

## PORTABLE DENTISTRY

I believe that many people in the dental field would like to participate in dental missions but may be reluctant to do so, because they are unfamiliar with portable dentistry. The following information is written to encourage dental professionals to use their gifts and talents to serve God by treating His people's dental needs.

There are many things to take into consideration when planning a trip. One decision to be made is whether only extractions will be done or if restorations (white and silver fillings) will also be performed. You may want to start with extractions, but I encourage you to try and include restorations. Many times patients will ask to have a tooth extracted that could be restored, because they cannot afford the treatment, even if a local dentist offers such services.

The disadvantages of doing restorations are that it requires more equipment and takes longer to treat each patient, so fewer patients can be seen. Normally we will see 20-25 patients per day doing restorations and 50-70 per day doing extractions, depending on how much treatment is done on each patient. The ideal situation is to have 2 or more dentists on the trip so both extractions and fillings can be done. The advantage that outweighs all the disadvantages is the satisfaction you feel in being able to save a person's tooth.

You will also need to decide how much treatment will be done on each patient. Many patients have a mouth full of teeth needing treatment and you could spend all day on one or two people. That would be advisable if you were at a location for an extended stay. However, we normally work only 2-4 days at one location and try to do a little on many people rather than a lot on a few. Some countries have suggestions or laws that dictate the maximum number of teeth that can be extracted. We try to extract no more than 4 teeth and do 2-3 fillings.

One dilemma you will face when doing restorations is the many patients who will have caries on both proximal surfaces of the six front teeth. In those cases, I have decided to restore all the front teeth which may take 45 minutes to one hour. Restoring only one or two teeth and letting the others decay and need extracting later did not seem wise to me.

After the decision is made as to the kind of dentistry you will perform; extractions only or restoration and extractions, and the amount of dentistry you will perform on each patient, you can then determine the amount of supplies needed. For example, if you are doing only extractions and plan to take out no more than 4 teeth on each patient, you

can see 50 to 70 patients a day. So 70 patients a day would require 70 needles and would average about 3 carpules of anesthetic per patient. Thus 210 carpules would be required. You can see that this will not be an exact science and that you will be required to estimate. Therefore, I usually try to error on the high side. You can always leave excess supplies for the next group or give them to a local dentist. A supply list for extractions and one for composite and amalgam restoration are found at the end of this article.

When packing supplies and equipment I use plastic trunks. Air liners have strict requirements and you should check with them about their regulations for size and weight. The regulation for the U.S. air lines usually state that you can carry two pieces of luggage weighing no more than 70 pounds and not to exceed 62 inches when the height, width, and length are added together. If it weighs over 70 pounds and/or exceeds 62 inches, you will be required to pay \$100 for each piece. If a piece of luggage is over 100 pounds and/or 115 inches, they will not put it on the plane. The trunks I use that fit the 62-inch requirement can be found at Lowe's hardware or Northern Tool and Equipment for about \$20 each. I lock my trunks but with locks being a problem at the security check in the airport after September 11, you can put a key in the lock with a note taped in the lid asking them to put the key in the trunk after checking it.

Getting dental supplies into some countries can be challenging. In Honduras I have a friend to whom I send my license and they get a letter from the school of dentistry, I think, stating that I have permission to do dentistry. I show this letter to the customs people as they check my luggage in the airport and very seldom do they open my luggage. You should ask the contact person in the country in which you plan to work to find out about the procedure for getting permission to work and restrictions on supplies and equipment entering the country.

Once you get to your work location, there may be an existing dental clinic already set up. However, many times this is not the case, and you may travel to a remote location and work in a church, school, or other building. Personally I prefer working in places where there are no dentists or the nearest dentist is a distance away.

When deciding where to set up your clinic in a remote location, there are several things to take into consideration. The first is lighting. Many times the person organizing your clinic may want to set up the dental teams, in a small, dark, hot room, when in actuality it is best to work in a well lighted room or outside in the shade of a porch. You can hang sheets or a tarp for privacy and shade.

When doing restorations the electrical supply is critical. If you are using air driven hand pieces and an air supply to create suction, you will need an air compressor. The smallest, yet adequate air compressor is a  $\frac{3}{4}$  horsepower. There are portable dental compressors from Aseptico, but they are fairly expensive. You can get a light, commercial grade, pancake shaped tank air compressor from companies like Grainger. That kind of compressor will fit perfectly in a round plastic garbage can. You can drill a hole in each side of the lid and place a lock on each side to secure it. (Be sure to measure the height, width, and length of the garbage can to make sure that it will meet airline requirements, since it has been several years since I shipped my compressor.) Also, place a 25-foot, 10 gauge extension cord, a surge strip, 2 or 3 six-foot extension cords, and several two prong adapters in the garbage can with the compressor.

Many times we have worked in churches wired only for a few lights and the wires were not heavy enough to run the compressor. I include in the garbage can a 15-foot piece of 10 gauge Romex wire to connect directly into a breaker box or the meter. On one end of the wire I connect a plastic electrical outlet box into which I can plug the 25-foot extension cord. Usually the meter or a breaker box will have heavy wire going into the top, but only a light gauge wire coming out the bottom to the lights and outlets. Connect the loose end of the Romex wire into the bottom of the breaker or meter box and this should give you enough power to run the compressor. You should ask someone qualified to work with electricity to do this for you. Also, be careful if you pull the meter because it is probably illegal and may be dangerous. In one house in Mexico the meter had been pulled and they had wired around the meter so that no usage showed on the meter which made the bottom wire 'hot' as well as the top wire.

Even though the compressor is very noisy it should be set near enough to you that you can hear it when it begins to run. Once the compressor begins to run it will cut off at 120 pounds of pressure. As you begin to use the air, the pressure in the tank will drop to 80 PSI and the compressor will start again. More electrical power will be required at this time than when it was first started with no air in the tank. Often time there will not be enough power to restart the compressor and you will hear it try to start but only hear a dull roar. If not turned off the compressor will overheat and not run until it cools down which takes time. Turn the surge protector switch off and continue to use your hand piece, suction, and air/water syringe to take pressure off the tank. As the pressure gets lower, turn the surge protector switch on to see if the compressor will run. If not turn it off again. Keep turning the switch on and when the pressure in the tank is low enough the compressor will come back on. Sometimes the compressor will run properly all day, but when night approaches and the

community begins to turn on lights in their homes, there will be a 'brown out' and thus, less electrical power, causing your compressor to fail.

So in choosing a location for the dental group, try to get near the source of electrical power. If there is no electricity, you will need a generator. The smallest generator that will operate a  $\frac{3}{4}$  horsepower compressor is 2500 watts. However, an older, worn generator may produce less power and not run your compressor. Also, different brands of  $\frac{3}{4}$  horsepower air compressor may vary from 10.6 to 11.2 amps, and thus require a larger wattage generator.

Portable dental units vary in size and shape and can be purchased from several sources or borrowed. The units I use are from Hampton Research in Oklahoma City. They have several designs from which to choose and give discounts for mission use. They have connections for 2 hand pieces, one water bottle reservoir, one air/water syringe, and a quick disconnect for suction. The suction is purchased separately and is a collection bottle and hose. It works off the Venturi Principle and uses air to create suction. The Christian Dental Society has units that can be rented for short term trips. Actually, they not only have units, but also compressors, chairs, lights, and all equipment needed for trips.

I have never used an electric motor hand piece, but you may want to experiment with it. You would need suction and an air/water source, but the electric motor may make it possible to use a smaller air compressor for the air/water syringe.

I have used several things for dental chairs from a kitchen chair to boards inclined at an angle against a table. Presently I use an inexpensive pool recliner that I purchased from Wal-Mart. It is the kind with a metal frame and mesh backing in which the head end and foot end both fold over the middle section and the legs fold as well. It needs some adjustments, because it is too low to the ground to sit down and do dentistry. The legs are in a wide 'U' shape, so I cut them off leaving four, 12" legs. I then welded  $\frac{1}{2}$ " metal electrical conduit in an "H" shape for each end of the chair. The conduit slides over the legs of the chair raising the height, and thus allowing you to get your legs under the chair.

Two of these portable chairs can be packed into a large suitcase. However there is a metal bar between the legs on each side that will need to be removed and then the chair can be squeezed together to fit in the suitcase.

A good light source helps tremendously. I have had someone hold a flashlight, and used head lamps, but the best portable light is an electric

goose neck light by Sunnex. It clamps onto a table with a 'C' clamp and extends over the patient.

Normally I use cold sterilization for the dental instruments. Three, shallow, Tupperware type dishes about 10" x 12" can be used with water in two of them and cold sterilization liquid in the other. Dirty instruments are placed in one dish of water and the debris is scrubbed off, then into the cold sterile for 10 minutes, and then the other water to rinse the instruments. White sheets can be placed over the tables to make things look cleaner.

It is important to keep in mind that doing portable dentistry will be more difficult than doing dentistry in the familiarity of your own office. Working long, hard hours in unfamiliar surroundings with unfamiliar equipment will produce fatigue and frustration. It will be important to stay focused on why you are doing the dentistry, and remember that God wants us to use our skills to benefit others.

References:

Aseptico- [www.aspetico.com](http://www.aspetico.com) or 800-426-5913

Hampton Research- [www.hamptondental.com](http://www.hamptondental.com) or 405-232-5103

Sunnex- [www.sunnex.com](http://www.sunnex.com) or 800-445-7869

Christian Dental Society- [www.christiandental.org](http://www.christiandental.org) or 563-578-8887

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