Journal Homepage: -www.journalijar.com

INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI:10.21474/IJAR01/16106
DOI URL: http://dx.doi.org/10.21474/IJAR01/16106

RESEARCH ARTICLE

INFECTION CONTROL PROTOCOLS IN SPECIALIST DENTAL CENTRE AT SAUDI ARABIA. A NEWAPPRESIAL

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Manuscript Info

Manuscript History
Received: 30 November 2022
Final Accepted: 31 December 2022
Published: January 2023

Key words:-
Patient Safety, Meta-Analysis, Infection Prevention and Control, Hygiene, Standard Precautions, Occupational exposure

Abstract

Context Although the principles of infection prevention and control remain unchanged, new technologies, materials, equipment and updated data require continuous evaluation of current infection control practices and continuous education for the oral health team.

Scope This policy statement provides the basic principles of infection prevention and control. More detailed information can be found in the references and in relevant legislation.

Definitions Infection prevention and control (IPC): scientific approach and practical solution designed to prevent harm caused by infection to patients and health workers.

Standard precautions: Guidelines for the prevention of transmittabled is eases including nosocomial infection. Standard precautions combine universal precautions and body-substance precautions for all patients regardless of diagnosis or possible infectious status.

Principles It is the responsibility of dentists to establish a protocol that prevents or limits the spread of infection in dental practice for their patients, their staff and them-selves. This can be accomplished by following the recommended infection control work practice procedures.

Policy FDI supports the following statements:

Recommendations, guidelines and regulations should be developed in consultation with the dental profession.

- Recommendations, guidelines and laws affecting standard precautions required of dental practices must beevidence-based or based on international best practices and receive adequate financial compensation for the additional costs that are incurred.
- Local/regional dental associations should educate the public on the importance of proper infection controlin the dental office, the effectiveness of such recommended procedures and consequently the absence of a significant risk of contracting transmittable diseases through the provision of dental care.
- Dental educators must in corporate current infection prevention and control recommendations in health care settings into the curriculum and during clinical activities. This should include a blame-free critical incident reporting and learning system.

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Introduction:-

Transmission of infectious agents among patients and dental health care personnel (DHCP) in dental settings is rarified. However, from 2003 to 2015, transmissions in dental settings, including patient-to-patient transmissions, have been credentialed.

In most cases, investigators failed to link a specific lapse of infection prevention and control with a particular transmission. However, reported break downs in basic infection prevention procedures included unsafe injection practices, failure to heat sterilize dental handpieces between patients, and failure to monitor (e.g.,conduct spore testing) autoclaves. These reports highlight the need for comprehensive training to improve understanding of underlying principles, recommended practices, their implementation, and the conditions that have to be met for disease transmission.

The information presented here is based primarily upon the recommendations from the 2003 guideline and represents infection prevention expectations for safe care in dental settings. It is intended for use by anyone needing information about basic infection prevention measures in dental health care settings, but is not areplacement for the more extensive guidelines. Readers are urged to consult the full guidelines for additional background, rationale, and scientific evidence behind each recommendation.

Additional topics and information relevant to dental infection prevention and control published by CDC since 2003 in this document can be found in Appendix B including Infection prevention program administrative measures. Infection prevention education and training.

Respiratory hygiene and cough etiquette. Updated safe injection practices. Administrative measures for instrument processing.

For the purposes of this document, DHCP refers to all paid and unpaid personnel in the dental health care setting who might be occupationally exposed to infectious materials, including body substances and contaminated supplies, equipment, environmental surfaces, water, or air.This includes
Dentists.
Dental hygienists.Dental assistants.
Dental laboratory technicians (in-office and commercial).Students and trainees.
Contractual personnel.

Other persons not directly involved in patient care but potentially exposed to infectious agents (e.g. administrative, clerical, house-keeping, maintenance, or volunteer personnel).

Objectives:-

By high lighting existing CDC recommendations, this summary guide
Provides basic infection prevention principles and recommendations for dental health care settings.

Re-affirms Standard Precautions as the foundation for preventing transmission of infectious agents during patient care in all dental health care settings.

Provides links to full guidelines and source documents that readers can reference for more detailed background and recommendations.

Administrative measures

Infection prevention must be made a priority in any dental health care setting. At least one individual with training in infection prevention—the infection prevention coordinator—should be responsible for developing written infection prevention policies and procedures based on evidence-based guidelines, regulations, or standards. Policies and procedures should be tailored to the dental setting on a regular basis (e.g., annually) or according to state or federal requirements. Development should take in to consideration the types of services provided by DHCP and the patient population served, extending beyond the Occupational Safety and Health Administration (OSHA) blood borne pathogenst and ard to address patient safety. The infection prevention coordinator should ensure that equipment and supplies (e.g. hand hygiene products, safer devices to reduce percutaneous injuries, and personal protective equipment) are available and should maintain communication with all staff members to address specific issues or

concerns related to infection prevention. In addition, all dental settings should have policies and protocols for early detection and management of potentially infectious personsat initial points of patient encounter.

Infection prevention education and training

On going education and training of DHCP are critical for ensuring that infection prevention policies and procedures are understood and followed. Education on the basic principles and practices for preventing the spread of infections should be provided to all DHCP. Training should include both DHCP safety (e.g. OSHA blood borne pathogens training) and patient safety (e.g. emphasizing job- or task-specific needs). Education and training should be provided during orientation to the setting, when new tasks or procedures are introduced and at a minimum, annually. Training records should be maintained according to state and federal requirements.

Dental health care personnel safety

Infection prevention programs should also address occupational health needs, including vaccination of DHCP, management of exposures or infections in personnel requiring post-exposure prophylaxis or work restrictions, and compliance with OSHA blood borne pathogens standard. Referral arrangements for medical services can be made with qualified health care professionals in an occupational health program of a hospital, with educational institutions, or with health care facilities that offer personnel health services.

Program evaluation

A successful infection prevention program depends on developing standard operating procedures.
Evaluating practices and providing feedback to DHCP. Routinely documenting adverse outcomes.
Monitoring health care associated infections in patients.

Strategies and tools to evaluate the infection prevention program can include periodic observational assessments, checklists to document procedures, and routine review of occupational exposures to blood-borne pathogens. The Infection Prevention Checklist for Dental Settings found in Appendix A is one tool DHCPcan use to evaluate their infection prevention program. Evaluation offers an opportunity to improve the effectiveness of both the infection-prevention program and dental practice protocols. If deficiencies or problems in the implementation of infection prevention procedures are identified — further evaluation and feedback, corrective action, and training (if applicable) is needed to eliminate the problems.

Standard precautions

Standard Precautions are the minimum infection prevention practices that apply to all patient care, regardless of suspected or confirmed infection status of the patient, in any setting where health care is delivered. These practices are designed to both protect DHCP and prevent DHCP from spreading infections among patients. Standard Precautions include—Hand hygiene.

Use of personal protective equipment (e.g., gloves, masks, eye wear). Respiratory hygiene/ cough etiquette.
Sharps safety (engineering and work practice controls). Safe injection practices.
Sterile instruments and devices.
Clean and disinfected environmental surfaces.

Each element of Standard Precautions is described in the following sections. Education and training are critical elements of Standard Precautions, because they help DHCP make appropriate decisions and comply with recommended practices.When Standard Precautions alone can not prevent transmission, they are supplemented with Transmission-Based Precautions. This second tier of infection prevention is used when patients have diseases that can spread through contact, droplet or air borne routes (e.g.skin contact, sneezing, coughing) and are always used in addition to Standard Precautions. Dental settings are not typically designed to carry out all of the Transmission-Based Precautions (e.g, Airborne Precautions for patients with suspected tuberculosis, measles, or chickenpox) that are recommended for hospital and other ambulatory care settings. Patients, however, do not usually seek routine dental out patient care when acutely ill with diseases requiring Transmission-Based Precautions. None the less, DHCP should develop and carry out systems for early detection and management of potentially infectious patients at initial points of entry to the dental setting. To the extent possible, this includes rescheduling non-urgent dental care until the patient is no longer infectious or referral to a dental setting with appropriate infection prevention precautions when urgent dental treatment is needed.

Hand-hygiene

Hand hygiene is the most important measure to prevent the spread of infections among patients and DHCP. Education and training programs should thoroughly address indications and techniques for hand hygiene practices before

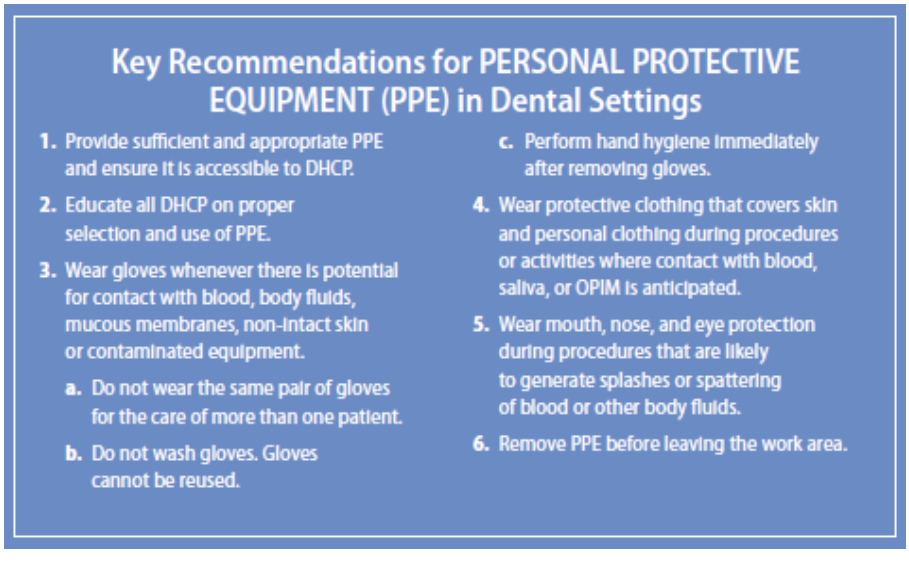
performing routine and oral surgical procedures. For routine dental examinations and non surgical procedures, use water and plain soap (hand washing) or antimicrobial soap (hand antisepsis) specific for health care settings or use an alcohol-based hand rub. Although alcohol-based hand rubs are effective for hand hygiene in health care settings, soap and water should be used when hands are visibly soiled (e.g., dirt, blood, body fluids). For surgical procedures, perform a surgical hand scrub before putting on sterile surgeon's gloves. For all types of hand hygiene products, follow the product manufacturer's label for instructions.

Personal protective equipment

Personal protective equipment (PPE) refers to wearable equipment that is designed to protect DHCP from exposure to or contact with infectious agents. PPE that is appropriate for various types of patient interactions and effectively covers personal clothing and skin likely to be soiled with blood, saliva, or other potentially infectious materials (OPIM) should be available. These include gloves, face masks, protective eye wear, face shields, and protective clothing (e.g., reusable or disposable gown, jacket, laboratory coat). Examples of appropriate use of PPE for adherence to Standard Precautions include -Use of gloves in situations involving possible contact with blood or body fluids, mucous membranes, non-intact skin (e.g., exposed skin that is chapped, abraded, or with dermatitis) or OPIM. Use of protective clothing to protect skin and clothing during procedures or activities where contact with blood or body fluids is anticipated. Use of mouth, nose, and eye protection during procedures that are likely togenerate splashes or sprays of blood or other body fluids. DHCP should be trained to select and put on appropriate PPE and remove PPE so that the chance for skin or clothing contamination is reduced. Hand hygiene is always the final step after removing and disposing of PPE.Training should also stress preventing further spread of contamination while wearing PPE by:

Keeping hands away from face. Limiting surfaces touched.

Removing PPE when leaving work areas. Performing hand hygiene.



Respiratory hygiene/Cough etiquette

Respiratory hygiene/cough etiquette infection prevention measuresare designed to limit the transmission of respiratory pathogens spread by droplet or airborne routes. The strategies target primarily patients and individuals accompanying patients to the dental setting who might have undiagnosed transmissible respiratory infections, but also apply to anyone (including DHCP) with signs of illness including cough, congestion, runny nose, or increased production of respiratory secretions. DHCP should be educated on preventing the spread of respiratory pathogens when in contact with symptomatic persons.

Methodology:-

Protocol, eligibility criteria, information sources and search

This review was performed according to a prior designed protocol and recommended for systematic reviews and meta-analysis. We developed a search strategy, and a systematic literature search was performed in the following data bases: Ovid MEDLINE (In-Process and Other Non-Indexed Citations, Ovid MEDLINE, Daily, Ovid MEDLINE and Ovid OLD MEDLINE, Embase Classic + EMBASE (Ovid), The Web of Science (Thomson Reuters), The Cochrane

Library (Wiley) and CINAHL Plus (EBSCOhost). The full search was performed in November 2015 and repeated in December 2016. The online supplementary material shows the complete search string as it was performed in MEDLINE. The controlled vocabulary of Medical Subject Headings (MeSH) from MEDLINE and the Emtree the saurus from Embase, including sub-headings, were used when applicable. In addition, the search fields, title, abstract and keywords, were searched when applicable. In The Web of Science, the search fields, title and topic were used. All references were exported to End note (X7.4, Thompson Reuters), where duplicates were removed. There were no restrictions regarding languages or publication year for the searches. Reference-lists of relevant articles and reviews were hand searched for additional reports. Meta-analysis of observational studies in epidemiology (MOOSE) guidelines were followed.

Study selection, data collection and data items

We aimed to compare the incidence of PTB among the pregnant women population with dental caries with those who do not have dental caries. The primary outcome was the occurrence of PTB, defined as birth DMFTand DMFS indices are numerical expressions of the caries prevalence of an individual or groups and are widely used in epidemiological surveys of oral health. DMFT/DMFS is calculated by adding up permanent teeth that are caries affected where in D is for decay, M is missing due to caries and F is filled teeth (T) or surfaces (S). If one tooth has filling as well as a caries lesion, then it is counted as D for the DMFT index, where as the filling caries surface is counted as D but if there is F on one and D in other surface, then they are counted differently for the DMFS index. The anterior teeth up to canine have four and premolars and molars teeth have five surfaces, respectively, in the DMFS index. D+M+F=caries prevalence of an individual [maximum of 28 for DMFT and 128 for DMFS, if 28 permanent teeth are included (excluding 4 wisdom molar teeth)].Studies were assessed according to the following criteria: population, outcome, gestational age at birth and clinical characteristics ofthe caries during pregnancy. Observational cohort and case–control studies were included. Similarly, studies reporting the occurrence of PTB in women affected compared with those not affected by dental caries in pregnancies and the full-text articles were considered suitable for the inclusion in the present systematic review. Case reports, conference abstracts and case series with fewer than three cases were also excluded to avoid publication bias.

Statistical analysis

A first random-effect meta-analysis of binary outcomes was used to compute the summary OR (and relative 95% CI) of PTB among women with caries versus women without caries (controls).

Table 1 General characteristics of the included studies

Author	Year	Country	Period analysed (year)	Study design	Gestational age at dental examination	Number of subject (n)	Definition of PTB
Martinez-Martinez *et al*[35]	2016	Mexico	2013–2014	Retrospective	From the first trimester of pregnancy until 8 weeks postpartum	70	<37 weeks
Harjunmaa *et al*[24]	2015	Malawi	2011–2013	Prospective	Within 6 weeks after delivery	1024	<37 weeks
Acharya *et al*[23]	2013	India	2009	Retrospective	Within 1 day after delivery	316	<37 weeks
Vergnes *et al*[22]	2011	France	2003–2006	Retrospective	Within 2–4 days post partum	2201	<37 weeks
Ryalat *et al*[21]	2011	Jordan	2009	Prospective	Within 1 week post partum	200	<37 weeks
Durand *et al*[17]	2009	France	2005–2006	Prospective	Within 8 weeks after delivery	107	<37 weeks
Heimonen *et al*[20]	2008	Finland	2002–2004	Retrospective	Within 2 days post partum	328	<37 weeks
Mumghamba and Manji[19]	2007	Tanzania	NS	Retrospective	Within 40 days from delivery	373	<37 weeks
Meurman *et al*[18]	2006	Finland	1998–2000	Retrospective	From the first trimester of pregnancy	207	<37 weeks

General

Members of the oral health team are obliged to keep their knowledge and skills up to date with regard to the diagnosis and management of infectious diseases that may be transmitted in the clinical setting, adhere to standard precautions and where necessary transmission-based precautions as set forth by the relevant authorities and to take appropriate measures to protect their patients and themselves against infections.These measures include:

1. Adopting the principles of cleanliness and disinfection of all exposed surfaces in the work environment;

2. Following protocols accepted and /or recommended by relevant authorities for the de-contamination, disinfection, sterilization and reprocessing of reusable instruments and disposal of clinical waste;
3. Assuring that sterile instruments are protected from recontamination by using appropriate barrier packaging;
4. Using single-use instruments if sterilization is not possible;
5. Exercising special care with the use of sharps; removing them from the work are after use and disposing them in a clearly labelled puncture-resistant containe.
6. adopting disinfection principles for devices, prostheses, impressions, instruments and applicable items transported to and from the dental laboratory;
7. Handling biopsy specimens with care and placing the min leak-proof containers according to the recommended guidelines.

Health Professionals

FDI urges oral health professionals

1. to be physically protected (surgical masks, gloves, protective eye wear and outer wear) as appropriate for the care being provided;
2. to be appropriately vaccinated against infectious diseases according to current guidelines issued by the relevant authorities;
3. immediately to initiate appropriate post exposure prophylaxis for occupational exposure of blood borne pathogens, including HBV,HCV and HIV6;
4. To be personally aware of signs and symptoms which indicate the possibility of blood-borne and other infectious diseases and undergo the necessary diagnostic tests when infection is suspected. FDI opposes any legislation that makes universal screening of oral health professionals for blood-borne pathogens mandatory;
5. To comply with medical advice and relevant regulations regarding continuation of clinical practice if an infection is diagnosed. Patient FDI believes that all patients with communicable infections should disclose their status as part of their medical history. It is unethical for patients to be denied oral health care solely be cause of their blood borne disease status.
6. FDI urges all oral health professionals
7. To be alert for signs and symptoms of blood-borne and other infectious diseases in their patients;
8. To advise all patients with a relevant medical history or condition suggestive of infection to undergo appropriate evaluation and treatment in a supportive environment with full regard to privacy;
9. To have an appropriate protocol, in accordance with applicable relevant laws, for the confidential handling of information about patients;
10. To make patients aware of the privacy policy in all settings where dental care is delivered;
11. To share information pertaining to the patient's medical condition with other health workers as permitted by relevant regulations and with the patient's consent. This Policy Statement replaces those on 'Human Immuno deficiency Virus Infection and Other Blood Borne Infections (2000)', and 'Sterilization and Cross Infection Control in the Dental Practice' (2005).

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