of IncA/C_2 plasmid may contribute to the diffusion and maintenance of bla_{IMP-1} in different groups of bacteria. Considering the concerning spread of carbapenem resistance mediated by plasmids and considering the high prevalence of ST648 *E. coli*, our study highlights the importance of continuous surveillance studies of carbapenemase genes in Latin America.

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The *Legionella* contamination of tap water in a brand-new hospital in Japan before patients move in

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To the Editor—Healthcare facilities are potential settings for *Legionella* infections, and 2%–20% of Legionnaires' disease cases have been estimated to have been acquired at hospitals, long-term care facilities, and clinics.[1,2] The widespread contamination of *Legionella* spp in the water systems of healthcare facilities has recently been recognized.[3,4] The persistent environmental contamination of *Legionella* spp in water systems can often be difficult to eradicate once the organism colonizes because the organism is likely to continue to survive in dead branches of complex plumbing systems. Furthermore, identifying the sources of *Legionella* spp contamination in hospital water systems and determining when colonization occurred can be difficult. Because most studies are performed in operational hospitals, the identified relationships between hospital water systems and *Legionella* are often attributed to old, scaled water pipes.

We evaluated the environmental contamination of *Legionella* spp before patients moved into a brand-new hospital, which was built by a leading Japanese construction company. The study was conducted in June 2019 at Tokyo Medical University Hospital, a 19-story building that has 905 beds and a 3-story basement (completed in March 2019). Overall, 61 sampling points were selected, including 27 manual faucets, 18 touch-free faucets, and 16 showers in inpatient hospital wards. A hot water sample and a cool water sample were obtained at each sampling point. In total, 122 500-mL samples were obtained, starting as soon as the water began to flow, and samples were stored in sterilized bottles. All samples were concentrated on a filtration, followed by treatment at 50°C for 30 minutes. These samples were cultured using Wadowsky-Yee-Okuda-α-ketoglutarate agar culture medium (Eiken Chemical, Tokyo, Japan). Cultures were incubated in a humid environment for 5 days at 36 ± 1°C.

Among the 122 samples taken, 1 sample, from the highest floor, was positive for *Legionella* spp. Matrix-assisted laser desorption/

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ionization-time-of-flight mass spectrometry was used to identify the specimen, resulting in a score of 1.77 for *L. felleii*. No reaction during the serological aggregation test (Denka Seiken, Tokyo) was observed against *L. pneumophila* serogroup (SG) 1-SG6, *L. bozemanii*, *L. dumoffii*, *Legionella gormanii*, or *L. micdadei*.

This study is the first report to describe the *Legionella* contamination of water taps in a brand-new building, before the start of standard usage. Water taps, showers, sinks, and water systems in healthcare facilities have been recognized to be the causes of healthcare-associated legionellosis.[3–5] Previous studies have not considered the possibility that even brand-new hospital water systems may be at risk for *Legionella* spp colonization during the building process, which can persist and spread once the hospital is operational. Although *Legionella* spp contamination in water systems has been associated with water scale, stagnant water, and sediment, brand-new buildings, even prior to active use, may possess contamination risk factors, such as stagnant dead spaces.[3] This study indicates that we must pay attention to the risks of healthcare-associated waterborne infections, even in brand-new buildings and before patients move in.

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Reply to "Comparative evaluation of the microbicidal activity of low-temperature sterilization technologies to steam sterilization"

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To the Editor—This letter is in response to the article by Rutala et al[1] that compared the microbial kill of steam, ethylene oxide (ETO), hydrogen peroxide gas plasma (HPGP), and vaporized hydrogen peroxide (VHP) in the presence of salt and serum in standard sterilization cycles.

Unfortunately, at this time, there are no 'standard' gaseous hydrogen peroxide sterilization processes. The article fails to consider that although both HPGP and VHP processes use gaseous hydrogen peroxide as the sterilant, the processes are distinct and different in the way they operate. Even though 28-minute HPGP and VHP cycles are used, these cycles use significantly different concentrations of sterilant. The HPGP exposure is 25.6 mg/L H_2O_2 for 7 minutes whereas the VHP exposure is 9.1 mg/L H_2O_2 for 12 minutes. The importance of disinfectant concentration is explained in the 2008 CDC Guideline for Disinfection and Sterilization in Healthcare Facilities where it is stated that "The more concentrated the disinfectant, the greater is its efficacy and the shorter the time necessary to achieve microbial kill."[2] For these evaluations with no chamber load, sterilant concentration should have been considered.

The delineation of the gaseous hydrogen peroxide processes like HPGP and VHP, with the subsequent comparisons of efficacy minus any consideration of sterilant concentration, seems to imply that there is a benefit from plasma within the sterilization process. This contention contradicts the current understanding of the purpose of a gas plasma in HPGP systems, in which it is known that the plasma step has little to no contribution to sterilizer efficacy. In the only research ever published to evaluate the impact of plasma in a HPGP process, the plasma phase appeared to be nonsporicidal.[3]

The detoxifying (residual sterilant removing) effect of the plasma would have no impact on gaseous hydrogen peroxide microbial lethality; thus, the ~3-fold sterilant concentration difference (25.6 vs 9.1 mg/L H_2O_2 for the HPGP and VHP systems, respectively) is clearly responsible for the observed efficacy differences in HPGP and VHP processes. Higher concentration is not always beneficial. Beyond efficacy, hospitals also consider the gentleness of the sterilization process to include the potential impact of higher sterilant concentrations and higher sterilant dose on device material compatibility (especially devices susceptible to reaction with the highly oxidizing hydrogen peroxide sterilant) or device biocompatibility as well as the potential impact of plasma on medical device surfaces.

Both the HPGP and VHP sterilization cycles have been cleared by the Food and Drug Administration (FDA), so both have demonstrated the ability to achieve a sterility assurance level (SAL) of 10E-6 for their claimed processes. The CDC disinfection guidelines[2] specify that even salts dissolved within surrogate body fluids dissolve with 60 seconds of nonflowing water; therefore, showing

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