PIII9: NOISE EXPOSURE IN A UNIVERSITY OPERATING THEATRE DURING THE COURSE OF PEDIATRIC SURGICAL PROCEDURES

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Background Our objectives were to measure noise level in our university operating rooms and to identify different phases during the course of surgical procedures in which noise level exceeding 40 decibels (National Recommendation)

Materials and methods A prospective randomized single blinded study was conducted for a period of 5 months starting from January 2016. A sonometer was placed randomly in the different operating theatres. Recording started from the patient's entry to the operating theatre and ended upon his/her exit. We divided the surgical course in three different periods: P1 (from the entry of the patient until the start of surgical procedure); P2 (from the surgical incision to the end of the procedure); P3 (from the completion of closure till the exit from the OR). Strict inclusion criteria (general pediatric surgery case, elective surgery, during normal working hours, operations performed by board certified surgeons) and exclusion criteria (non-general pediatric surgery cases, emergency case, after hours, resident performing the procedure as first surgeon) were applied. We used the equivalent continuous noise level (Leq level) which is the metric of choice for the assessment of noise dose or sound exposure in the workplace

Results The sonometer was present in a total of 64 operations. It was recording in 26 operations. The surgical procedures were: 54% open surgery, 34% laparoscopic surgery and 12% were endoscopic procedures. The total recorded time was 2419 minutes, around 40.4 hours. The average P1 time was 25', P2 65' and P3 7'. T test was performed and found the average to be significantly P value < 0.0001 from the 40 dBA recommended limit. LEQ noise level was 56.48 dBA during P1, 53.14 dBA during P2 and 55.50 dBA during P3. We registered 813 incidents or sudden noise peaks > 70 dBA during P1, 912 incidents during P2 and 293 incidents during P3. Most often the incidents were due to conversations within the staff at the level > 75 dBA. Only 1.5% incidents were more than 80 dBA. More rarely we registered sounds of bells from cellular phones sometimes more than 90 dBA. The surgical team involved did use one of or a combination of electrical machines such as: monopolar diathermy, bipolar diathermy or suction. A multivariable linear regression of average noise levels with the different instruments did not show any significant relationship.

Conclusions It is as if there is a first period with excited staff before the beginning of surgery. Then, a second period follows, where the staff is quieter due to required concentration: it looks like the major period of the surgical procedure. The third period, at the end of the surgical act, appeared like a moment of relaxation with a noisy ambiance. By this point of view, as we didn't find any relation between the use of electrical machines during surgeries and increase noise incidences. Noisy distractions are considered one of the main causes of perioperative incidences which appear to be related to the staff seriousnes

Key words noise, operating room, incidences