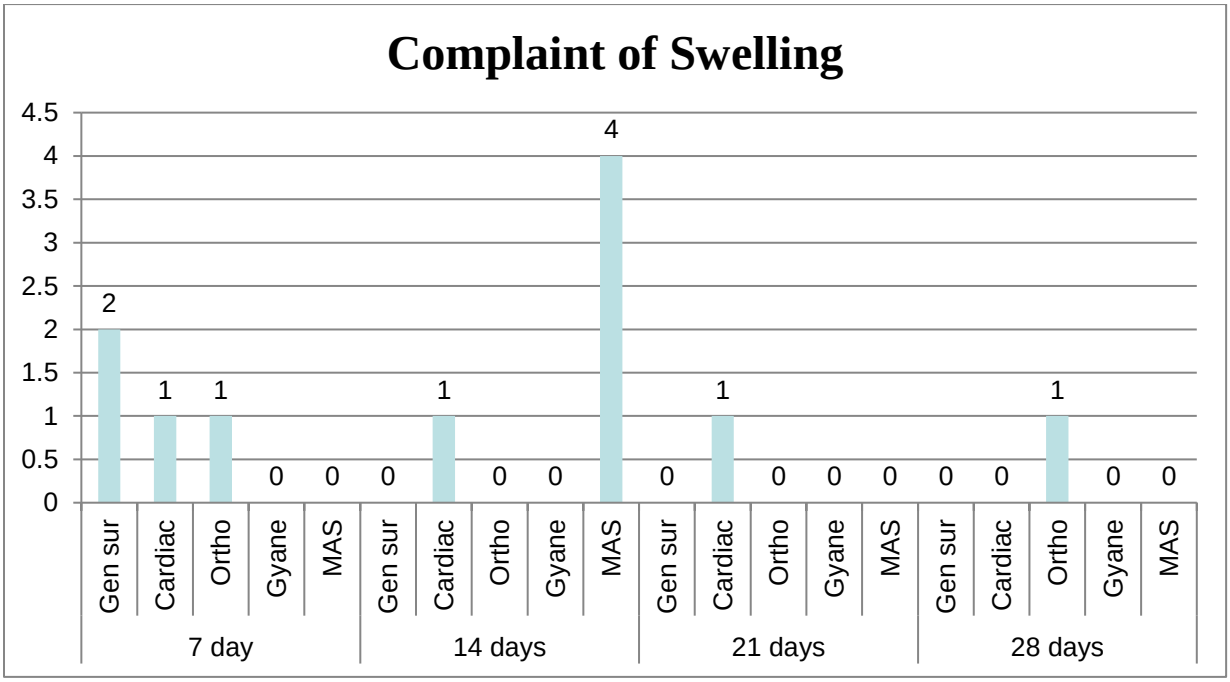

Redness or any sensation around the wound area after surgery could be a sign of SSI. **9 patients** noticed redness around the surgical area in the **1st week** and **3** patient in **2nd week** and finally it reduced to **1** in the **4th week**



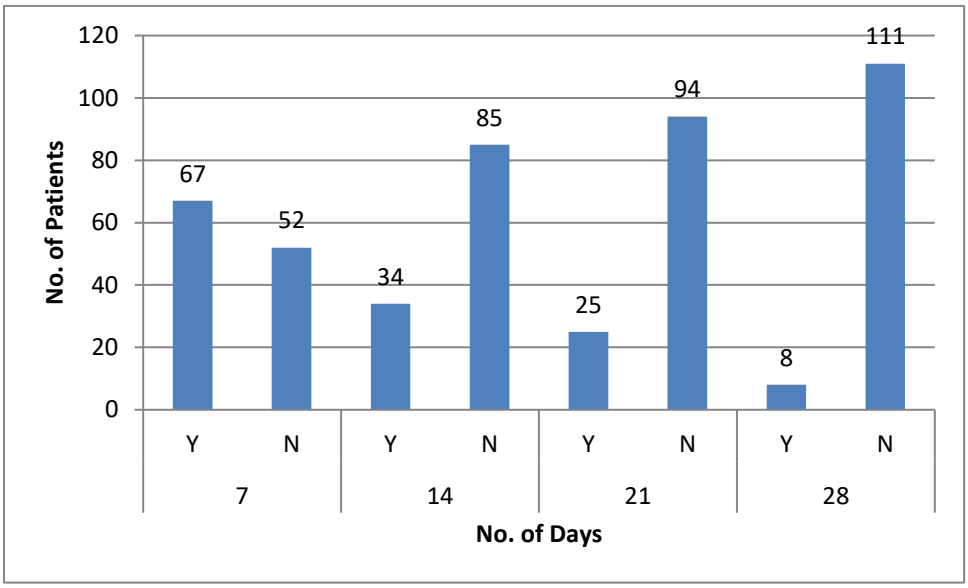
## 4.3 SWELLING AROUND THE WOUND AREA AFTER DISCHARGE



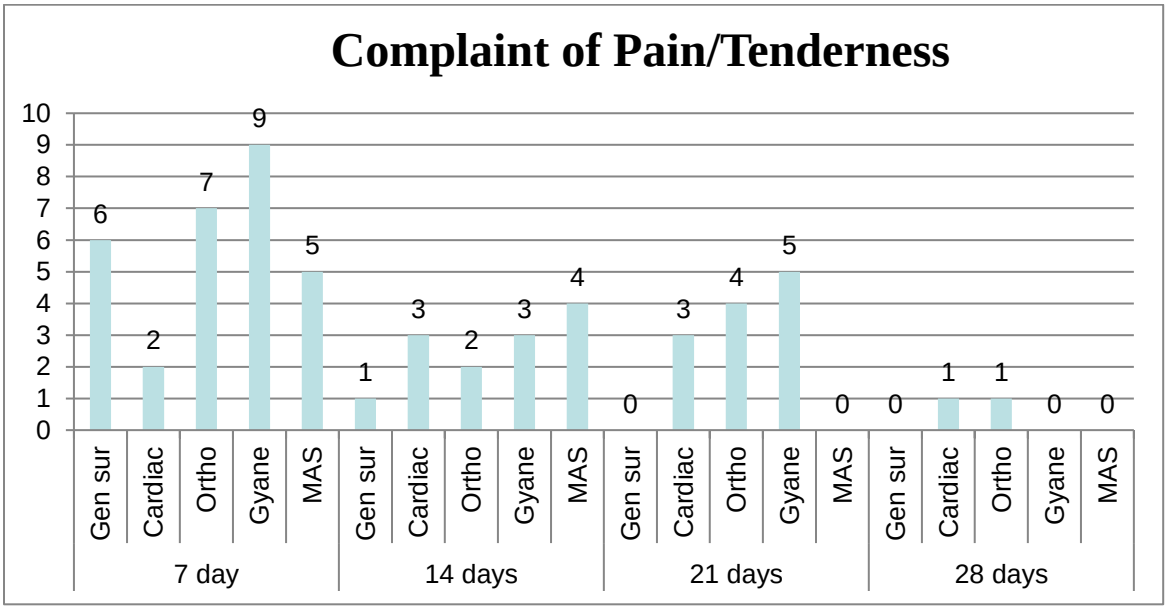

Swelling around the area could be another sign of SSI. Some microorganism might be behind the same. In the **1st week** of surgery, **9 patients and 3 patient in the 2nd week** were noticed swelling



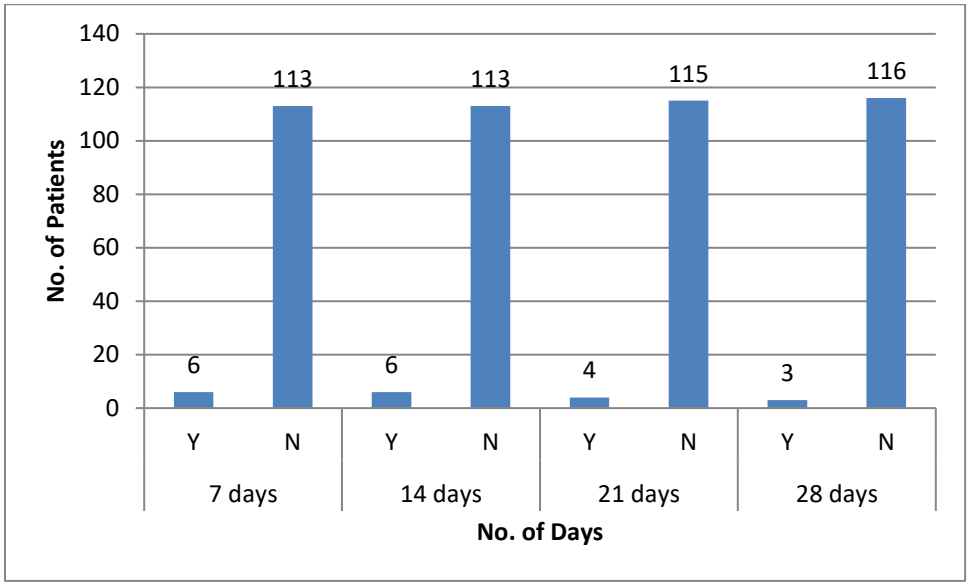
## 4.4 PAIN OR TENDERNESS AFTER DISCHARGE




Pain or tenderness (pain on touching the area) could be normal as a result of the surgery or it might be a sign of infection around the area indicating SSI. **67** patients reported of having pain, mostly due to the surgery (as per the physician) in the **1st week** and in the **2nd week**, the number comes to **34 patients** and **25** in the **3rd week** and finally it reduced to **8** in the **4th week.**

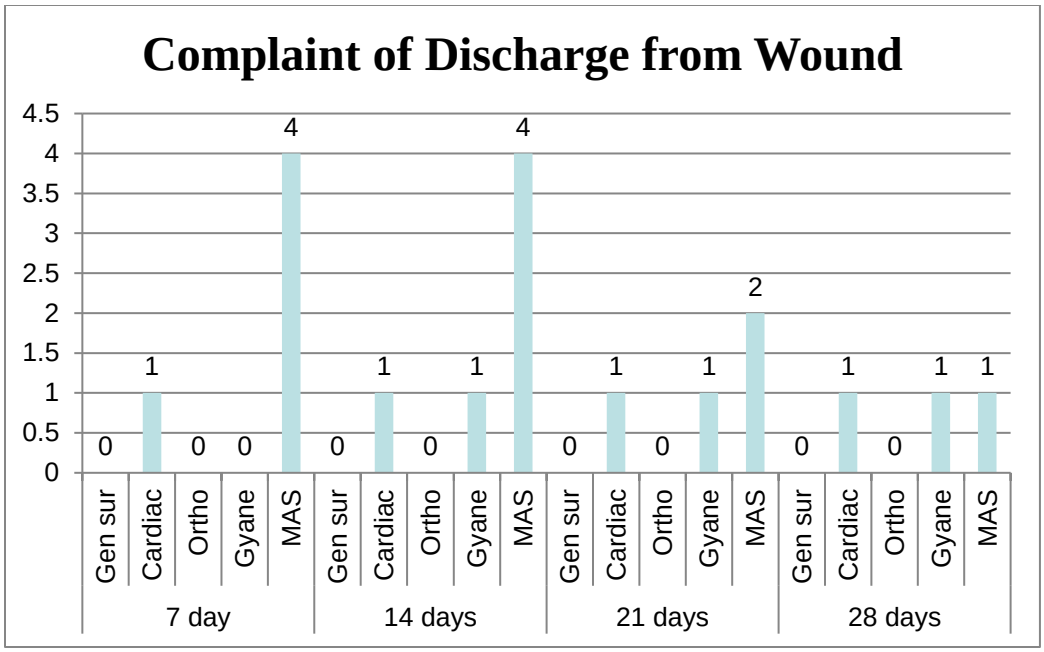


## 4.5 DISCHARGE FROM THE WOUND AREA AFTER DISCHARGE



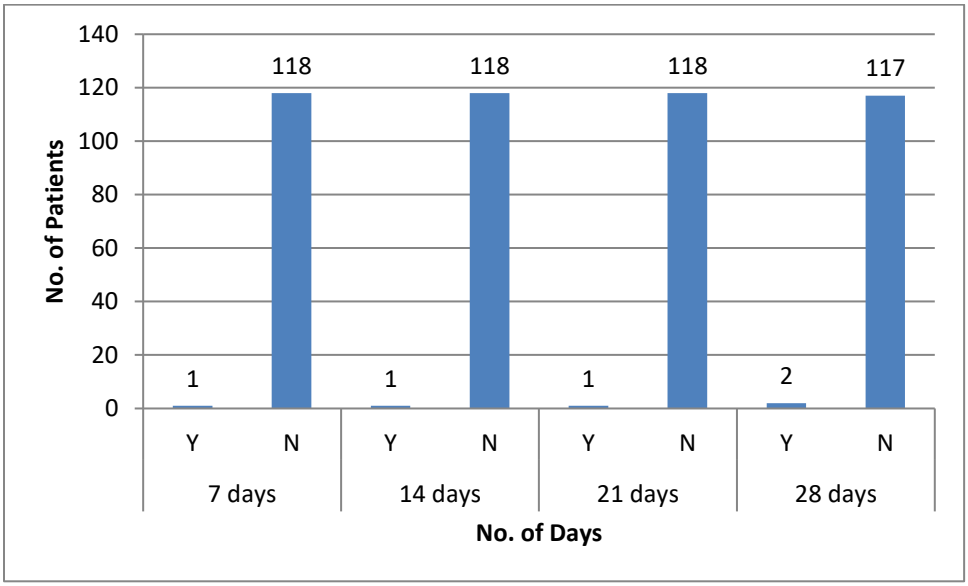

Discharge could be in a watery state or yellow pus formation which would be oozing from the wound area. **6** patients in the **1st & 2nd week** of surgery and **4** patients in the **3rd week** of surgery reported of some discharge coming from the wound area. However, the patients were not the same in both the weeks. This could be a sign of SSI but not a confirmed point and **3** in the **4th week** and detail break up is given below;-

- 1 patient from cardiac, 1 from general and 4 from minimal access surgeries department .and surgeries done was 4 CABG (CARDIAC), retinal detachment (General, ip no is 69522), 4 lap chole(MAS),2 perinal abscess (MAS), 4 operative laparoscopy(MAS) , 2 abdominal hysterectomy (Gyany) and LAP IPOM (MAS).
- In 3rd and 4th week xxx( operative laproscopy) and yyyy( LAP IPOM) where the two patients having discharge from their wound
- In 2nd , 3rd and 4th week, llllll(abdominal hysterectomy) and mmmmm (CABG) , where the two patients having discharge from their wound.


Complaint of Discharge from Wound
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
0 1 0 0 4 0 1 0 1 4 0 1 0 1 2 0 1 0 1 1
Gen sur
Cardiac
Ortho
Gyane
MAS
7 day
14 days
21 days
28 days

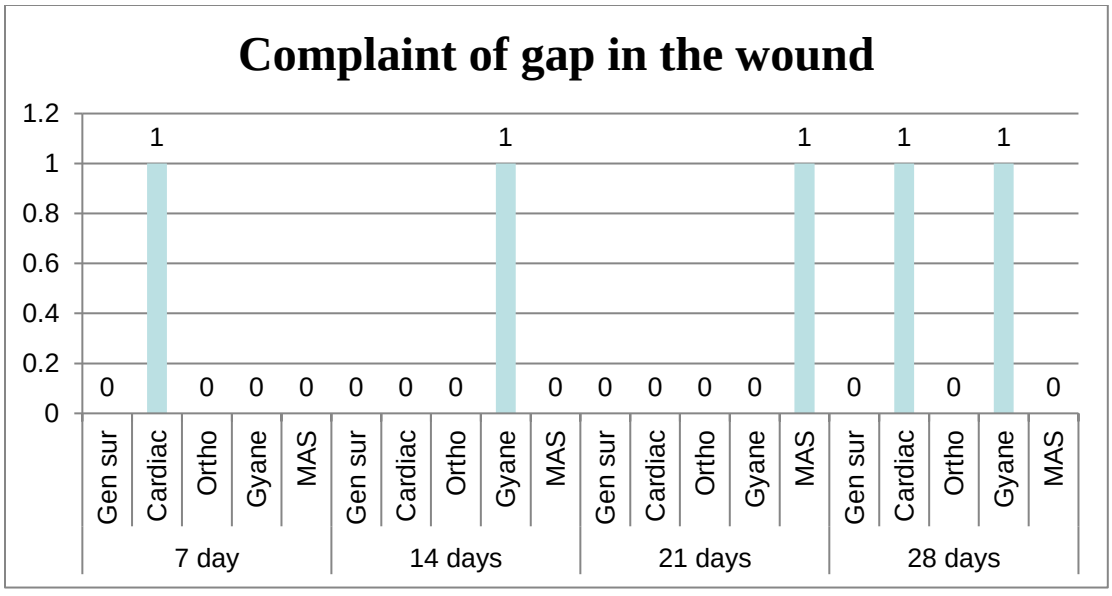
.

## 4.6 SYMPTOMS OF GAP IN THE WOUND AFTER DISCHARGE

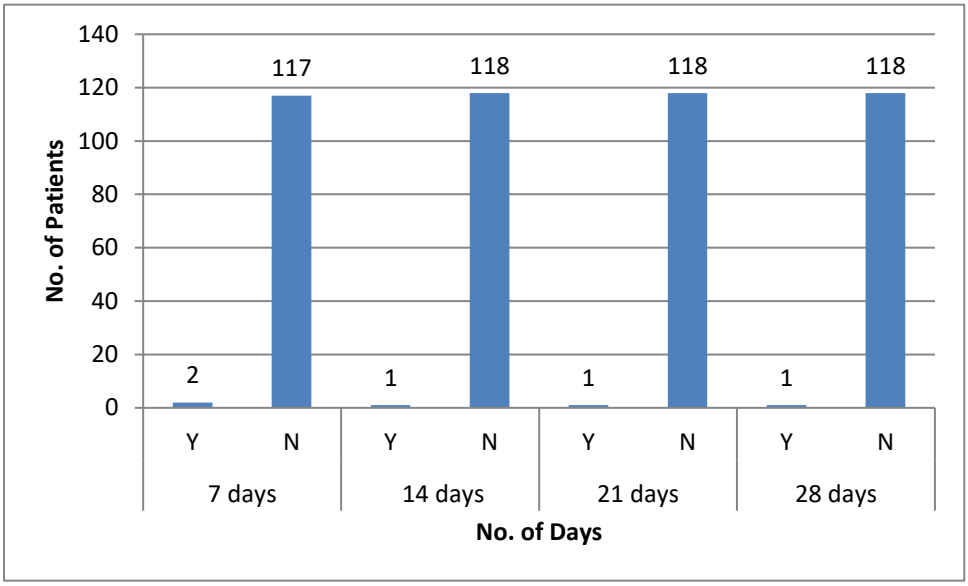



The main cause of gap in the wound could be due to pus formation inside the wound. Only **1** patient in the **1st,2nd** and **3rd week** and **2** patients in **4th week** reported of it and rest don't have gap in their wound and detail is given below;

- **1 patient from gynae and 1 from cardiac and surgery done was abdominal hysterectomy (gynae) and CABG (Cardiac).**
- **One patient (Abdominal hysterectomy) having gap in the wound in both 3rd and 4th week and one patient ( CABG) having gap in 4th week .**



## 4.7 INCISION BEING KEPT OPEN BY THE DOCTOR




Incision could have been kept open by the doctor depending on the surgery or he might have checked the wound area by opening it a bit to check any pus formation inside the surgical area. There are 2 patients whose incision being kept open by the doctor and detail is given below:-

- 1 patient from gynae and 1 from general department and surgery done was repair of ruptured uterus (Gynae) and retinal detachment (General).

**Discussion of Findings**

All the specialities are showing some or the other signs of SSIs. The telephonic survey alone is not a reliable method to determine whether a particular sign is a sign of infection or is to be expected after a surgery. This study is usually done by hospitals as the length of stay of patients after the surgery as inpatients as considerably declined over a period of years.

## Conclusions

This study is usually done by hospitals as the length of stay of patients after the surgery as inpatients as considerably declined over a period of years.

This can be attributed to:

- Many patients are from outstations
- Increasing cost of treatment
- Economic problems of patients
- Patients start getting relief within days of surgery due to the use of modern technology and efficient care, and others

However, this even increases the chances of getting SSIs as patients tend to lack the appropriate level of care needed after their surgery. Hence, in order to track such patients, a telephonic method involving a set of questions has been done. Apart from this, other methods like calling the patients for consultation also are a must. Patients are not good efficient judge when it comes to medical terminology.

## Recommendations

- Wash hands promptly after contact with infective material.
- Use no touch technique wherever possible.
- Wear gloves when in contact with blood, body fluids, secretions, excretions, mucous membranes and contaminated items.
- Doctor should wash hands immediately after removing gloves
- Patients education should be given before and after the surgery.
- Clean up spills of infective material promptly.
- Ensure that patient-care equipment, supplies and linen contaminated with infective material is either discarded, or disinfected or sterilized between each patient use.
- Ensure appropriate waste handling.
- If no washing machine is available for linen soiled with infective material, the linen can be boiled.
- Antibotics should also taken by patient at the prescribed time suggested by doctor.

- **Limitations**

    - A few Patients could not be traced as some of them were outstations during the time of interview.
    - Some patients were also not aware of the antibiotics they were on.
    - Culture test of patients is an important factor in the determination of Surgical Site Infections (SSIs). However, many patients were not knowing of it and on most of the patients, this test was not performed.
    - Some of the patients are not interested in the feedback.

## ANNEXURE

**1. DETAILED ANALYSIS OF THE STUDY: *Surgical Speciality*** :-

Total number of patients is 119 were interviewed.

| ***NAME OF SPECIALITY*** | ***NUMBER OF CASES*** |
|---|---|
| Cardiac Surgery | 8 |
| General Surgery | 23 |
| Obstetrics & Gynaecology | 19 |
| Orthopaedics | 27 |
| Minimal access surgery | 42 |

**2.Surgeries patient underwent:**

| ***ORTHO*** | |
|---|---|
| OZONE DISCOLYSIS | 3 |
| EXTERNAL FIXATOR REM | 1 |
| OPEN BIOPSY &DEBRIDEMENT | 1 |
| SPINE | 1 |
| MUA | 1 |
| ARTHROSCOPIC DEBRIDE | 1 |
| HIP / KNEE JOINT | 1 |
| TENDON ACHILL & QOUTS REPAIR | 1 |
| PERCUTANEOUS SCREW | 1 |
| ACL / PCL Reconstruct | 1 |
| SURGERY OF CDH/CDK | 1 |
| ORIF | 1 |
| ASPIRATION OF CYST | 1 |
| EXCISION OF SOFT TISSUE | 1 |
| IMPLANT REMOVAL+ORIF BONE GRAFTING | 1 |
| INTERLOCK NAILING | 1 |
| K WIRE FIXATION | 1 |
| OSTEOTOMY METATARSH | 1 |
| OSTEOTOMY+BONE GRAFT | 1 |
| POST INSTRMENT | 1 |
| REMOVAL OF PLATE: R | 1 |
| UNILATERAL TOTAL HIP | 1 |
| SKIN GRAFTING | 1 |
| DISTA C+ COWRADING ALMA | 1 |

| ***GENERAL*** | |
|---|---|
| LAP CHOLECYSTECTOMY | 6 |
| EXCISION OF PILONOID | 1 |
| I & D | 1 |
| RECTAL PROLAPSE REPAIR | 1 |
| EXCISION OF MASS | 1 |
| CHOLECYSTECTOMY | 1 |
| STAPLED HAEMORRHOIDS | 2 |
| SPHINCTEROTOMY | 1 |
| B/L INGUINAL HERNIA | 1 |
| CIRCUMCISION | 1 |
| LAP CHOLE | 1 |
| EXCISION OF MULTIPLE SEBACEOUS CYST | 1 |
| HYPOSPADIAS URETHRAL FISTULA | 1 |
| HEMIRHTYRODCTOMY | 1 |
| HERNIA REPAIR WITH MASH | 1 |
| RETINAL CETACHMENT | 1 |
| | |

| ***OBS AND GYNAE*** | |
|---|---|
| LSCS | 2 |
| LAVH | 1 |
| DIAGNOSTIC LAP PLUS | 1 |
| LAP SALPINGECTOMEY | 1 |
| DIAGNOSTIC HISTROSCOPY+E | 1 |
| ABDOMINAL HYSTERECTOMY | 2 |
| ECTOPIC PREGNANCY | 1 |
| ECTOPIC PREGNANCY | 1 |
| LAP LIGATION | 1 |
| LAP Rt. OVERIAN CYSTECTOMY | 1 |
| MTP | 1 |
| VAGINAL HYSTERECTOMY | 1 |
| REPAIR OF RUPTURED U | 1 |
| TLH+BSO | 1 |
| | |
| **CARDIAC** | |
| DVR | 1 |
| CABG | 6 |
| *PERICARDICTOMY* | 1 |
| | |
| | |
| | |

| **MINIMAL ASSESS SURGERIES** | |
|---|---|
| BIL TEP (1+1) | 6 |
| FISSURE IN ANO | 1 |
| FISTULA IN ANO | 3 |
| GASTRIC BYPASS | 2 |
| I&D | 1 |
| LAP CHOLE | 17 |
| LAP GASTRICPLICATION + LAP CHOLY (1+1) | 1 |
| LAP GASTRICPLICATION + LAP CHOLY (1+1) | 1 |
| LAP IPOM | 3 |
| LAP MYOMECTOMY | 1 |
| LAP VARICOCELECTOMY | 1 |
| OPERATIVE LAPROSCOPY | 2 |
| PERINEAL ABSCESS | 1 |
| *STAPLED* HAEMORRHOIDECTOMY | 1 |
| TLH | 1 |

*SPECIALITY WISE CLASSIFICATION*

**TABLE :1**

CARDIAC SURGERY

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | WEEK 1 | | WEEK 2 | | WEEK 3 | | WEEK 4 | |
| **QUESTIONS** | Y | N | Y | N | Y | N | Y | N |
| Has your wound healed completely? | 1 | 5 | 1 | 5 | 1 | 4 | 2 | 3 |
| Had fever? | 1 | 5 | 0 | 6 | 0 | 5 | 0 | 5 |
| Redness or heat | 2 | 4 | 0 | 6 | 1 | 4 | 1 | 4 |
| Swelling | 1 | 5 | 1 | 5 | 1 | 4 | 0 | 5 |
| Pain or tenderness | 2 | 4 | 3 | 8 | 3 | 2 | 1 | 4 |
| Discharge from wound | 1 | 5 | 1 | 5 | 1 | 4 | 1 | 4 |
| Gap in the wound | 1 | 5 | 0 | 6 | 0 | 5 | 1 | 4 |
| Incision being kept open by the surgeon | 0 | 6 | 0 | 1 | 5 | 1 | 4 | 5 |
| Culture | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 |
| Antibiotic | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 |

The above table 1 ***watery discharge and gap in the wound due to underlying pus*** were seen and patient is also having pain so, This confirms the presence of Surgical Site Infections in the patient.

TABLE: 2

ORTHOPAEDIC SURGERY

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | WEEK 1 | | WEEK 2 | | WEEK 3 | | WEEK 4 | |
| **QUESTIONS** | Y | N | Y | N | Y | N | Y | N |
| Has your wound healed completely? | 5 | 12 | 4 | 13 | 7 | 8 | 9 | 6 |
| Had fever? | 1 | 15 | 0 | 17 | 0 | 15 | 1 | 14 |
| Redness or heat | 2 | 15 | 0 | 17 | 0 | 15 | 0 | 15 |
| Swelling | 1 | 16 | 0 | 17 | 0 | 15 | 1 | 14 |
| Pain or tenderness | 7 | 10 | 2 | 15 | 4 | 11 | 1 | 14 |
| Discharge from wound | 0 | 16 | 0 | 17 | 0 | 15 | 0 | 15 |
| Gap in the wound | 0 | 16 | 0 | 17 | 0 | 15 | 0 | 15 |
| Incision being kept open by the surgeon | 0 | 16 | 0 | 17 | 0 | 1 | 0 | 15 |
| Culture | 1 | 5 | 1 | 5 | 1 | 5 | 1 | 5 |
| Antibiotic | 2 | 4 | 1 | 5 | 0 | 6 | 0 | 6 |

The above table2 does not show any patients having any kind of infection and this confirm the absence of surgical site infection.

**TABLE: 3**

GENERAL SURGERY

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | WEEK 1 | | WEEK 2 | | WEEK 3 | | WEEK 4 | |
| **QUESTIONS** | Y | N | Y | N | Y | N | Y | N |
| Has your wound healed completely? | 4 | 7 | 8 | 3 | 9 | 2 | 9 | 2 |
| Had fever? | 0 | 11 | 0 | 11 | 0 | 11 | 0 | 11 |
| Redness or heat | 2 | 9 | 0 | 11 | 1 | 10 | 0 | 11 |
| Swelling | 2 | 9 | 0 | 11 | 0 | 11 | 0 | 11 |
| Pain or tenderness | 6 | 5 | 1 | 10 | 0 | 11 | 0 | 11 |
| Discharge from wound | 0 | 11 | 0 | 11 | 0 | 11 | 0 | 11 |
| Gap in the wound | 0 | 11 | 0 | 11 | 0 | 11 | 0 | 11 |
| Incision being kept open by the surgeon | 0 | 11 | 0 | 11 | 0 | 11 | 0 | 11 |
| Culture | 1 | 5 | 1 | 5 | 0 | 6 | 0 | 6 |
| Antibiotic | 1 | 5 | 1 | 5 | 0 | 6 | 0 | 6 |

In the above table 3, criteria for ssi like Redness or Heat found in a patient in both 3rd week.*This may confirms the presence of a surgical site infection (SSI).*

**TABLE:4**

OBS & GYNAE SURGERY

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | WEEK 1 | | WEEK 2 | | WEEK 3 | | WEEK 4 | |
| **QUESTIONS** | Y | N | Y | N | Y | N | Y | N |
| Has your wound healed completely? | 3 | 10 | 4 | 9 | 5 | 8 | 8 | 5 |
| Had fever? | 0 | 13 | 0 | 13 | 0 | 13 | 0 | 13 |
| Redness or heat | **2** | 11 | 0 | 13 | 0 | 13 | 0 | 13 |
| Swelling | 0 | 13 | 0 | 13 | 0 | 13 | 0 | 13 |
| Pain or tenderness | 9 | 4 | 3 | 10 | 5 | 8 | 0 | 13 |
| Discharge from wound | 0 | 13 | 1 | 12 | 1 | 12 | 1 | 12 |
| Gap in the wound | 0 | 13 | 1 | 12 | 0 | 13 | 1 | 12 |
| Incision being kept open by the surgeon | 0 | 13 | 0 | 13 | 1 | 12 | 1 | 12 |
| Culture | 1 | 3 | 1 | 3 | 0 | 4 | 0 | 4 |
| Antibiotic | 0 | 4 | 0 | 4 | 0 | 4 | 0 | 4 |

In the above table 4.***watery discharge and gap in the wound due to underlying pus*** were seen. This confirms the presence of Surgical Site Infections in the patient.

**TABLE:5**

MINIMAL ACCESS SURGERY

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | WEEK 1 | | WEEK 2 | | WEEK 3 | | WEEK 4 | |
| **QUESTIONS** | Y | N | Y | N | Y | N | Y | N |
| Has your wound healed completely? | 4 | 9 | 4 | 9 | 10 | 3 | 12 | 1 |
| Had fever? | 3 | 10 | 0 | 13 | 0 | 13 | 0 | 13 |
| Redness or heat | 0 | 13 | 1 | 12 | 0 | 13 | 0 | 13 |
| Swelling | 0 | 13 | 4 | 9 | 0 | 13 | 0 | 13 |
| Pain or tenderness | 5 | 8 | 4 | 9 | 0 | 13 | 0 | 13 |
| Discharge from wound | 4 | 9 | 4 | 9 | 2 | 11 | 1 | 12 |
| Gap in the wound | 0 | 13 | 0 | 13 | 1 | 12 | 0 | 13 |
| Incision being kept open by the surgeon | 0 | 13 | 0 | 13 | 0 | 13 | 0 | 13 |
| Culture | 0 | 13 | 1 | 12 | 0 | 13 | 0 | 13 |
| Antibiotic | 4 | 9 | 1 | 12 | 2 | 11 | 0 | 13 |

In the above Table 5 criteria for SSI like *discharge from the wound* were found in a patient during all the 4 weeks after surgery. The surgery done was OPERATIVE LAPROSCOPY. *This confirms the presence of a surgical site infection (SSI).*

***Questionnaire for Telephonic Survey:***

| **Questions** | **Patient's Response** | |
|---|---|---|
| Has your wound healed completely | Yes | No |
| Have you had a high fever that was not due to an illness since your operation | Yes | No |
| Have you ever had the problems like | | |
| • Redness/heat | Yes | No |
| • Localized Swelling | Yes | No |
| • Pain or tenderness | Yes | No |
| • Any kind of discharge from the wound | Yes | No |
| • Gap in the wound | Yes | No |
| Have your incision being kept open by the surgeon | Yes | No |

## ***refrences***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*The Center for Transforming Healthcare launched its fourth project which aims to reduce surgical site infections (SSI) in patients having colorectal surgery and colorectal procedures(Aug 2010)*

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*www.pubmed.in.*