

Nemocnice Jihlava dbá na prevenci, vyhledávání a kontrolu infekcí vzniklých v souvislosti s poskytováním zdravotní péče. Nedílnou součástí prováděných aktivit epidemiologických sester a členů Týmu pro kontrolu a prevenci HAI tvoří i audity operačních sálů.

Druhy prováděných auditů:

- komplexní audit oddělení včetně sterilizace, dodržování hygienicko-epidemiologického režimu na pracovišti, křížení čistých a nečistých cest, kvalita prováděného úklidu při běžném provozu,
- STOPAŘ – monitoring pacienta v průběhu celé hospitalizace se zaměřením na operační výkon (předoperační, perioperační a pooperační péče),
- mimořádná šetření dle epidemiologické situace.

Při auditech je využívána metoda přímého pozorování, kontrola dokumentace a pohovor s personálem a pacienty. K ověření sdělených informací se provádí otisky rukou personálu, značky pro kontrolu úklidu a omezení i stěry z prostředí.

Checklisty jsou konstruovány s důrazem na:

- zajištění základních hygienických požadavků pro provoz operačních sálů,
- zajištění standardních opatření k eliminaci rizika přenosu infekčních agens při poskytování zdravotní péče,
- compliance personálu.

Audity monitorují dodržování pravidel pro vstup na operační sál – hygiena rukou, používání OOPP, asepsy při výkonu, dezinfekce, sterilita, předoperační příprava pacienta k výkonu včetně ATB profylaxe (timing, velikost a počet dávek), manipulace s biologickým materiálem a eliminace rizik u infekčního pacienta.

Výstupy z auditů jsou projednávány s vedením oddělení k zajištění nápravy identifikovaných neshod pro následné zlepšení kvality poskytované zdravotní péče.

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### **Variation of hygienic behavior during the day: Are there peak-times for hand hygiene during the everyday work of healthcare professionals? Změny v hygienickém chování během dne: Má hygiena rukou svou špičku v každodenním pracovním dni zdravotníka?**

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Background: Transparency in the treatment of patients is a key factor to quality driven medicine. The hand hygiene monitoring solution HygNova ADVANCE® uses IoT (Internet of Things)-sensor technique and machine learning to detect hygienic vulnerabilities for medical institutions. HygNova solutions visualize hygiene through gapless monitoring of hand disinfections and fill informational blind spots with reliable data to avoid hospital infections and to improve healthcare. HygNova ADVANCE® works without wearable devices and avoids user bias and observer bias in hygiene monitoring. Goal: IoT-sensors are used in various fields, especially in the automatization of producing industries, but are also upcoming in health monitoring solutions. Modern sensor technique in hygiene monitoring becomes more and more important due to rising antimicrobial resistance

and increasing numbers of hospital-acquired infections. The goal of the study was to identify the pattern of the usage of hand disinfection dispensers during the day without the influence of known biases.

Methods: 32 patients' beds and the associated dispensers in the room were equipped with the HygNova ADVANCE® hand hygiene monitoring solution for the duration of 12 weeks. Due to lack of WiFi, data was sent via Bluetooth to implemented local data hosts. Data aggregation, evaluation and visualization was done in the HygNova backend using established data routines. Measurements were done in an orthopedic ward. Staff and patients were informed that a study took place. GDPR conformity was guaranteed. Agreement of work council for the study was available.

Results: Equipped dispensers showed a typical pattern of usage. The daily hours (x-axis) were correlated with the number of usage of dispensers in total (y-axis). During the medical visit between 6 a.m. and 8 a.m., most disinfections took place while disinfections decreased significantly during night time. Other activities that require contact with patients (i.e. the oral application of drugs or the usage of intravenous infusions) increased hand disinfections rates, respectively. The tasks were scheduled between 10 a.m. and 2 p.m.

Conclusions: Hand disinfections correlate with the daily routine of healthcare professionals, showing highest disinfection rates during the medical visit and other activities that include contacts with patients. Data shows that healthcare professionals also perform hand disinfections during night time, even when no control is in place, but do so on a lower scale. Staff might be biased by HygNova ADVANCE® and the Hawthorne effect resulting in higher hand disinfection rate. Further studies of the HygNova ADVANCE® solution are needed to show the specific effect on hand disinfection rate and to gather more information about qualitative parameters of hand disinfection.

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### **The role of ultra clean air to prevent Surgical Site Infections (SSI)**

#### **Úloha ultra čistého vzduchu v prevenci infekcí operačních rán**

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Background: Bacteria-free air in the operating room (OR) is very important in preventing deep wound infections in all types of surgery, although orthopedics have extraordinary requirements. Ventilation systems are usually based on OR having at least 16 air exchanges/hour to dilute the air and reducing the amount of bacteria-bearing particles that the staff generates 10,000/person and minute and 10% of these are bacterial-bearing and leak out through clothing. However, it has been found in several scientific studies that it is extremely difficult to guarantee the sterile instruments and wound the area from being contaminated via the air when lamps and other