

THE OLYMPIC MINI-PASTEURMATIC™ HIGH-LEVEL DISINFECTION SYSTEM Reviewed by Paul Mathews PhD, RRT



In this issue, we review the Olympic Medical Mini-Pasteurmatic™ high-level disinfection system. The Mini-Pasteurmatic is the table-top model of the venerable Pasteurmatic series of high level disinfection systems produced by Olympic Medical of Seattle Washington for over 25 years and currently in use in over 3000 hospitals around the world. The device disinfects medical equipment by a process of pasteurization similar to the process used to sanitize and disinfect milk. The company has always had an impeccable reputation for making fine disinfection and drying systems for numerous applications such as respiratory care, O.R, central supply, sleep labs and numerous other settings. We start this review then, pleased to see that such a reputable company is now making a *tabletop* model to go along with their line of larger systems.



equipment being disinfected to a point where microbes are outside of their thermal life environment. Complete *sterilization* may not be achieved by this method, as it is possible that some organisms will survive, but if they do, they will do so below their infective growth phase. Vegetative bacteria and viruses for instance, are killed completely by immersion in water at 158° F for 30 minutes. This is well recognized by the CDC, JCAHO, APIC and CSA as High Level Disinfection, and of course, Olympic's 167°F temperature gives an extra measure of assurance that high level disinfection is achieved. Total immersion, of course, is a requirement, for if water cannot totally surround the equipment being disinfected, pasteurization will not take place.

Let's begin with an quick overview of pasteurization itself. **Pasteurization** is a process of low, but prolonged heating of a substance or object which results in the elimination of most bacteria including some spore forms. In most applications pasteurization calls for heating an object to 158° F then keeping the object exposed to that temperature for 30 minutes. In the case of the Mini-Pasteurmatic, Olympic goes one better by equipping their unit to provide a water bath at the higher temperature of **167° F**. The operating theory of pasteurization is that this amount of time and heat *combined*, brings the microbial load on the

equipment being disinfected to a point where microbes are outside of their thermal life environment. Complete *sterilization* may not be achieved by this method, as it is possible that some organisms will survive, but if they do, they will do so below their infective growth phase. Vegetative bacteria and viruses for instance, are killed completely by immersion in water at 158° F for 30 minutes. This is well recognized by the CDC, JCAHO, APIC and CSA as High Level Disinfection, and of course, Olympic's 167°F temperature gives an extra measure of assurance that high level disinfection is achieved. Total immersion, of course, is a requirement, for if water cannot totally surround the equipment being disinfected, pasteurization will not take place.

General Description: The Mini-Pasteurmatic is a stainless steel tank complete with an immersion heater and a stainless steel lid. Inside the tank is a perforated steel basket into which the parts to be disinfected are placed. This basket is attached to the lid and through a ratchet mechanism can be manually rotated when the lid is engaged to rotate the basket's contents. This rotating insures that the equipment being disinfected is completely immersed in the 167° F water and contains no air pockets inside the equipment that can prevent proper disinfection.

The control panel consists of an On/Off switch and a "Power cycle" switch which starts the cycle. A second push turns the pasteurization cycle off. A paper strip printer records the time and temperature every five minutes throughout the pasteurization process and has a "Paper advance" button to review the data. Digital displays are mounted on the control panel giving instant information. The actual specifications and measurements of the device are as follows:

Footprint – Lid closed 18" (45.7 cm) high x 26" (66.0 cm) wide x 21.75" (55.2 cm) deep.

Weight – Empty 75 lb (34 kg). Full 160 lb (72.6 kg).

Tank Volume – 11 gallons (41.3 L).

Power Requirements – 120 V, 9A, 60+/- 5 Hz. Hospital grade power cord.

Heater – 1,000 Watt immersion type.

From uncrating to initial use it took us an hour to have an operational pasteurizer and the majority of this time was devoted to bringing the 11 gallon water reservoir up to its 167° F operating temperature. This ease of setup and teardown makes it possible for the unit to be placed on a cart for use in multiple locations or departments. Naturally, care needs to be taken to have a sturdy table, counter or cart as the unit is heavy when filled with water and more so when the equipment to be sanitized is loaded into the tank. Also, be aware that the machine should ideally be located near a sink/faucet to simplify the addition and emptying of water. The tank's water should be changed weekly, something that only takes a few minutes using the fill/drain hose that comes with the unit and stores nicely in a compartment in the back of the unit. (We noted the nice feature



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baric referral indication in North America. Should the position taken by these two intermediaries be adopted by the larger health insurance community, the practice of hyperbaric medicine as we know it today might cease to exist.

It is interesting in that the principal reason for a change in reimbursement policy was a lack of Level 1 evidence. We see clearly that poor methodology (a blunder) not lack of adequate science resulted in the carbon monoxide decision. A failure to understand the concept of evidence-based medicine likely contributed to the radiation necrosis decision.

As noted earlier, evidence-based medicine involves a hierarchy process. The idea here is that one begins at the top. If no Level 1 evidence is available one moves to level 2, and so on. Eventually, one will come across one or more tests or therapies that represent 'best' evidence. It appears that these BCBS representatives failed to grasp this concept. Take radiation cystitis for example. Therapeutic options include a variety of surgical and medical options, including hyperbaric oxygen therapy. More are supported by Level 1 evidence. Moving down the evidence trial we arrive at Level 2. What is it? Why, hyperbaric oxygen therapy? So, the decision not to reimburse for hyperbaric medicine on the basis of lack of evidence implies that no other intervention should be covered. This, of course assumes that the same standards that are applied to hyperbaric medicine apply elsewhere.

What, then, is the hyperbaric medicine discipline to do? Three options spring to mind. The first is to hope that present position by BCBS remains limited, and not embraced by the other major purchasers of health care. A head in the sand approach, and not the smart thing to do. Next, and already underway, is a lobbying effort. To argue some of the points made above; to say that evidence was missed in one case and that no better evidence than hyperbaric oxygen therapy exists in another. While this latter option is not exactly arguing the negative it is perhaps not a strong enough an argument for some policy-makers to accept. A third option? To undertake clinical research that will hopefully generate the type of evidence (Level 1) that resolves efficacy questions.

This is not as tall an order as it might seem. Several randomized trials are already underway, and several others in the planning stages. Such trials are time-consuming both to design and implement, particularly when a reasonable degree of follow-up is incorporated. Not only must one show efficacy. One must also demonstrate an enduring response. It is one thing is to cure a case of radiation cystitis for \$15,000.00: an entirely different matter to demonstrate that such a cure is not short-lived and therefore a good financial investment.

Hopefully, resulting supportive evidence will become available before reimbursement is more widely affected.

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of a Low Water alarm which sounded as a result of us inadvertently not filling the unit to the proper level.) This will, of course, insure the operator that the proper water level needed to submerge equipment is always maintained. While the unit will work with normal tap water it is suggested that, if the local water is heavily mineralized, distilled, but not de-ionized water, be used. This is due to the fact that the water level sensor requires ionized water to function correctly.

Operational Analysis: The Mini-Pasteumatic is exceedingly easy to use. It has only 4 controls. The written instructions are also simple and clear consisting of photos illustrating each step of the process. As previously noted the start-up process was just about an hour. From that point the pasteurizer maintains its heat until the power is shut off. This means that it is always "ready to go".

Miscellaneous: We asked for the standard information and literature packet and received a collection of very informative materials including CDC and APIC guidelines. The instruction manual, as mentioned previously, is well designed, easy to understand and had lots of white space for note taking.

Benefits: This is a low cost method of decontaminating equipment that can tolerate submersion in moderately hot water. There are no chemical or radiation disposal or hazardous problems associated with the process. Special personal protection devices other than, perhaps gloves and goggles are also, not needed. There is a thirty minute turn around time from the time the lid closes until it is ready for opening.

Naturally, it is not to be used with electronic or electrical devices such as spirometers, respirometers, gas analyzers, etc. Parts and equipment should also be washed and rinsed of particulate matter prior to pasteurization and drained and dried after the process is finished. (Olympic makes washers and drying cabinets for these purposes, as well.)

Recommendation: The Olympic Medical Mini-Pasteumatic is an ideal, low cost, effective solution for providing high level disinfection at sites with low to moderate levels of equipment usage. It would be a good choice for respiratory therapy departments, outpatient clinics, sleep labs, public health clinics, pulmonary and stress labs. The unit has an excellent track record and there have been no problems or recalls in the field. Again, the company itself is a proven organization with an excellent 40 year history of manufacturing high quality devices covered by excellent warranties and top-notch service. This table-top disinfection unit can be just the ticket for many settings. We recommend you look into it as a possible solution to your equipment disinfection needs. The company can be contacted at 800-426-0353. Their website is found at www.olymed.com.



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