# OSAP 2010 ANNUAL SYMPOSIUM ABSTRACTS

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# Antibiotic-Resistant *Staphylococcus aureus* in Cellular Phones used Chairside

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**Background:** Introduction and use of diverse non-sterilizable personal communication devices may pose a new challenge for infection control in health care facilities worldwide. Physicians, surgeons and dentists are increasingly using their mobile phones in clinical settings, even during patient care.

**Objectives:** To assess *Staphylococcus aureus* contamination of cell phones used chairside in dental clinics.

**Methods:** This study was approved by the Ethics Committee at the National University of Mexico School of Dentistry (UNAM). During an unannounced visit to our teaching clinics at UNAM, bacteriological swabs were obtained from 29 cell phones spotted in use chairside. After 24 hr aerobic growth at 37ºC, mannitol fermenting isolates were further characterized with catalase and coagulase tests, Gram stain, antibiotic susceptibility tests, MIC determination, and PCR amplification to search for the *mecA* genes.

**Results:** Of 29 cell phones in use by students chairside, 8 (28%) were contaminated with antibiotic-resistant *Staphylococcus aureus*. Seven of these *S. aureus* isolates were resistant to two or more antibiotics but none was methicillin resistant or *mecA* gene positive.

**Conclusions:** Cell phones used chairside are a potential source of contamination with antibiotic resistant *S. aureus.* It is necessary to identify the new challenges posed by the growing use of personal devices during patient care. These devices pose challenges to infection prevention and control. Site specific policies and practices should address the infection control management of these devices and enhance compliance with recommended procedures for infection prevention and control in dental settings.

# Methicillin-resistant *Staphylococcus aureus* (MRSA) among Dental Patients in Mexico City

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**Background:** The emergence and dissemination of antibiotic-resistant bacteria is a growing public health concern. Antibiotic misuse and abuse leads to the emergence of antibiotic-resistant bacteria. In Mexico, antibiotics are easily available over the counter without a prescription and auto medication with incomplete dosages is commonplace. Methicillin-resistant *Staphylococcus aureus* (MRSA) is a challenge for patient safety and an occupational hazard for health care providers worldwide. Patients with MRSA in their respiratory tract disseminate MRSA through the air. It is possible that is the patient carriers MRSA, spray and splashes generated in dental settings may increase opportunities for transmission. However, no national population estimates of MRSA colonization are available in Mexico.

**Objectives:** To explore the possible presence of MRSA carriers among patients receiving care in our teaching clinics in Mexico City

**Methods:** This study was approved by the Ethics Committee at the National University of Mexico School of Dentistry (UNAM). Paired nasal and throat swabs were obtained from 50 patients at UNAM. After 24 h aerobic growth on mannitol salt agar at 37ºC, mannitol fermenting isolates were further characterized with catalase and coagulase tests, Gram stain, antibiotic susceptibility tests, MIC determination, and PCR amplification of the *mecA* gene.

**Results:** Six (12%) of 50 dental patients were identified as MRSA carriers, four yielded positive throat swabs and two were nasal carriers. No throat and nasal pair resulted positive in both samples.

**Conclusions:** The presence of MRSA carriers in this small convenience sample indicates the need to determine the prevalence of MRSA among our dental patient populations. These results also indicate the need to adhere to recommended procedures for infection prevention and control in dental settings.

# Iodometric Analysis of Commercial Solutions of NAClO for Endodontic Use

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**Objective:** Based on iodometric titration, determine sodium hypochlorite concentrations found in brand name solutions used in root canal irrigation in Mexican dental practice.

**Method:** Sodium hypochlorite solution samples were obtained in Mexico City using local brands (Clorox concentrado, Cloralex, Viarzoni-T, Great Value, Los Patitos). Clorox Regular Bleach, purchased in the US, was also sampled. Ten samples were obtained from two different lots of each brand name solution, and titrated 15 times, a total of 150 titrations were obtained per brand. Iodometric titration was used to determine hypochlorite concentration in brand name solutions used for endodontic irrigation. Based on the ideal concentration values of 5.25 and 2.5% (w/v), averages of brand name solutions were compared.

**Results:** Average hypochlorite concentrations found in Clorox Regular Bleach (mean=6.34, CI-95%=6.32-6.36), Clorox concentrado (mean=5.43, CI-5%=5.42-5.45), Cloralex (mean=5.40, CI-95%=5.38-5.41), Great Value (mean=6.21, CI-95%=6.19-6.23) and Los Patitos (mean=5.82, CI-95%=5.80-5.83) exceeds the 5.25% ideal. Hypochlorite concentration in Viarzoni-T (mean=2.86, CI-95%=2.85-2.87) is between 2.5% and 5.25%. Thus, there is a statistically significant difference ($p \leq 0.001$) between the brand name solutions and the ideal concentration percentages found in current research.

**Conclusion:** Hypochlorite concentration in brand name solutions exceeds the 5.25% ideal. Tissue damage can result from inadequate use of these solutions in irrigation procedures and other maneuvers where complete isolation is not in place.

# Occupational Exposures to Biological Material in Dental Workers and Students

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**Objective:** Descriptive epidemiological study of occupational accidents involving biological material exposure to dentists, dental assistants, and dentistry students to provide accident prevention in dental practice.

**Methods:** Source information was obtained from patient charts and accident notification forms (from 2000 to 2004). All cases were described according to accident: victims' personal, professional details, location of the accident, device causing the injury, organic material exposed to, circumstances of the accident, and index of accident incidence. Procedures taken before and after any accident are described, as are the resulting serological proceeding. The EPIINFO program was used as database.

**Results**179 accidents were identified, involving 174 professionals. The majority of cases, 49, occurred in 2000. Women and young people were more often affected, being mainly those among dentistry students. The predominant circumstance for accidents registered was during dentistry procedures involving percutaneous exposure with needles contaminated by blood. Other devices involved in accidents were probes, burs, curettes and files. The majority of accident victims were wearing gloves and masks when the accident occurred and were hepatitis B vaccinated. The Anti-HB S reaction test was rarely done. In most cases sources were known, and from these only 39.2% had serological exam results registered for HIV, 10.7% for HBV and 2.1% for HCV. 84.5% of the professionals involved in accidents did not follow all the post-exposure procedures. Antiretroviral medication was administered in 85.5% of cases, and 3.9% received gamaglobulin medication for hepatitis B; 19% were hepatitis B vaccinated. Seroconvertions were not registered in any of the cases (HIV, HBV and HCV). The index of accident incidences registered, for dentistry students only, reached 36.3/1000 per year.

**Conclusion**: Continuing education for dentistry professionals regarding occupational accident risks should help minimize these accidents. The development of programs that provide distinct aspects of accident prevention in dentistry are also suggested.