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ABOUT THE NEWSLETTER:

"By providing important and relevant information to healthcare providers, this Newsletter aims to enhance communication of quality and patient safety information, raise awareness of reported adverse events and maintain an ongoing link to all the medical departments of the Ministry of National Guard Health Affairs (MNGHA) facilities."

Protecting Future Generation from COVID-19: Establishing KASCH Emergency Flu Screening Unit (KEFSU)

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Background

The latest epidemic to be declared in Saudi Arabia was in 2015 with the emergence of the Middle East Respiratory Syndrome (MERSCoV). Then nothing much was researched or implemented regarding the epidemiology of this disease in the pediatric population. This was until 2143 pediatric cases COVID-19 were reported to the Chinese Centre for Disease Control and prevention from January 16 2020 to February 2020. COVID-19 was first reported in China in a city called Wuhan in December 2019. This comparative study conducted as the first epidemiological study on pediatric population in China. The report reflected that 728 (34.1%) were confirmed cases and 1407(65%) were suspected pediatric cases (Dong, Mo, Hu et al., 2020). This prompted the KASCH Pediatric Emergency Department to be proactive in developing triage, patient flow processes and treatment pathways. The epidemiological study in China concluded that all children of all ages appeared to be

susceptible to COVID-19. Although clinical manifestations in children of COVID-19 were generally less severe than those of adults, young children particularly infants were vulnerable and those with underlying pulmonary pathology and immunocompromised conditions have been associated with more severe outcomes (Dong, Mo, Hu et al., 2020). With this in consideration the KASCH Pediatric Emergency Department Team had to put processes in place to protect this vulnerable group of the pediatric population including the immunocompromised and children with multiple comorbidities.

Methods :

The quality improvement methodology of IHI Model for Improvement was applied in the establishment of the KASCH Emergency Flu Screening Unit (KEFSU). The first PDSA cycle was to construct a structure for the flu unit. The initial brainstorming included nurses, physicians, engineers and infection control advisers. During the brainstorming, the SWOT analysis highlighted the following; our strength was the fact that we had a large physical space in our waiting area where part could be renovated and converted into a flu unit. The weakness and challenge was how to convert the area into a negative pressure as COVID-19 was confirmed not only to be transmitted through contact and droplet but was widely airborne transmitted. The opportunities presented was the idea that there were less number of pediatric patients with COVID-19 presenting to our Emergency Department. The greatest threat was the increase of adult confirmed COVID-19 cases being reported daily, thereby posing the children more susceptible to the exposure. The preliminary data collected in China focused on severe respiratory manifestations which were seen predominantly in adults, with limited data on the burden of COVID-19 in children (Dong, Mo, Hu et al., 2020).

Another threat identified by the QI project team, is that the virologists confirmed that a large number of confirmed children with COVID-19 were asymptomatic even though the transmission of the virus was from the adult population. Uniquely, the current COVID-19 virus seems to spare the children of severe manifestations of the illness, at the same time they remained asymptomatic carriers.

PDSA cycle 2 concentrated on establishing and completing the structural

changes. Within 14 days, the engineers completed the structure and HEPA filters were supplied. The unit was complete with a spacious initial assessment area having a safe social distancing of patients on initial presentation. An examination room was created and it functioned as a swabbing room (for collecting samples for COVID-19 testing). The third PDSA cycle was to establish the triage and flow processes with guidelines. Since the Flu Screening Unit is strategically located at the entrance of the Emergency Department, all patients and relatives are being screened for Acute Respiratory Illnesses (ARI). The ARI Screening Tool approved by the Saudi Ministry of Health (MOH) in a form of a questionnaire is utilized in order to identify suspected and confirmed cases of COVID-19. These patients are immediately isolated from the other non-suspected patients and are seen in the Flu Unit for further assessment and completion of the triage process. The flow process and guidelines were designed and approved by all stakeholders. Key performance indicators were identified and measured such as: patient waiting time, length of stay and occupancy rate. The PDSA cycle 4 include staff training about the ARI screening tool. The housekeeping department was oriented to strictly follow the policy and procedures as outlined in the Infection Control guidelines on cleaning and waste management of the unit. A nursing staffing plan was drafted and approved to ensure adequate manpower.

Results.

The KEFSU started on April 12, 2020 with 126 patients, with a dramatic increase of 1,718 in September, accounting for 36% of the total ED Visits (suspected ARI Screening). Capturing 100% of the suspected COVID-19 will provide the KASCH Pediatric Emergency Department in prevention and lowering the risk of cross-transmission for both staff, patients and families.

The Figure 1 depicts the number of KEFSU visits with the number of discharge patients, and discharge rate.

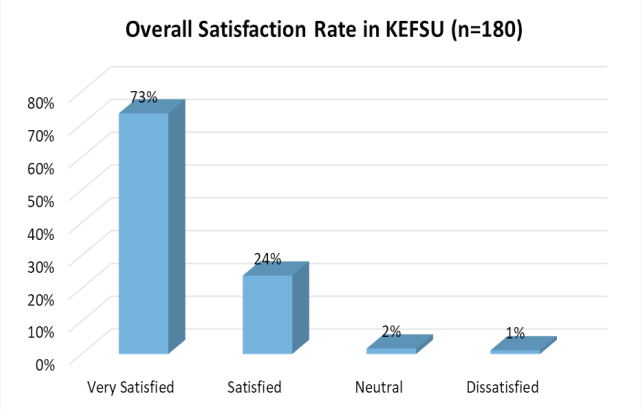

Figure 1: Number of KEFSU visits and discharge rate

During the month of July 2020, patient satisfaction survey was conducted with the results. Patients and families were highly satisfied with the waiting time which is less than 30 mins.

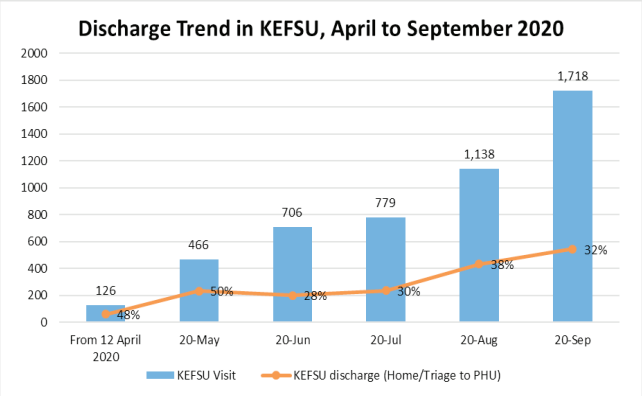

Figure 2: Satisfaction survey on Average Waiting Time

Figure 3 shows that patients and families were highly satisfied with education and explanation about home isolation precaution and COVID 19 prevention measures.

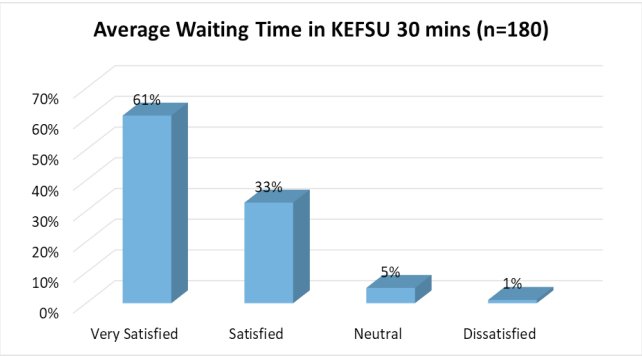

Figure 3: Overall Satisfaction Rate in KEFSU

Discussion

Protecting future generation from COVID-19 by establishing a robust system to detect the infection and manage illness at the point of care entry is a very substantial declaration. Health care systems are challenged to develop strategies and plans to deliver high quality care to patients during this global crisis. In light of the growing strain on the healthcare systems, it is pertinent to proactively upscale the system capacity to meet the expected high demand in respect to workforce, capacity and equipment. Furthermore, guidance on management of patients with COVID-19 is needed. s

Conclusion:

Collaborative efforts of the management and the multidisciplinary team in revising the patient flow after establishing the flu screening unit had saved the department from extreme burden of controlling the spread of the COVID-19 infections. The KASCH Pediatric Emergency flu Screening Unit (KEFSU) is considered a long-term sustainable approach to protecting future generation from COVID-19 and other respiratory illnesses outbreak.

The Impact of Endoscopic Vein Harvesting Technique on Secondary Surgical Site Infection among Patients Undergoing Coronary Artery Bypass Graft

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The saphenous vein is the most commonly harvested conduit for revascularization in coronary artery bypass grafting (CABG). Risk factors include but are not limited to: obesity, female, diabetes, peripheral vascular disease, and traditional open methods of saphenous vein harvesting. The rate of surgical site infection (SSI) at the donor site of patients undergoing coronary artery bypass graft (CABG) at our hospital used to be threefold higher than reported by the US National Healthcare Safety Network (NHSN). Advanced surgical technique has an effect in reducing SSI. In an effort to reduce the SSI, saphenous vein harvesting using endoscope was implemented in June 2016. The objective was to compare the impact of using endoscopic vein harvesting (EVH) versus traditional open vein harvesting (OVH) on secondary SSI among CABG patients.

Prospective surveillance was done among patients who underwent CABG at king Abulaziz Medical City (KAMC), Riyadh, Saudi Arabia between June 2016 and

March 2019. The surveillance methodology and secondary SSI definition was similar to NHSN ones. Post-discharge surveillance included surgical follow-up, outpatient clinic visits, and emergency visits. EVH was done only by one surgeon who had the clinical skills for the technique.

A total 474 patients were included in the current analysis. The average age was 60.9±10.1 yearsApproximately 70.0% were males. Out of 474 patients, endoscopic vein harvesting was done among 275 (58.0%) patients and secondary SSI was detected in 11 (2.3%) patients. Compared with OVH, EVH was associated with lower secondary SSI rate (1.09% vs. 4.02%, Figure 1). The difference was significant using Mid-P exact test (p=0.046) but not Fisher exact (p=0.076). Compared with NHSN, standardized infection ratios (SIRs) adjusted for differences in risk index categories between KAMC and NHSN were similar in KAMC patients with EVH (SIR=1.23, p=0.737, Figure 2) but much higher in KAMC patients with OVH (SIR=4.07, p=0.004, Figure 3).

In conclusion, the current findings indicate that endoscopic vein harvesting was effective in reducing the risk of SSI at the donor site. Implementing the endoscopic vein harvesting technique to all CABG patients may further reduce the secondary SSI rate.

Figure 1: Rates of secondary SSI following CABG surgery by the type of saphenous vein harvesting

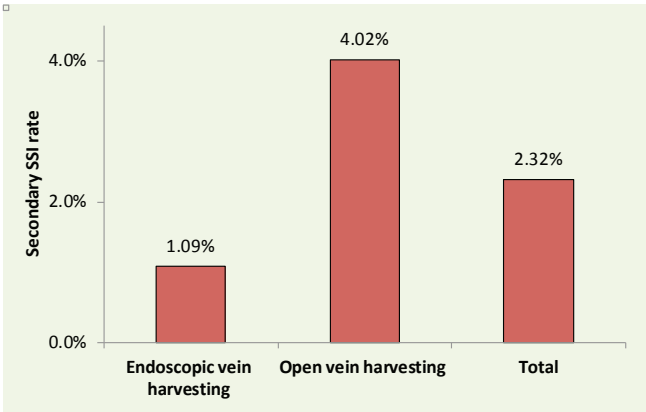
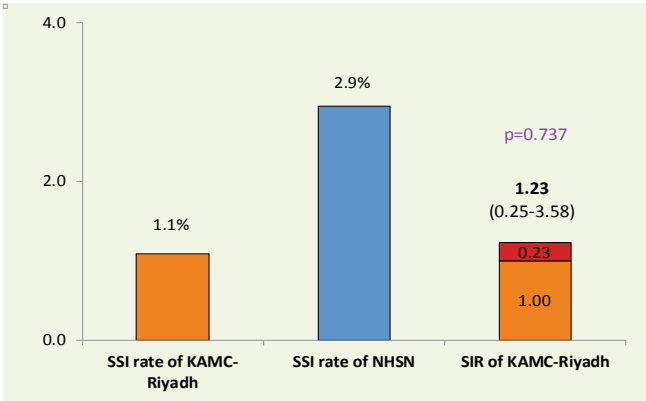
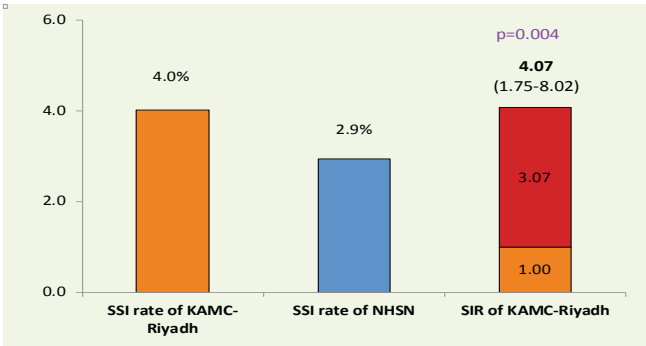


Figure 2: SIR for secondary SSI following endoscopic vein harvesting in KAMC- Riyadh compared with



NHSNFigure 3: SIR for secondary SSI following open vein harvesting in KAMC- Riyadh compared with NHSN



The 24 to 72 Hour Nursing Care Following a Stroke Admission in the Hospital: Does it matter?

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Introduction

Nursing care is regarded as one of the cornerstones in the provision of essential care during the first 24 to 72 hours following a stroke diagnosis. The first 24 to 72 hours during acute phase is the crucial this period where deterioration may occur this period. Complications such as hemorrhagic transformation, raised intracranial pressure, developing an evolving stroke and aspiration due to dysphagia or swallowing difficulty may develop in the first few hours of stroke onset. Continuous monitoring (blood pressure, electrocardiogram, oxygen saturation, temperature) for 72 hours in a stroke unit compared to routine care (less intense monitoring) showed that more intensive care led to a 2.5 fold increase in the probability of a good outcome at discharge. This may be due to earlier detection and correction of complications. Nurses serve as frontlines in prompt detection of complications, robust monitoring of deterioration, prevention of and evaluation of stroke care.

The aim of the article is to describe the evidence-based nursing care in the first 24 to 72 hours following a stroke diagnosis and highlight the role of a nurse in the provision of the hyperacute stroke care.

The first 6 hours of stroke nursing care

The priority of patient care in the first 6 hours following a diagnosis of stroke is stabilization of physiological monitoring such as vital signs, Glasgow coma scale (GCS), glucose, blood pressure and oxygen saturation (table 2). The use of continuous of cardiac monitoring is essential because significant cardiac arrhythmias (e.g. atrial fibrillation, supraventricular or bradyarrhytmias) occurred in 25.1% of all patients during the 72 hours of monitoring, with the highest risk period being the first 24 hours after admission (Kallmunzer et al., 2012) . Hence, placing stroke patients for 72 hours is highly recommended to

a. Blood pressure

Hypertension and hypotension in stroke are associated with increased poor outcomes. Hypertension in stroke is often associated with haemorrhagic conversion whereas hypotension can lead to the extension of cerebral infarction. The cause of hypertension in stroke is due to the failure of auto regulation system. Any changes in the systemic blood pressure can directly affect the cerebral blood flow (Horer & Haberl, 2012). In acute stroke, 75% of patients have hypertension and 50% of those have a prior history of high blood pressure (BP) (Britton et al, 1986; Oppenheimer &, Hachinski, 1992; Appleton et al., 2016). Guidelines recommend that BP lowering in acute stroke should be withheld for days or even weeks unless BP is unacceptably elevated (>220/120 mm Hg) (Appleton et al., 2016).

The nurse must be familiar with the BP parameters in stroke so that appropriate action will be escalated to the stroke team. Below is the target blood pressure in various cases (Table1):

Table 1. Target BP Parameters

Cases	BP Parameter
In thrombolysis (Jaunch et al , 2013; Appleton et al 2016)	BP must be <185/100 mm Hg prior to administration of alteplase. <180/105 mm Hg for the following 24 hours Consider intravenous labetalol, nicardipine or nitroprusside as prescribed.
In intracerebral haemorrhage, (Hemphill et al, 2015;Steiner et al. 2014)	American and European guidelines recommend acute lowering of SBP to ≤140 mm Hg within 6 hours of onset.

b. Blood Glucose

Capes et al (2001) explained that non-diabetic ischemic stroke patients with

hyperglycemia have a 3-fold higher 30-day mortality rate than do patients without hyperglycemia. In diabetic patients with ischemic stroke, the 30-day mortality rate is 2-fold higher. Hyperglycaemia could be toxic in the ischaemic brain and could lead to further increase of the infarct volume.

The National Institute of Clinical Excellence (NICE) (2018) recommends that patients with acute stroke should be treated to maintain a blood glucose concentration between 4 and 11mmol/litre. Below and above this parameter, the nurses must escalate it to the physician and advocate the optimal use of insulin therapy, which can be achieved by the use of intravenous insulin and glucose.

C. Oxygen saturation

20% of all human oxygen consumption is used by the brain (Hoiland et al 2016; Ferdinand & Roffe, 2016). The brain has no oxygen or glucose stores. Hence, any interruption of cerebral blood flow results in an anoxic, hypoglycaemic state, which via a variety of mechanisms ultimately leads to cell death (Ferdinand & Roffe, 2016). Patients with stroke should receive supplemental oxygen only if their oxygen saturation drops below 95% (NICE, 2018). Therefore, the nurse should not routinely use supplemental oxygen to acute strokes who are not hypoxic.

d. Temperature

Campos et al (2013) explained that hyperthermia occurs up to 30 to 40% of patients following a stroke. The highest temperature occurs at 1.5 to 2 days following a stroke, and is related to stroke severity or subtype (Karaszewski et al 2012), infection or physiological response from brain repair (Wrotek et al, 2011). Monitoring patient's body temperature is a basic component of stroke care. And nurses must check patient's temperature because pyrexia is associated with poor outcome and high mortality. "The risk of poor outcome doubles with every degree Celsius increase in body temperature measured within the first 12 hours from stroke onset (Reith et al, 1996; de Ridder et al 2017). The European Stroke initiatives and European Stroke Organization suggest treating body temperature between 37°C to 37.5°C (European Stroke Organization, 2008;

Wrotek et al 2011). Both recommend acetaminophen (paracetamol) with no specified doses (Wrotek, 2011.) On the other hand, high- dose acetaminophen for patients with acute stroke lowers body temperature by 0.3°C within 4 hours after start of treatment (de Ridder, 2015).

e. Swallowing screening

Dysphagia is common in stroke. Early swallow screening and assessment is vital to reduce the risk of pneumonia and has been shown to improve survival in some studies (Bray et al, 2013; Ingeman et al, 2008). A swallowing screening must be done on patient's admission and it should only be carried out by healthcare professionals including nurses who have been adequately trained in the procedure (Scottish Intercollegiate Guidelines Network (SIGN), 2010). Nurses play an important role in the early identification of dysphagia. One systematic review suggests that nursing knowledge and practice should underpin: risk factors, early signs, observation of eating and drinking habits and monitoring weight, body mass index and hydration (Ramritu et al., 2000).

f- Oral hygiene

As a result of stroke, patients are becoming more dependent on the nurses due to neurological deficits affecting cognition, limb power, swallowing reflex, language and consciousness level. These problems may lead patients to develop mouth thrush and xerostamia ('dryness of the mouth'). Therefore, oral hygiene must be an integral part of stroke care. The use of mouth wash and application of petroleum jelly can prevent oral thrush and xerostamia.

g. Skin assessment and prevention of pressure sores.

Pressure ulcers are described as "an injury that breaks down the skin and underlying tissue. They are caused when an area of skin is placed under pressure and are sometimes known as 'bed sores' or 'pressure sores'" (Healthcare Improvement Scotland, 2015). In stroke, it is a common complication due to limited mobility and cognitive impairment. Nurses must regularly assess and evaluate the pressure points such as sacrum, soles and elbows. A meticulous skin care remains the highest priority in the prevention of pressure sore. Maintaining the patient's skin dry and intact, regular patient turning from side to side at least every two hour, the use of air pressure relieving bed mattress are some of the measures to prevent hospital acquired pressure sores.

F. Bowel elimination

"Post-stroke constipation is caused by inactivity, lethargy, insufficient water or nutrition intake, depression, lack of exercise capabilities, cognitive impairment, reduced level of consciousness and drug intake (Yi et al, 2011)". The nursing role must focus on assessing the contributory factors causing post-stroke constipation and commencing early patient ambulation when necessary; increasing fluid intake unless contraindicated; monitoring dietary intake and ask physician's for laxative medication.

A 7 to 12 - Hour Stroke Nursing Care

The essence of the 7 to 12 hour stroke nursing care is a follow –up with the multidisciplinary team (MDT) to ensure that the strokes have been referred to physiotherapist, occupational therapist, dietitian, social services and patient educator so that screening and assessment for early rehabilitation are commenced appropriately. Furthermore, patient nutritional status must be established this period. If a patient failed the swallowing screening, the nurse must keep patient nil by mouth (NBM) and must insert a nasogastric tube (NGT) so that nasogastric feeding is commenced as prescribed. The nurse must also assess the hydration status and ask physicians if intravenous fluid is required.

A 25 to 48 - Hour Stroke Nursing Care

Observation for any signs and symptoms of aspiration pneumonia

Dysphagia ('swallowing difficulty') affects up to 65% of stroke patients (The American Heart and Stroke Association, 2016). If not identified, assessed or managed early, it can lead to poor nutrition and aspiration pneumonia. It is essential that nurses must observe for any signs aspiration like febrile, coughing, tachypnea and tachycardia. The nurses should closely monitor the vital signs and oxygen saturation and any changes in within normal parameters must be reported to the physicians. Positioning patient in a semi –upright whilst eating or on NGT feeding prevents the incidence of aspiration.

A 49 to 72- Hour Stroke Nursing Care

In this period, the focus of nursing care will include the provision of education to patient and family on stroke and prevention of future stroke. It also includes the assessment of deep vein thrombolysis following a stroke.

Patient and family education

Patient education remains the cornerstone to increase awareness patients and patients' relatives about early recognition of stroke symptoms and prevention of recurrent stroke. Nurses play a pivotal role in providing lifestyle advice focusing on smoking cessation, blood pressure management,

diet, blood sugar control and exercise. Stroke information leaflets and useful websites should be provided to increase patient, family and career awareness. The nurse should check that they understand (Catangui & Slark, 2012):

-What a stroke is?

-The Face Arm Speech Test. (FAST)

-Importance of lifestyle modifications, such as diet, exercise, blood pressure and blood glucose monitoring, and alcohol and smoking cessation, in preventing recurrent stroke.

-Patients who have had a stroke should not drive for a month (The Stroke Association, 2011).

Assessment for any signs of DVT

DVT is common in stroke and can be a life- threatening complication if it leads to pulmonary emboli. The incidence of DVTs is from 10-75%, depending on the diagnostic method and time of evaluation (Khan et al., 2018; Soroceanu et al., 2016; Bembenek et la., 2011). “The onset of development of a DVT following acute stroke can be as early as the second day, peaking between days 2 and 7; if left untreated, proximal DVT have a 15% mortality rate (Kelly et al., 2001; Khan et al., 2018)”. Hence, the nurse must assess stroke patients for any signs and symptoms of pain, swelling, tenderness in one leg (usually the calf), warm and red in the affected part. Evidences have demonstrated that the use of heparin and intermittent pneumatic compression (IPC) in stroke setting can reduce the incidence of DVT by 29% and a 14% reduction in overall mortality (Dennis et al., 2013). The DVT prophylaxis must be initiated on patient admission in the stroke unit as indicated.

In essence, the nursing care and management for stroke patients include BP and blood sugar control, maintaining oxygen saturation, prevention of complications (e.g. xerostamia, DVT or hospital acquire pressure sore), continuous cardiac monitoring, screening and assessment (e.g. dysphagia or DVT, early referral to the multidisciplinary team, provision of patient and family education on stroke.

In summary, the guidelines for stroke care integrating the evidence based practice and clinical guidelines. This guide nurses in assessing and managing stroke patients in the unit. It also defines the role of a nurse in the hyperacute management in stroke setting. The application of these guidelines will improve patient care in stroke and ensure that safe care is delivered to strokes at the right time.

Conclusion

The hyperacute care in stroke encapsulates a comprehensive nursing care during the first 24 to 72 hours of patient admission in acute stroke setting. Nurses play a pivotal role in the provision of evidence based practice to ensure that patients receive stroke care in a timely and proactive fashion.

References (upon request)

Successful Post-Procedure Intervention in a Tertiary Care Setting with High Rate of Surgical Site Infection among Patients with Coronary Artery Bypass Graft

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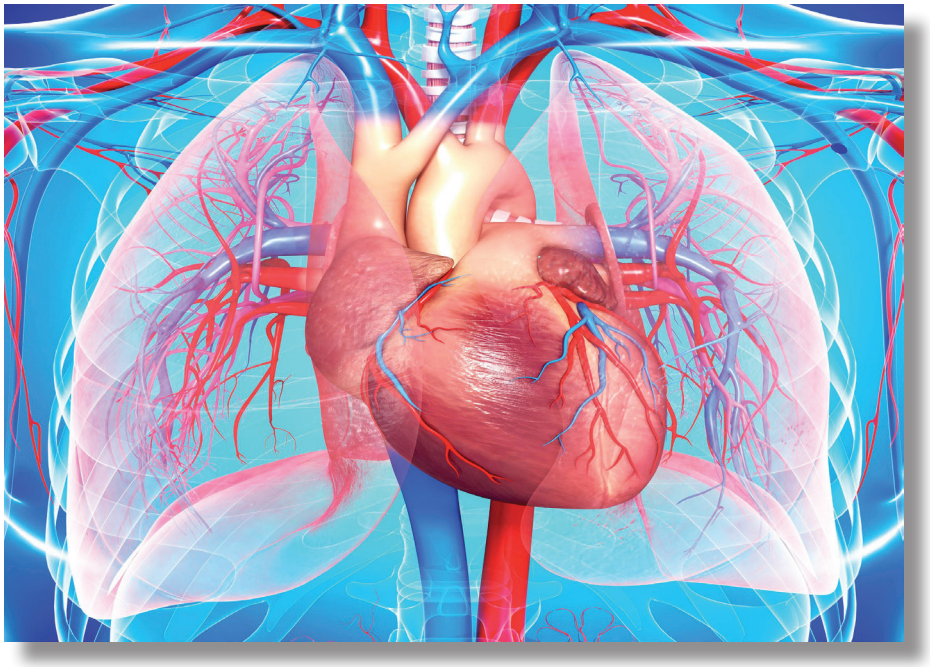


Surgical site infection (SSI) is a major source of morbidity and mortality among patients undergoing coronary artery bypass graft (CABG) procedures. SSI occurs after surgery, can be superficial involving the skin only, or can be more serious involving deep layers under the skin, organs or implanted material. Centers Disease control and Prevention (CDC) developed a guidelines and tools to prevent SSI. Risk factors for SSI include but are not limited to: age, diabetes, obesity, smoking, hypertension, skin preparation, poor infection control practices perioperatively and length of stay. The rate of surgical site infection (SSI) among our patients who underwent CABG has been consistently higher than reported by the US National Healthcare Safety Network (NHSN). Post-discharge personal hygiene has been raised as a possible contributing factor. The objective was to examine the impact of using post-procedure antiseptic body shower on infection and mortality in CABG patients.

Interventional study was conducted among all patients who underwent CABG at king Abulaziz Medical City (KAMC), Riyadh, Saudi Arabia between October 2018 and March 2019. The intervention was educational sessions focusing on appropriate usage of chlorhexidine gluconate 4% antiseptic body shower during hospital stay and 7 days post-discharge. The outcome was the development of superficial

SSI according to NHSN criteria. SSI was assessed from outpatient records, emergency visits, and a phone call. Additionally, the phone call was used to confirm the compliance with the intervention. To further identify areas for interventions, infection prevention and control has performed several investigations, assessments, meetings with stakeholders and surgeries observations. A multidisciplinary committee was developed to eliminate SSIs by identifying different indicators and implementing effective interventions which will be reviewed on a regular basis.

Out of 111 patients included in the current study, 87 (78.4%) were compliant with the post-procedure antiseptic body shower and 13 (11.7%) developed superficial SSI. Compared with non-compliant patients, patients who were compliant with the intervention had markedly low SSI rate (2.3% vs. 45.8%, p<0.001) (figure 1) and no mortality (0.0% vs. 8.3%, p=0.045) (figure2). The difference in SSI remained significant after adjustment for the risk index categories in both groups (p<0.001). Additionally, total and post-procedure length of hospital stay were shorter among compliant patients compared with non-compliant patients (17.8±8.4 vs.31.1±30.3 days, p<0.001 and 11.5±6.6 vs. 24.1±29.2 days, p<0.001, respectively).

In conclusion, the current findings indicate that the use of chlorhexidine gluconate 4% antiseptic body shower was very effective in reducing the risk of infection, mortality, and length of stay. Additionally, the findings highlight the importance of patient education and personal hygiene. The findings still need to be confirmed in large randomized studies.

Figure 1: Superficial SSI following CABG surgery by the compliance with using CHG 4% body shower

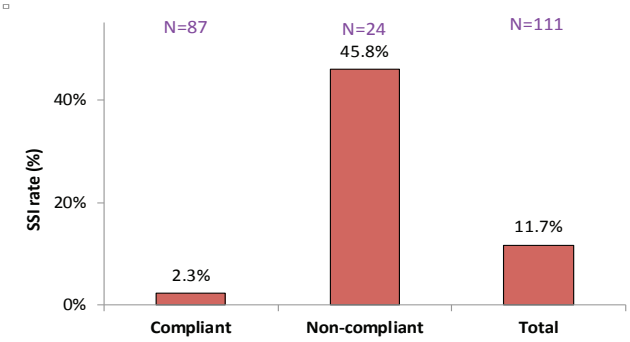


Figure 2: Mortality following CABG surgery by the compliance with using CHG 4% body shower

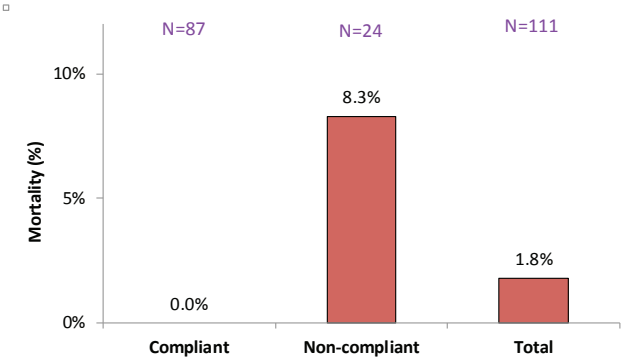
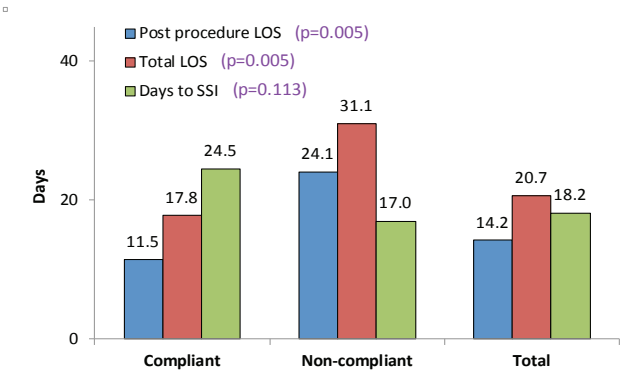


Figure 3: Length of stay (days) among CABG patients by the compliance with using CHG 4% body shower



Quality & Patient Safety Newsletter

This is your Newsletter and we value your comments. Please recommend Quality Improvement Projects in your area.

We strongly encourage you to share patient safety information.

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