EDITORIAL https://doi.org/10.3329/jmcwh.v21i2.83676

ANTIMICROBIAL RESISTANCE, INFECTION PREVENTION AND CONTROL, AND PATIENT SAFETY.

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Infectious diseases continue to present a major threat to patient safety, carrying significant clinical and economic consequences. Healthcare-associated infections (HAIs) are illnesses acquired by patients while receiving medical treatment for other conditions in any healthcare setting, including hospitals and nursing homes. Many of these infections, however, can be prevented through effective infection prevention and control (IPC) strategies[1-3]. Improving patient safety in healthcare, therefore, demands a coordinated approach that addresses antimicrobial resistance (AMR) and strengthens IPC, as the two are closely interconnected.

AMR has become a serious global health challenge, endangering modern medicine, animal health, and food security. While resistance develops naturally through bacterial evolution, human actions—particularly the misuse and overuse of antibiotics and the non-compliance with IPC measures—have greatly accelerated its spread. Today, AMR is among the most urgent patient safety issues worldwide, with prevalence rising sharply in recent decades.

In 2008, the acronym ESKAPE was introduced[1], referring to six high-risk bacteria: *Enterococcus faecium, Staphylococcus aureus, Klebsiella pneumoniae, Acinetobacter baumannii, Pseudomonas aeruginosa,* and *Enterobacter*. These bacteria are of particular concern because they increasingly evade the effects of antibiotics.

Unlike a single, treatable disease, AMR is a complex and multifaceted phenomenon that undermines treatment outcomes for patients and weakens healthcare systems. It cannot be addressed with simple, technical fixes. Instead, it requires a multidisciplinary response at local, national, and global levels, involving collaboration across human health, animal health, and environmental sectors to protect the effectiveness of existing antibiotics[1].

Although AMR is a very complex problem and must be addressed according to a One Health approach, healthcare professionals have an important role in containing its impact on human health. Hospitals are particularly vulnerable to the development and spread of resistant organisms. Patients in acute care often face multiple risk factors, and factors such as high-intensity interventions, inappropriate antibiotic use and lapses in IPC can create conditions where AMR can thrive.

The relationship between AMR and IPC is two-way: effective IPC prevents the spread of resistant bacteria, while the rise of AMR increases the need for appropriate IPC.Basic practices such as proper hand hygiene, environmental cleaning, and patient isolation can substantially reduce infection rates, including those involving resistant strains. Lower infection rates reduce antibiotic use, which in turn slows the development of resistance.

A particularly troubling issue is the "paradox" of HAIs: patients are admitted for care but contract infections during treatment. HAIs, such as surgical site infections, bloodstream infections, pneumonia, and urinary tract infections, are common but often preventable, making them a key indicator of patient care quality[4].

Although best practices for IPC are well supported by evidence, they are often underutilised in practice.Despite the known burden of HAIs, their impact is often underestimated, leading to inadequate prevention efforts. In many health systems, there is a persistent gap between available scientific evidence and its application in clinical settings. Implementation of IPC measures requires strategies tailored to local contexts and supported by strong leadership.

Barriers to effective HAI prevention exist at multiple levels[2,3]:

- Individual: limited knowledge, awareness, or motivation among healthcare workers.
- Interpersonal and cultural: workplace norms, peer influence, and leadership engagement.
- Organisational and economic: shortages of resources, inefficient workflows, and structural obstacles to innovation.

Overcoming these challenges calls for comprehensive, multimodal interventions that address specific behavioural and systemic barriers. With well-designed IPC programs, up to 55% of HAIs[5] could be prevented, significantly improving patient safety and helping to control AMR.

In summary, HAIs remain a serious patient safety concern, but many can be prevented with effective IPC. AMR and IPC are fundamentally linked. Sustained, collaborative action is crucial to bridging the gap between evidence and practice, and ensuring safer care for all.

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