

Wet packs: is extending drying time increasing water (scarce natural resource) consumption?

Pacotes molhados: o aumento do tempo de secagem aumenta o consumo de água (recurso natural escasso)?

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Dear Editor,

I have read with a lot of interest the publication about wet packs⁽¹⁾ and would like to make some comments:

1. First of all I would like to thank the authors for addressing such interesting topics as the wet loads are. However, I see that the conclusions that they come to are quite obvious. Since the 2 known vacuum systems for steam sterilizers in the market (Venturi and liquid ring vacuum pump) use water, it is completely logical that extending the drying times and therefore the running times of each system, will increase the water consumption.
2. On the other hand, the load that was used for the tests is not mentioned at all in the study. It is neither stated if an empty chamber was used. The text suggests that all tests were performed under the same conditions (same load or empty chamber) and even though the conclusions will not change (there will be always more water consumption when there is more running time of the vacuum system), it is not correct to talk about “the most efficient cycle configuration” when the load has not been taken into account. The main goal of the “conditioning” phase is to remove air and deliver steam into the instruments (including long narrow instruments). So, the most efficient cycle configuration depends on the load to be sterilized and cannot be determined without using that load.
3. From the wet packs perspective, the conditioning phase has also an impact, but sometimes on the opposite direction to what the authors

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Conflitos de interesse: nada a declarar.

mentioned. Therefore, a deeper vacuum does not necessarily mean that less condensate will be generated during conditioning. Due to the fact that the deeper the vacuum, the higher the energy is being lost by the liquid (thermodynamics law), this will lead to a temperature decrease of the condensate and goods. Hence, in the next steam injection pulse, there would be more creation of condensate (because the load is cooler), and this excess of condensate will be carried to the plateau period of the process and then to the drying phase, making the drying of the load more difficult. The authors have not discussed this, probably because the test were performed with no load and therefore, they weren't able to detect it.

4. The conditioning phase is always a compromise between the air removal demand of the load, the energy (media) consumption, and the elimination of condensate for the next steps, as explained in points 2 and 3. Thus, no consistent conclusions of an "efficient" cycle can be done without using load on the tests.
5. On the drying phase, something similar will happen. The more vacuum is performed, the cooler the load is becoming and therefore it is more difficult to dry it. Because the temperature inside the load is not uniform, there would be zones on the load that would be cooler and will not be possible to dry if no

heat is supplied, despite the deep vacuum and longer drying times.

6. As mentioned by the authors, the wet packs are a common problem in SPD, even though no evidence has shown a correlation between wet packs and contamination inside. It is correct that extending the drying times of the sterilizers will not always solve the problem and will create additional costs. However, the proposed solutions (adjust vacuum points in conditioning and drying phases) should be only executed in combination with a validation of the steam sterilization process using the real load to be sterilized. Experiences show that the most efficient way to solve the wet packs problem is the load configuration (weights, packing material, positioning of the load, etc). During the validation of the steam sterilization process not only the load dryness should be checked, but also the steam penetration and sterility conditions on each Medical Device must be proven. This is in line with the best practices and the only way to ensure that a load is consistently sterilized in a reproducible and standardized way.

Referências

1. Laranjeira PR, Bronzatti JA, Souza RQ, Graziano KU. Wet packs: Is extending drying time increasing water (scarce natural resource) consumption?. *Acta Paul Enferm.* 2019;32(1):101-5.