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From outbreak to strategy: the hospital epidemiologist as an agent of change in the prevention of healthcare-associated infections (HAIs)

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Healthcare-associated infections (HAIs) represent one of the most persistent and complex challenges for hospital systems. Their emergence is not an isolated event, but rather the manifestation of accumulated failures in care processes, infrastructure, work organization, and institutional culture. In this scenario, the hospital epidemiologist occupies a key position: not as a data producer, but as a translator of operational reality, a facilitator of change, and a generator of decisions.

Epidemiological analysis acquires meaning when it allows us to interpret patterns, anticipate risks, and transform information into concrete actions. It is not enough to calculate rates or prepare monthly reports: the true impact occurs when data makes the invisible visible, provokes discomfort, sparks dialogue, and leads to decisions that improve patient safety. This is the difference between monitoring and transformation. Interpretation is not simply saying whether a rate is green, yellow, or red; it is understanding what has failed in the processes. For example, if the rate of ventilator-associated pneumonia is high, the analysis must go beyond the numbers: it's about evaluating whether the process of setting up, maintaining, and weaning from mechanical ventilation is being carried out properly. Do we have the correct fixation system? Are artificial noses available and changed as frequently as needed? Are the sensors installed, reused, or not even in place? Is the humidification and heating system working correctly? Is the patient properly positioned? Is oral hygiene being performed? Is weaning being assessed promptly by the medical team? Do we have closed suction circuits? Are suction traps being used? Is the staff trained to perform suctioning? Is antimicrobial treatment based on specific microbiological cultures? Etc. The rate tells us how quickly patients progress from a non-infected state to one with pneumonia, and as epidemiologists, our duty is to interpret,

communicate, and point out areas for improvement. The more specific the analysis, the more tools we generate for decision-making.

Hospitals as ecosystems: culture, microorganisms, and missing decisions

Hospitals are living in complex environments where the tension between clinical, operational, and administrative aspects is constant. Recent evaluations in hospital units show recurring patterns: implemented but fragile surveillance structures, preventive programs without effective oversight, incomplete records, deteriorating infrastructure, and weak leadership.

In this context, microorganisms not only inhabit patients: they colonize devices, hands, sheets, radiant warmers, faucets, and surfaces. Over time, they become part of the landscape, part of the shared normality. In many hospitals, the microbiota is so commonplace that no one even notices it anymore. Infection prevention ceases to be a priority when risk becomes routine.

Safe healthcare requires much more than supplies: it requires conviction. But institutional conviction is lacking when decision-makers are unaware of the true scope of the problem. In many hospitals, epidemiological reports are not reviewed, indicators do not guide action, and the epidemiologist's role is reduced to an operational one. Nationally, the lack of updates to regulatory frameworks such as NOM-045 confirms the structural shortcomings in this area.

Prevention vs. Reaction: The Active Role of the Hospital Epidemiologist

A healthcare-associated infection (HAI) is, fundamentally, a manifestation of a lack of control. Preventing it requires intervening in processes before harm occurs. This is only possible by strengthening active surveillance, risk monitoring, and the standardization of preventive actions at every stage of care.

Evidence shows that the critical points are constant: use and handling of invasive devices, environmental cleaning and disinfection, food preparation and storage, handling of hospital linens, medication administration, hand hygiene, hazardous waste disposal—in general, the substantive processes of healthcare. Each of these processes must be monitored, understood, and supported with useful, timely epidemiological information translated into operational language.

The epidemiologist's work is therefore twofold: interpreting the data and interpreting the context. It is not enough to detect that the surgical infection rate is high; one must go to the operating room, observe the flow of patients,

inquire about patient flow, review supplies, and listen to the staff. Only from this intersection between the numerical and the real can a meaningful intervention be generated.

Leading without imposing change as a relational process

The leadership required to transform the HAI prevention system is not hierarchical or punitive, but relational and sustained. The epidemiologist is called upon to exercise leadership that connects evidence with action, fosters difficult conversations without breaking cooperation, and builds trust through clarity.

Leading in this context means staying focused when reports aren't read, persisting when priorities shift, and communicating when the risk isn't perceived. It means maintaining the tension between diagnosis and improvement without becoming frustrated, because change isn't decreed: it's cultivated. And it's cultivated best when ideas aren't imposed but emerge from the operational staff themselves. Listening, observing, engaging, and building collectively are more effective than ordering.

The most difficult thing to transform in a hospital isn't the supplies or the physical structures, but the behaviors. Prevention requires a new culture, where quality and patient safety are not slogans, but convictions. This is only achieved when change is embraced as our own, when we understand that preventing an infection is not about avoiding statistics: it's about protecting a person, a mother, a child, a grandparent who could have been part of our own family.

Therefore, doing what we are called to do—with conviction, with clarity, with evidence, with active listening, and with genuine commitment—is also exercising ethical leadership. Leadership that transforms because it convinces, not because it subjugates. Because it builds community, not bureaucracy. Because it reminds us that, even in the most adverse environments, it is always possible to aspire to something better.

Nothing more, and nothing less.