8 A COMPARISON OF GLUCOMETERS USED AT KING ABDULAZIZ MEDICAL CITY, JEDDAH, 2018

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Background Glucometers have become a fundamental tool in measuring and monitoring glucose level, both in healthcare institutions and home care. The accuracy of glucometers affects the quality of management of diabetic patients and is associated with the occurrence of over-treating or under-treating accidents due to inaccurate readings. This study assessed the accuracy of five commercially available glucometers by reference to laboratory venous plasma glucose (PG) measurement.

Methods A cross-sectional study was conducted among patients with diabetes attending King Abdulaziz Medical City laboratory. All participants underwent venipuncture regarding laboratory PG, simultaneously with capillary blood sampling, on which capillary glucose (CG) was measured using the glucometers AccuCheck®, OneTouch®, Freestyle Optium Neo®, Contour Next®, and Contour Next One® in random order. All glucometers were adequately calibrated and verified according to American Diabetes Association guidelines before use. Bias was calculated for each glucometer as the difference between CG and PG (Δ CG-PG). One-sample t-test was used to analyze mean Δ CG-PG by reference to zero for each of the glucometers. Bland-Altman analysis was undertaken by plotting Δ CG-PG against PG. Proportional bias was investigated by analyzing the relationship between Δ CG-PG and PG using linear regression.

Results A total of 203 patients were included, with mean PG 155.22 (SD 64.88) mg/dL. The coefficient of variation of the meters ranged from 37.79% to 41.80%. Mean CGs ranged from 153.01 (SD 57.82) to 163.00 (SD 64.52) depending on the glucometer. Three meters showed negative bias. Mean difference was 2.20 for AccuCheck, -2.26 for One Touch, 0.90 for Freestyle, -2.08 for Contour Next, and -7.78 for Contour Next One. Bias percentage ranged from -5.01 to 1.42. Bland-Altman plots showed proportional bias (an increase in the magnitude of the error as the test result increases). Proportional bias was supported by the significant linear regression analysis for all glucometers.

Conclusion Of all glucometers, Freestyle Optium Neo showed the minimal mean bias, while Contour Next One showed the highest proportional bias. However, all of the glucometers were within 5% difference. High blood glucose readings above 200 mg/dL should be confirmed by venous measurement.

9 BACTERIAL CONTAMINATION AND STETHOSCOPE DISINFECTION PRACTICES: A CROSS-SECTIONAL SURVEY AMONG RESIDENTS AT KING ABDULAZIZ MEDICAL CITY, WESTERN REGION OF SAUDI ARABIA, 2018

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Background Although knowledge of healthcare providers regarding stethoscope care is reasonable, their practices regarding stethoscope disinfection after use have been consistently reported to be quite poor, with the results of several hospital-

based local and international studies showing a high prevalence of stethoscope contamination. The objective of this study was to assess prevalence of bacterial colonization of stethoscope diaphragms and to explore knowledge, awareness, and practices of residents in different departments.

Methods A cross-sectional study was carried out among residents at King Abdulaziz Medical City, the National Guard Hospital, Jeddah, Saudi Arabia, throughout the period 1 April to 31 May 2018. Residents of specialties with expected low stethoscope use were excluded. A 17-item valid self-administered study questionnaire was developed and used for data collection. It included personal characteristics, assessment of residents' knowledge regarding stethoscope contamination, practice of stethoscope disinfection, and residents' awareness regarding stethoscope cleaning and disinfection. The stethoscopes used by participants at the time of completing the questionnaire and their diaphragms were sampled for culture and sensitivity. When three or more colony-forming units were found on a plate, the organism was regarded as a bacterial contaminant. The isolated bacteria were assessed by colony characteristics, morphology, and Gram reaction and biochemical tests.

Results The study included 170 resident physicians. Their age ranged from 24 to 34 years with a mean of 27.1 (SD 1.7) years. 54.1% were female. The average number of hours of patient contact per 24 hours was 7.0 (SD 2.4) hours. Prevalence of bacterial colonization was 63.5% (108 of 170) whereas that of bacterial contamination was 50.6% (86 of 170). Organisms were present in nine specimens (5.3%). The most common isolated organism was *Bacillus* sp (three [33.3%] of nine). The highest rate of bacterial contamination was reported among emergency medicine residents (81.8%), whereas the lowest rate was observed among internal medicine residents (32.1%, $p=0.001$). More experienced residents were more likely to have bacterial contamination, because the mean experience of residents who showed bacterial contamination was significantly higher than others (2.72 ± 1.67 versus 2.27 ± 1.22 , $p=0.048$). Longer time since last cleaning of the stethoscope was significantly associated with bacterial contamination ($p=0.020$).

Conclusion Bacterial contamination of the stethoscope is a common problem among resident physicians, affecting almost half of them, particularly those working in the emergency department and those who had not cleaned their stethoscope for a long time. Therefore, continuing training and education to encourage resident physicians to continuously clean their stethoscope could reduce stethoscope contamination and prevent hospital-acquired infections.

10 COMPARING ANTIFUNGAL PROPHYLAXIS EFFICACY BETWEEN FLUCONAZOLE AND AMPHOTERICIN B LIPID COMPLEX IN ADULT PATIENTS WITH ACUTE LYMPHOCYTIC LEUKEMIA (ALL) RECEIVING HYPER-CVAD-BASED CHEMOTHERAPY

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Background Fungal infection is common in acute lymphocytic leukemia (ALL), which can lead to significant mortality and morbidity. Our aim is to compare the efficacy of antifungal

prophylaxis using fluconazole 400 mg once daily versus amphotericin B lipid complex 2.5 mg/kg three times per week in adult patients with ALL during the neutropenic nadir who received hyper-CVAD as part of their chemotherapy regimen.

Methods This was a retrospective, cohort chart review study conducted in eligible patients with ALL who received a hyper-CVAD-based chemotherapy regimen between 1 January 2007 and 31 December 2016 at KAMC, Jeddah. We included patients with ALL aged older than 14 years who completed at least one course of hyper-CVAD and received antifungal prophylaxis. We excluded patients who received the BFM regimen. Data were collected using a hospital information system. The primary endpoint was the incidence of fungal infection, which was assessed using microbiology data and imaging studies for radiological evidence of fungal infections. The secondary endpoints were to assess QTc prolongation in Philadelphia-positive ALL that is associated with fluconazole use in combination with tyrosine kinase inhibitor, and lastly the cost impact based on the type of antifungal prophylaxis used.

Results A total of 105 cycles of hyper-CVAD were reviewed. In 70 cycles, fluconazole was used as antifungal prophylaxis ($n=70$) and in 35 cycles amphotericin B lipid complex was used ($n=35$) as antifungal prophylaxis. Microbiologically documented fungal infection was found in two of 70 cycles in the fluconazole group and radiologically documented fungal infection was found in one patient in the fluconazole group. QTc prolongation was observed in 12 cycles. In nine of 12 cycles, events of QTc prolongation were observed during the study, fluconazole was used as antifungal prophylaxis, and patients were on tyrosine kinase inhibitor. In three of 12 cycles, events of QTc prolongation were observed during the study, amphotericin B lipid complex was used as antifungal prophylaxis, and patients were on tyrosine kinase inhibitor.

Conclusion Fluconazole is considered as standard antifungal prophylaxis in patients with ALL with acceptable safety profiles. Fluconazole had comparable efficacy to amphotericin lipid complex. Fluconazole may cause QTc prolongation when used in combination with tyrosine kinase inhibitors and patients need to be monitored more closely when this combination is used in those with Philadelphia-positive ALL.

11 CONSISTENCY OF CT-KUB RADIATION DOSE AND EXPOSURE PARAMETERS IN KING ABDUL-AZIZ MEDICAL CITY IN JEDDAH: QUALITY ASSESSMENT

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Background Computed tomography (CT) is a type of medical imaging that uses x-rays to generate cross-sectional images of the body. Although CT improved the limitations in conventional radiography, the effective dose for CT procedures is higher than the dose of a conventional radiographic examination of the same part. For instance, the radiation dose for kidney, ureter, and bladder (KUB) in conventional radiography is 0.7 mSv, whereas in the CT scan it is 10 mSv. Therefore, patient radiation safety in compliance with American College of Radiology (ACR) standards has to be maintained. In this study, we aimed to evaluate the patient radiation dose delivered in unenhanced CT-KUB examinations using two CT

machines at King Abdulaziz Medical City in Jeddah (KAMC-JD).

Methods This was a retrospective, cross-sectional study of all patients who had unenhanced CT-KUB examinations in KAMC-JD between 1 January and 30 June 2018. Patient characteristics and radiation parameters were obtained from the hospital information system and pictures archiving and communication system, respectively, and compared with the ACR standards.

Results A total of 264 patients were included in the study: 199 (75.5%) examinations were performed with machine 1 and 65 (24.6%) were performed with machine 2. Mean age was 48.1 ± 16.3 years and 66.7% of patients were male. Mean body-mass index (BMI) was 29.59 ± 6.45 kg/m². The mean volume CT dose index (CTDIvol), dose-length product (DLP), time(s), pitch, and effective dose were significantly different in the CT machines with p values between 0.004 and <0.001 . No significant differences were found in kVp, slice number, slice thickness, length of cover, and effective dose with use of different types of CT. Both CT machines were within the ACR standard range of 10mSv. There was a positive strong correlation between BMI (29.6 kg/m²) and the effective dose ($p<0.001$).

Conclusion The radiation doses delivered by the two CT scanners in KAMC-JD are compliant with ACR standards. Periodic assessment is recommended every 2 years.

12 OUTPATIENT FOLLOW-UP IS ASSOCIATED WITH REDUCED EMERGENCY DEPARTMENT VISITS IN PATIENTS WITH SICKLE CELL DISEASE: A RETROSPECTIVE COHORT STUDY FROM RIYADH, SAUDI ARABIA

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Background Pain is the main source of distress in patients with sickle cell disease (SCD). Unmanageable pain, often termed 'crises', may prompt unexpected visits to the emergency department (ED) or other acute healthcare facilities. One study from the Eastern Province in Saudi Arabia reported that 64% of patients with SCD present to the ED more than three times over a 6-month period. Outpatient follow-up may have a role in preventing ED visits, but this has not been fully explored in Saudi Arabia. This study aimed to assess the relation between outpatient follow-up and future ED visits due to painful crises in patients with SCD.

Methods This retrospective, observational study utilized data from the electronic medical record system at King Abdulaziz Medical City, National Guard Health Affairs in Riyadh. The study included adult patients with SCD who presented at least once to the ED due to a painful crisis between January 2016 and December 2017. The time between ED visits due to painful crises was set as the outcome variable. Cox regression analysis with random effects model (frailty model) was used to determine the effect of outpatient follow-up at 15 days, 30 days, and 90 days on the time to next ED visit. Baseline characteristics and previous history of sickle cell complication were included in the model as confounders.

Results Eighty patients with SCD presented a total of 463 times to the ED due to painful crises. 54% of these visits