Most dental care occurs in the controlled environment of a standard dental office. However, hurricanes and other disasters can wreak havoc and certainly present challenges for providing safe dental care. Humanitarian trips and alternative settings such as nursing homes and treating the homebound also present their unique characteristics that need to be considered beforehand.

**Water supply challenges**

Disasters take their personal toll and also impact businesses and healthcare facilities. The water supply can be a key issue and must be understood. When municipal water supplies become unsafe due to microbial contamination, disruption of water treatment processes, absence of residual disinfection or any other reason, the focus tends to be on the safe use of the water in homes. It is equally important to implement specific precautions in the dental office.

If a dental office is under a boil water alert but otherwise functional, the dental practice should:

- Refrain from running municipally-supplied water through dental devices such as air/water syringes, highspeed handpieces, ultrasonic scalers, etc.
- Not use tap water to mix disinfectants used in the dental office.
- Not allow patients to rinse using water from the tap or water delivered via the public water system.
- Use bottled or distilled water or tap water that has been brought to a rolling boil for one minute and cooled to fill the reservoir bottle if independent water reservoirs are present on the dental unit.
- Purge the lines and disinfect prior to use if publicly-delivered water had previously been used in the dental unit.
- Refrain from performing procedures requiring the use of water-cooled devices or water delivery systems if water reservoirs are not present on the dental unit. It may be necessary to suspend the delivery of most dental care during the advisory.
- Not wash hands with tap water.
- Not rinse disinfected instruments with tap water.

Once the advisory is cancelled, several steps must be taken to ensure the safety of patients. Since lines connected to the public water supply at the time of the advisory are now contaminated, they must be cleared of the contaminated water. Flush all lines for at least one minute and possibly as long as five minutes, depending on the instructions from your local water utility.

Carefully consider all sources of water in the office and flush according to instruction:

- Highspeed handpiece lines.
- Air/water syringe lines.
- Drinking fountains.
- Sinks in treatment rooms, bathrooms, break rooms, laboratories, kitchens, eyewash stations, etc.
Safe Dentistry under Uncommon Conditions

Humanitarian Aid Missions

Delivering oral healthcare services to individuals who would not otherwise have access to care is a significant and fulfilling means for a dental professional to give something back to the world community. The American Dental Association lists over eighty secular, religious and nonprofit organizations that provide care to the underserved in their International Dental Volunteer Organizations: A Guide to Service and a Directory of Programs. Numerous other programs are operated independent of formal organizations or through dental schools. Safety for the dental team and patients presents unique challenges for these groups and individuals.

Resources that are taken for granted in the developed world such as electricity, clean water and sewage systems are often nonexistent in areas where these missions take place. This lack of resources requires a change in planning and preparing for infection control.

There are a number of ways to provide safe care under less than ideal circumstances.

The dental team must determine if the minimal standards of safety and infection control will be met. If they cannot be met, the mission should be abandoned or altered until such time as minimum standards are possible. Some examples of compromises that are acceptable are:

- If sterilization of instruments is not possible, refrain from the use of surgical instruments or take enough instruments for all procedures.
- For semicritical instruments, perform high-level disinfection using established guidelines for boiling or chemical reprocessing.
- If handwashing facilities are not available, use a packaged towelette to clean soiled hands and an alcohol based hand sanitizer for hand hygiene.
- If medical waste disposal facilities are unavailable, create a collection area and burn waste before leaving after the mission is completed.
- If contaminated sharps cannot be properly destroyed, encase the sharps in cement and bury in a designated area.


Alternative Care Settings

Individuals who reside in nursing homes or are not ambulatory and being cared for at home rely on the services of dental providers who are willing and equipped to bring healthcare to them. Dental healthcare may be provided by a dentist or by a hygienist licensed in alternative practice (RDHAP).

There are numerous barriers to providing care in alternative settings. Ensuring the safety of the patient, dental workers and other healthcare personnel involved in patient care is one aspect of this undertaking. In general, practitioners should:

- Use a clean and dirty tub system for delivering instruments safely to and from the area where they are stored and reprocessed.
- Maintain instruments in sterile pouches or wrapped cassettes until the time of use.
- Always travel with adequate and appropriate personal protective attire.
- Establish a plan for follow-up in the event of an accidental exposure to blood or body fluids.
- Consider alternative treatment options for sharps if containers are not available at the location (e.g., needle destruction devices, mail-in services, etc.).

Follow the same standard of care regardless of the setting in which care is delivered. If care cannot be delivered safely, alter the plan to ensure safety or delay treatment until the necessary precautions can be observed.
Compliance Corner

CDC

The Centers for Disease Control & Prevention advise the following while a boil-water advisory is in effect:

♦ Do not deliver water from the public water system to the patient through the dental operative unit, ultrasonic scaler, or other dental equipment that uses the public water system.
♦ Do not use water from the public water system for dental treatment, patient rinsing, or handwashing.
♦ For handwashing, use antimicrobial-containing products that do not require water for use (e.g., alcohol-based hand rubs). If hands are visibly contaminated, use bottled water, if available, and soap for handwashing or an antiseptic towelette.

The following apply when the boil water advisory is cancelled:

♦ Follow guidance given by the local water utility regarding adequate flushing of waterlines. If no guidance is provided, flush dental waterlines and faucets for 1-5 minutes before using for patient care.
♦ Disinfect dental waterlines as recommended by the dental unit manufacturer.

Centers for Disease Control and Prevention, “Guidelines for Infection Control in Dental Health-Care Settings - 2003”

California Dental Board

(example of regulations pertaining to alternative practice for dental hygienists)
(An RDHAP) may perform the duties established by Board regulation in the following settings:
(1) Residences of the homebound.
(2) Schools.
(3) Residential facilities and other institutions.
(4) Dental health professional shortage areas, as certified by the Office of Statewide Health Planning and Development …

Glossary

Alcohol hand sanitizer  An alcohol-based solution intended for decontamination of hands that are free of debris. Products vary in content, residual activity and additives

Ambulatory  A patient who is able to walk

Boil water advisory  A preventive measure issued to protect the health of the community from water-borne infectious agents. A Boil Water Advisory is issued only after careful consideration among representatives from public health, regulatory agencies and municipal departments

Medical waste  Waste generated during the delivery of health care. May consist of contaminated waste and/or regulated medical waste

Municipal water supply  Water delivered by a regulated municipality. The water must meet the requirements of the Safe Drinking Water Act. Water must be tested daily to meet US EPA standards and the municipality must make the results of those tests available to the public

RDHAP  Registered Dental Hygienist in Alternative Practice. An extension of an RDH license allowing the licensee to perform specific procedures without the direct supervision of a dentist in settings such as home health and long term care facilities

Secular  Non-religious in nature
Putting It All Together

Every effort must be made to conform with routine infection control standards. In humanitarian aid or disaster situations, however, water and power may be unavailable. The following alternative procedures may be used for safe care in these extreme situations.

Hand asepsis
In the absence of potable water:
1. Use premoistened towelettes to clean hands that are visibly soiled.
2. Use an alcohol hand rub before donning gloves and after removing gloves.

Instrument reprocessing: Cleaning
1. Use heavy-duty gloves during cleaning.
2. Soak instruments in a tub of water with mild detergent or suitable cleaner.
3. Gently scrub with long-handled brush to remove debris.

High-level disinfection
Boiling water
1. Place large metal container of water over heat sufficient to sustain boiling.
2. Once the water is boiling, fully immerse the instruments.
3. Cover the container.
4. Boil at a gentle rolling boil for twenty minutes.
5. Do not add water or other instruments.

Sterilization
Pressure Cooker
1. Use a large pressure cooker.
2. Elevate the instruments on a metal rack above water.
3. Follow manufacturer’s instructions regarding the amount of water to add for a 30-minute boil.
4. Boil for 30 minutes from the time the weight on top of the pressure cooker begins bouncing.
5. At the end of 30 minutes, turn off the heat source and let the instruments cool before handling.

Instrument transport
Clean (sterilized) instruments
1. Maintain instruments in packaging used for sterilization
2. Place in secondary container, such as a closable plastic tub
3. Label secondary container as clean.

Used (contaminated) instruments
1. Avoid transport of contaminated instruments if possible.
2. Clean instruments to remove overt debris, if possible (see “cleaning” under instrument reprocessing section).
3. Place in a rigid container with a lid that can be secured during transport.
4. Clearly label the top and sides of the container indicating the contents are contaminated.

Waste disposal
If local waste disposal services are unavailable:
1. Incinerate all burnable medical waste and bury the ash.
   a. Add accelerant, such as kerosene, to the waste pile before lighting.
   b. Ensure that the fire is in a secure area and that the person lighting the fire takes all appropriate precautions for safety.
2. If waste cannot be burned, bury it in a location that is downhill from any wells, free of standing water and away from flood zones and agricultural areas. Seal the waste pit with concrete.
3. Collect disposable sharps in labeled, rigid containers at the location of use.
   a. Transport or mail for medical waste treatment, if possible.
   b. If containers cannot be transported from the location of use, fill with cement and deeply bury away from play areas, animal grazing areas, or water.

Ask OSAP
Q : How may we safely transport unsterilized used sharp instruments from a remote site when doing humanitarian aid?
A : First, every effort should be made to avoid the transport of items contaminated with blood or other potentially infectious materials. Consider using the boiling water method for high-level disinfection to render the items safe for transfer. If this is not possible, a rigid container with a secure lid should be used for transport. Mark the container with the universal biohazard symbol to ensure all individuals who may come into contact with the items are aware of the potential hazard. If traveling by commercial airline, check before departure regarding restrictions they may have in the transport of contaminated dental instruments and follow specific instructions for labeling and whether or not the items can be checked or carried onboard. — OSAP

Q : I am an RDHAP who provides care to homebound patients. I must take my instruments to my home to be cleaned and sterilized. Are there basic guidelines for setting up a sterilization area in my home?
A : When it comes to infection control practices you must follow the same community standard of care that is expected of office-based practitioners. You should set up a separate area in your home that allows proper segregation of dirty and clean instruments, and allows you to clean instruments before they are sterilized. Instruments should be packaged before sterilization and transferred to the work site in sealed packages. The sterilization process should be monitored with mechanical and chemical indicators and validated weekly using a biological indicator. The July 2004 ICIP is dedicated to sterilization center issues and should provide useful and detailed information that will help you provide safe care to your patients. — OSAP

Do you have an inquiry about infection control, occupational health, or practice safety? Ask OSAP. Send your questions to office@OSAP.org
# OSAP Chart & Checklist

## Preparing for Oral Healthcare Humanitarian Missions

### Advance Preparation

- Make advance arrangements with local sponsors
- Perform a pre-mission site visit (if possible)
- Potable water: Yes ☑ No ☐ Don’t know
  - If no, what fuel resources, if any, are available (e.g., wood)?
- Obtain a written letter of support or invitation
- Identify available resources
- Electricity: Yes ☑ No ☐ Don’t know

- Perform a team health and safety threat assessment (i.e., infectious disease epidemiology)

### Team Health and Safety

- Provide all personnel with a list of required clothing, personal articles, toiletries, and sundries, including sunscreen, insect repellents, and anti-diarrhea medications, as appropriate
- Inform all personnel of anticipated health and safety risks
- Receive necessary vaccinations and recommended prophylactic medications (e.g., antimalaria medication)
- Distribute a trip itinerary and provide a thorough mission briefing (written or oral) prior to departure
- Cancel the mission if:
  - adequate disinfection and sterilization of patient-care equipment cannot be identified or obtained
  - safe follow-up of patients cannot be established
  - any unsolvable safety hazards for the team are anticipated

### Dental Equipment, Supplies, and Clinic Set-Up

- Determine the type of location (e.g., urban or rural)
- Identify treatment facility (e.g., a building, a hut)
- Identify specialized personal protective equipment as determined by a team health and safety threat assessment (e.g., NIOSH N-95 respirators for tuberculosis-endemic areas)
- Identify postexposure prophylaxis medications
- Perform a population needs assessment to determine the numbers, types, and treatment needs of patients
- Prepare a list of equipment and supplies based on the population needs assessment, available resources, and action reports from previous missions (if available)
- Prepare and print sufficient quantities of language- and culture-appropriate patient health history, consent, or other forms and materials
- Ensure that potable water is available for drinking and clinical use
- If potable water is not available, determine a water treatment method for making water safe for use:
  - Boiling ☑
  - Filtration ☐
  - Chemical treatment ☐
- Ensure that electricity is available, either locally or through other sources (such as a generator)
- If electricity is unavailable, determine an alternative method for processing instruments
  - Pressure cooker ☑
  - Boiling water over fire ☐
  - High-level chemical disinfection ☐

### Appropriate Waste Disposal

- Make arrangements for managing:
  - Sewage ☑
  - Chemical waste disposal ☐
  - Solid medical waste disposal ☐
  - Sharps disposal ☑

### Preparing for Travel and Reaching Your Destination

- Arrange for transportation and lodging for each leg on the travel itinerary
- Ensure that all team members have necessary travel documents and identification, including VISAs (where required)
- Identify size and weight restrictions for equipment and supplies based on the most limiting mode of transportation
- Ensure that all items can be safely transported by air or other modes of transportation
- Pack equipment and supplies to prevent damage or spills during transport and to meet airport security requirements
- Identify and address issues relating to customs or import duties in the host country
- Account for all team members at each transit point

To help practices stay on track, OSAP provides this calendar listing typical schedules for periodic maintenance, recordkeeping, and infection control activities. This schedule is intended only to serve as a guide. Proper practices, procedures, and maintenance schedules can vary according to the kinds of products used, the practice type, and patient volume. Always follow the device or equipment manufacturer’s instructions for maintenance and infection control.

For a monthly dental office calendar you can customize to best meet the needs and schedules in your practice, visit osap.org/calendars/index.htm. (Adobe Acrobat Reader required.)

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Continuing Education

If you wish to obtain one (1) hour of continuing-education (CE) credit, complete the following test and fax or mail it to the OSAP Central Office for grading. Please include a check or credit card to cover handling charges. Pending satisfactory results (at least seven out of ten), you will be issued a letter for one (1) CE credit hour through the Academy of General Dentistry and the Dental Assisting National Board. AGD Approved National Sponsor, FAGD/MAGD credit, 10/23/93 to 12/31/05. OSAP also is an ADA CERP Recognized Provider. For more information, call OSAP at 800-298-6727 (410-571-0003).

1. A boil water advisory:
   a. Is only of concern if you do not have bottled water systems for delivery of water to dental devices such as handpieces
   b. Only affects households
   c. Indicates a problem in the building water delivery system
   d. Indicates water supplied by the public utility is unsafe for consumption

2. During a boil water advisory:
   a. Mix disinfectant with tap water before using it to wash hands
   b. Instruct patients to rinse with tap water, but to avoid drinking the water
   c. Use bottled water or distilled water in reservoir systems on dental units, only if the lines are free of tap water
   d. Continue to use dental units attached to the public water supply, because it is not possible to deliver bottled or distilled water

3. When a boil water advisory is cancelled:
   a. The office may return to all normal operations immediately
   b. Flush all waterlines connected to public water supply 1-5 minutes
   c. Detach all waterlines and disinfect before reattaching
   d. Flush dental waterlines, resume use of all water sources

4. During humanitarian aid missions, compromises in traditional practices for safety that are NOT acceptable include:
   a. Bringing enough instruments for all surgical procedures and transporting disinfected instruments home for sterilization
   b. Using boiling water according to specific guidelines for the high-level disinfection of instruments
   c. Collecting and burning or otherwise destroying medical waste
   d. Disinfecting surgical instruments using alcohol hand rubs with at least 60% ethyl alcohol between patient uses

5. Patients are considered ambulatory if:
   a. They are able to walk
   b. They can be transferred by ambulance to a healthcare setting
   c. They are unable to leave the inpatient setting
   d. They must be treated in a home health/long-term care setting

6. When traveling to alternative settings to provide dental healthcare:
   a. The practitioner should request the facility or home provides appropriate instruments, personal protective attire and disinfectants
   b. Follow the exposure incident protocol established by the facility or home
   c. Postpone or alter the treatment plan if the minimum standards of care that apply in a dental office cannot be met
   d. It is acceptable to alter the standard of care due to the demands of the setting

7. In preparing for oral healthcare missions:
   a. Identify local resources
   b. Assume you must bring everything, including potable water with you
   c. Avoid attracting attention to your group by contacting local officials/agencies
   d. Be sure to have enough glutaraldehyde on hand

8. Which of the following is NOT a valid reason to cancel an oral healthcare mission:
   a. Adequate disinfection and sterilization of patient-care equipment cannot be identified or obtained
   b. Safe follow-up of patients cannot be established
   c. Any unsolvable safety hazards for the team are anticipated
   d. Reliable electrical power will not be available

9. If surgical instruments cannot be sterilized using a traditional heat sterilization method, a suitable alternative would be:
   a. Immersion in boiling water for 10 minutes
   b. Immersion in intermediate-level disinfectant for 20 minutes
   c. Use of a pressure cooker
   d. Wiping with household bleach

10. In locations where used contaminated sharps may not be picked up by a medical waste treatment facility, they may be:
    a. Rendered nonhazardous by cutting and sterilizing before disposal
    b. Encased in cement and buried
    c. Discarded in the regular trash
    d. Collected in a rigid container and left onsite

Mail or Fax completed test to receive (1) hour of continuing-education credit, or visit www.OSAP.org/training/online/ to test online.

Your Name: ______________________________________  OSAP Member Name: ________________________________ (If different)
Address: ____________________________________________________________________________________________

M VISA  M MASTERCARD  M CHECK ENCLOSED  Fee:  M OSAP MEMBER, $10  M OSAP SUBSCRIBER, $15
Name on Card: ___________________________________  Card Number: ______________________________________
Expiration Date: ________________________  Signature: _________________________________________________
One of the most eye-opening experiences for a dentist is to be a patient. A recent personal experience as a dental patient inspired me to develop an infection control exercise for the dental students I teach.

The students were instructed to assume the role of a patient, and to consider what they might observe regarding infection control. Students grouped together in threes to role-play the dentist, assistant and patient. Each group reviewed an infection control checklist, posted in the dental operatory, and the patient was asked to write down what they observed concerning infection control. Did the dental team wash their hands before and after donning gloves? Were overgloves available and used when reaching into drawers? Was the overhead light splattered with debris from previous procedures? Did all of the people involved in the procedure wear proper personal protective equipment (PPE), and did they provide clean goggles for the patient?

Following the mock procedure, the team reviewed the information with the attending faculty member. They made suggestions to encourage improvement, and commended positive actions.

This simple, but effective learning exercise can be duplicated in any dental setting as part of a regular infection control assessment. Viewing a procedure from a different perspective provides valuable information to the dental team about a patient’s perceptions. It is often the case that patients do not vocalize their concerns about infection control. Instead, they frequently choose not to return, and leave the dentist to wonder, “What went wrong?” In more extreme cases, the patient may report their complaints to the state Dental Board, initiating a formal inquiry into the dentist’s infection control practices. Conversely, when a patient is impressed with careful infection control by the dentist and staff members, he or she is apt to believe that the same attention to detail is practiced in all aspects of care.

Molly P. Newlon DDS, MA is Assistant Clinical Professor and Director of Health and Safety at the University of California, San Francisco School of Dentistry. She also is a practicing dentist and long-time OSAP member.