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### THE IMPACT OF COLLABORATION BETWEEN PHYSICIANS, NURSES, AND CLINICAL PHARMACISTS IN REDUCING MEDICATION PRESCRIBING ERRORS IN KING ABDULLAH SPECIALIZED CHILDREN'S HOSPITAL ER

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**Background** Medication errors remain the leading cause of mortality and morbidity in the pediatric emergency room (ER) across the world. The Institute of Medicine (IOM) has noted that this is due to the unique needs of the pediatric population compared with adults. With the introduction of the Computerized Physician Order Entry (CPOE) system in the National Guard Health Affairs (NGHA), there was a decrease in medication errors resulting from prescription. Inevitably, the CPOE did not eliminate all prescription errors. The King Abdullah Specialist Children Hospital Emergency Department reviews all safety reports (SRS) as part of the daily key performance indicators meeting with the ER Chairman, nurse managers, and charge nurses. The SRS report from 2016 showed a total of 102 errors. Medication administration is a process that commences with prescription by physicians, then dispensing by the clinical pharmacists, and finally administration by nurses. The NGHA adheres to the 'swiss cheese model' recommended by its Safety Medication Program; therefore, the majority of these errors were 'near miss', meaning they were caught in the process before reaching the patient. The aim of this project was, therefore, to reduce the rate of prescription errors by 60% by the end of 2018.

**Methods** This project was done in the KASCH Emergency Department with a total of 65 beds. Total visits can be up to 500 patients in 24 hours, especially during the winter season. PDSA (plan-do-study-act) methodology was applied in this quality improvement project. A collaborative team was formed led by the ER Chairman. A series of meetings were held. Cycle 1: team formation, brainstorming, and data validation and analysis. The following themes were identified: dose incorrect, frequency incorrect, and allergy override. The following medications were also identified with frequent errors: paracetamol, dexamethasone, and antibiotics. Cycle 2 focused on establishing order sets, pre-calculated prescription doses based on weight on BestCare. Cycle 3: allergy awareness campaign to all clinicians. PDSA 4 focused on the accuracy of reporting errors follow-up and action plans to be implemented and documented.

**Results** The overall results showed that there were 28 ER prescription errors in the year 2018 compared with 102 in 2016, reflecting a reduction of 73%.

**Conclusion** The success of this project was evidence that collaboration among all clinicians involved in medication administration can greatly decrease medication errors. This project aims to spread to all areas of KASCH to address the challenge of medication errors.

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### OUTBREAK OF MEASLES AND MUMPS IN THE NATIONAL GUARD POPULATION IN RIYADH, 2018

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**Background** Measles, mumps, and rubella (MMR) vaccine is a safe combined vaccine that is considered one of the most effective protective measures against three separate diseases: measles, mumps, and rubella (German measles). During 2018, there were reports of an increased number of measles cases in Saudi Arabia and globally. The objective of the current study was to confirm the presence of such an increase among the National Guard population and to assess if mumps and rubella were also affected.

**Methods** Communicable diseases are regularly reported from the National Guard population in all regions to the public health section of the Infection and Prevention Control (IPC) department at Riyadh. Retrospective review of prospectively collected information about the three diseases prevented by MMR was conducted in 2019. This covered the period between 2008 and 2018.

**Results** During the study period, a total of 48 patients with measles, 84 with mumps, and 20 with rubella had been reported to the IPC department. Compared with the previous 10 years, the number of patients with measles increased from an average of 3.7 to 11 (197% increase). Compared with the previous 10 years, the number of patients with mumps increased from an average of 5.6 to 28 (400% increase). Compared with the previous 10 years, the number of patients with rubella increased from an average of 1.8 to 2 (11% increase).

**Conclusion** We are confirming an outbreak of both mumps and measles. This may indicate that the increase is related to a problem with MMR coverage or effectiveness. Further research is required to confirm the possible causes of this outbreak: missing immunization, shortness of vaccine, misconception about the link between the MMR vaccine and autism, vaccine-induced disease, and pockets of unvaccinated immigrants. Additionally, there is an urgent need to increase public awareness of the MMR vaccine.

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### IMPROVEMENT IN THE OUTCOME OF THE VIRAL HEPATITIS PREVENTION PROGRAM AT NATIONAL GUARD HOSPITALS (RIYADH) IN 2018

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**Background** The public health team of the Infection Prevention and Control (IPC) department conducted a systemic evaluation in 2017 for patients diagnosed with hepatitis B or C between 2013 and 2016. The findings showed high rates of loss to follow-up and unreachable viral hepatitis B and C infected cases. Loss to follow-up has been shown to be a major obstacle for management of patients with hepatitis. The objective of the current study was to improve the rate of case identification and follow-up management.

**Methods** To improve the rate of case identification and follow-up management, the guidelines for viral hepatitis were upgraded in 2018 by IPC staff after active engagement of head and treating physicians of relevant departments and hospital executives. Additionally, key performance improvement (KPI) metrics were established: loss to follow-up (unable to reach patient) and increase in management initiation (able to reach and counsel patient). Data for

patients with positive HBsAg and HCV PCR were collected in 2018 using the hospital electronic record system. In addition to enhanced counselling and referral of infected patients, an annual viral hepatitis awareness campaign was done during the International Hepatitis Day to raise public awareness about vaccination and treatment for viral hepatitis.

**Results** Hepatitis B management initiation increased from 67% during 2013–2016 to 94% during 2018, and patients lost to follow-up decreased from 33% to 6%. Similarly, hepatitis C management initiation increased from 67% during 2013–2016 to 86% during 2018, and patients lost to follow up decreased from 33% to 14%.

**Conclusion** Enhanced counselling and referral of infected patients, and increasing public awareness were successful in improving the initiation of case management and reducing loss to follow-up for patients with hepatitis B and C. The intervention focused on engagement and use of the hospital electronic record system in improving the public health role of the IPC department. More efforts are still required to reduce the number of patients lost to follow-up.

#### 67 THE PREVALENCE OF OCCUPATIONAL INJURIES AMONG SAUDI RED CRESCENT PRE-HOSPITAL CARE PROVIDERS IN JEDDAH, SAUDI ARABIA, 2018

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**Background** Pre-hospital care providers were at higher risk of occupational injuries than other medical care providers because of the workplaces and situations they usually deal with. Through observations and repetitive visits to the Saudi Red Crescent Authority (SRCA) stations, the issue was outlined and identified. The sample was collected from SRCA, which is the main emergency medical services authority providing care for patients outside the hospital environment. The pre-hospital care providers in SRCA are divided into three groups: physicians, paramedics, and emergency medical technicians (EMTs). In Saudi Arabia (SA), no studies had been done on pre-hospital occupational injuries; however, some studies on this topic have been done around the world. The aim of this study was to identify the prevalence and risk factors of occupational injuries among SRCA pre-hospital care providers in Jeddah, SA.

**Methods** A cross-sectional study was done using an online questionnaire (Google Forms) to obtain demographic and occupational injuries-related information from 217 SRCA pre-hospital care providers. The sample was collected using a 95% confidence level and 5% margin of error, which was derived from the population number (n=495) of SRCA pre-hospital care providers in Jeddah, SA.

**Results** After the calculations, the study showed a high prevalence of occupational injuries of 52.5% among 137 EMTs, 51 paramedics, and 29 physicians. Participants had an average of 6.63 years' experience. Back-related injuries were the most common type of injury, resulting in 60 cases among 114 injured participants. Work stress was considered the most common estimated risk factor based on the participants' questionnaire, with 64 cases. Additionally, no significant difference was found using T-test and Chi-squared test

to compare age and experience with different types of occupational injuries.

**Conclusion** Despite the study's limitations, which affected its accuracy, the study showed a high prevalence of occupational injuries among SRCA pre-hospital care providers in Jeddah, SA. One of these limitations was a small sample size resulting from communication barriers with SRCA. Occupational injuries that affect pre-hospital care providers may reduce the effectiveness of a patient's health and safety. Future studies should identify and evaluate prevention strategies to increase public health awareness in the pre-hospital setting by highlighting the relationship between healthcare occupational injuries and patients' outcomes and safety.

#### 68 THE PRACTICE AND ATTITUDE OF HEALTHCARE WORKERS TOWARDS STETHOSCOPE CLEANING: A PATIENT SAFETY QUALITY IMPROVEMENT PROJECT

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**Background** Healthcare-associated infections constitute a major health concern for hospitalized patients. Contaminated stethoscopes may be a potential source for the spread of microorganisms. The aim of this study was to determine the current attitude and rate of stethoscope cleaning as well as the level of contamination of stethoscopes, followed by the implementation of a patient safety quality improvement project.

**Methods** A prospective study was performed at King Abdulaziz University Hospital. Our study ran through four main phases. In the first phase, healthcare workers (HCWs) were observed throughout the medical wards to determine their attitudes towards stethoscope cleaning. During the second phase, random stethoscope swabs were taken for culture to determine their contamination rate; afterwards, a questionnaire was distributed among the HCWs to identify stethoscope cleaning barriers. In the third phase, an awareness day was scheduled to demonstrate the importance of stethoscope cleaning, and cleaning materials were made accessible. In the fourth phase, we estimated the impact and effectiveness of the intervention by observation of HCWs. Descriptive statistics were applied. All data were analyzed using Microsoft Excel sheets.

**Results** In the observational phase, only 16.7% of 155 HCWs cleaned their stethoscopes between patient encounters. Among the 155 HCWs who participated in the survey, 25% reported that they never cleaned their stethoscopes, 33.5% had difficulty finding cleaning materials, 18.7% thought cleaning isn't necessary, 93.4% reported that they would clean their stethoscopes if the wipes were accessible, and 21.3% cleaned their stethoscopes regularly. Among the 39 stethoscope sterile swabs taken, the mean growth on blood agar was 245 colony-forming units (CFUs;  $\pm 64$ ). In the post-intervention observational phase, 65 HCWs were observed, of whom 70.1% cleaned their stethoscopes ( $p < 0.01$ ).

**Conclusion** Most HCWs do not clean their stethoscopes between patient encounters. Raising awareness and providing appropriate cleaning materials are effective interventions to increase the rate of stethoscope cleaning among HCWs.