

## 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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To Editorial Board and readers of *Acta Paulista em Enfermagem*,

We thank the opportunity to discuss such an important topic of our area of knowledge. We observed that some comments by the reader were out of the normative framework of sterilization equipment, therefore some of them were precipitated and lack strong evidences needed to advance the knowledge and promote adequate discussion in a qualified scientific journal. That said, we would like to clarify some points to the readers of our paper:

1. We believe that the readers' assumptions are opinions and lack evidences or theoretical references to support them. We recommend the reader to consult references used in our paper to confirm information and understand the reasons why the assumptions might be mistaken.
2. In our country's national context, the reduction of water consumption is aligned with reduction of rains and hydric scarcity in a number of municipalities, especially in large cities, such as São Paulo, where the demand for water is high due to large concentration of inhabitants.<sup>(1)</sup> For this reason, studies that have measured the water and energy consumption is fundamental for decision making in practice, as well as operating review cycles, mainly in longer drought periods.
3. In conditioning phase, the "obvious" hypothesis was confirmed. However, in science, even the obvious requires measures, and these measures were showed by our study. However, when the water consumptions is analyzed in drying phase, the "obvious" was refuted. We

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expected large water consumptions when drying time was set to 90mbar, however, this was not confirmed.

4. Our study was conducted **with no load**. Independent variables considered were: number of pulses in conditioning phase, drying time and vacuum depth set point. This decision intended to isolate described variables and did not invalidate any other norms and recommendations required for good practice. In addition, the study with load would include a variable that could be characterized as a confounding factor.
5. In our study, we did not intend to propose changes to the conditioning phase and drying time as the unique solution or priority for problems of wet packs, however, we aimed to show interventions impact of conditioning phases and drying on water consumption. Therefore, any information provided in our study did not replace the guidelines described in best practices manual for sterilization regarding the creation of loads and requirements for development, validation and control of routine of ISO series for sterilization processes.<sup>(2-4)</sup>
6. Our considerations regarding the efficiency of cycle regarding the type of load are aspects currently covered by ISO 17665-3 standards<sup>(4)</sup> in which affirm that “duration of drying time will depend on presentation and weight of each item of the sterilization load”. Therefore, given that our data do not pretend to invalidate normative requirements, but to reduce water consumptions, therefore, we obtained the most efficient cycle. Additionally, there is the need to re-emphasize that performance and consumption of sterilization equipment ranges according to manufacturer, size and models.
7. In drying phase, 75% of efficient occurs when exposition is finished and high vacuum is reached, this variation in pressure will cause immediate water vaporization. To keep the vacuum in equipment corresponds to 25%

only of drying efficiency, therefore, the increase of drying time has little influence in load drying.<sup>(5)</sup>

8. In response to the comment of the reader concerning the conditioning phase, we clarify that conclusions of our study is still valid: increasing the drying time, without observe the vacuum depth, will increase considerably water consumption (Figure 2 of the article). Considering the current need to implement evidence based practices that enable the rational use of natural resources, the authors consider the inadequate to affirm that the study conclusions are inconsistent, once no experimental data were presented.
9. Finally, we reinforce the importance of annual validation of sterilizations according to legal requirements of each country, and based on requirements of the ISO 17665 series<sup>(2-4)</sup> and on the safety use of equipment of evaporation sterilization. Based on current time that reduction of water waste is extremely relevant, the increase of drying time should be considered the last resource to solve wet packs. To date, there are no evidences that may weaken the conclusion of our paper.

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