“Keep your friends close, keep your enemies closer.”

Niccòlo Machiavelli, The Prince

Man’s fate has been intricately intertwined with that of microbes since the beginning of his existence. Microbes are possibly our best friends. We share an exceptional symbiotic relationship with them, with each one of us harbouring almost 10-100 trillion microbiota in our bodies which forms about 10% of our body weight.1 They live on our body surfaces (gut, oral cavity, vagina, skin, etc), and also some of the really smart bacteria/archea merged with our cells about 1.5 billion years ago and became part of us.2 Today, they handle the energy economy in each of our cell efficiently and go by the name of mitochondria.3

They also make for formidable foes when they don the guise of pathogens, and mankind has been in a constant state of war with them. Our immune system evolved in response to their onslaughts, and we created an additional layer of defence in the form of antibiotics and antimicrobials. Despite the astounding depths of our understanding about them, we often find ourselves outwitted in the ongoing war. New pathogens emerge periodically to keep us on our toes as is evinced by emergence and spread of the Severe acute respiratory syndrome (SARS), Ebola, Zika and HIV epidemics. Development of multidrug resistance among bacteria, fungi and viruses is challenging our ability to fight back and herald difficult times ahead.4 Even diseases once considered eradicated (such as anthrax and smallpox) have a potential to make a comeback as a result of rogue intent.

We may not find it easy to describe our relationship with the microbes, but it makes eminent sense to update our knowledge about them constantly. This special issue of Medical Journal Armed Forces India (MJAFI) makes a sincere and valiant attempt at the same with a slew of original articles and reviews spanning the length and breadth of microbial world.

Enteric fever is endemic in India, and understanding the trends in development of resistance is of paramount importance to clinicians. The threat of drug resistance is folklore, and it is important to gather evidence on this critical aspect. In the same context, Joshi et al.5 studied the trends in antibiotic resistance in Salmonella typhi and Salmonella paratyphi-A isolates over the past 12 years from South India. They show that multidrug resistance (to chloramphenicol, ampicillin and cotrimoxazole) was relatively stable throughout the study period, whereas nalidixic acid resistance increased in both typhi and paratyphi; complete susceptibility to ceftriaxone and azithromycin was observed in this study.

The intravenous (IV) cannulas are a potential route for microorganisms to enter the bloodstream, resulting in a variety of local or systemic infections. There are sparse Indian data quantifying this menace. Rai et al.,6 in a cross-sectional study, have reported colonisation rates of IV cannulas to be more than 5% in a tertiary care setup and have suggested regular flushing every 6 h to reduce the same.

Methicillin-resistant Staphylococcus aureus (MRSA) is a common challenge in hospitals and is now increasingly seen in community settings. The regional variations in this threat are brought out by Bhowmik et al.7 as they evaluated MRSA in both community and hospital settings from North East India and found that mecA gene was responsible for methicillin resistance in most strains.

Tuberculosis (TB) remains an old foe, but conventional cultures in Lowenstein-Jenson (LJ) medium takes 4–6 weeks with an additional 4 weeks for antibiotic sensitivity. There remains an urgent need for simple, rapid and affordable diagnostic tests for TB to combat the great burden of the disease in developing countries. The study by Agarwal et al.8 evaluates microscopic observation drug susceptibility in more than 2400 samples compared to gold standard and reports excellent concordance (>95%) at a fraction of the cost (Rs. 200 per test).
Hepatitis C virus (HCV)–related liver disease is a significant cause of morbidity and mortality in patients with end-stage renal disease on dialysis. Roy et al. assessed the prevalence of HCV infection in patients on haemodialysis and found it to be 18.8% (range, 6.7–35.6%), with predominant genotype being 1a.

Global elimination of vaccine-preventable diseases such as measles, mumps and rubella remains a priority. Much media attention has accompanied the recent combined measles, mumps and rubella (MMR) vaccination drive in India, one of the largest vaccination drives in history. Sen et al. looked at serological evidence of susceptibility to measles, mumps and rubella by qualitative detection of IgG antibodies among 335 young individuals in the community and found 13–20% of them to be susceptible. These findings have implications to plan periodicity of vaccination campaign.

Pregnant women and infants are vulnerable for developing severe dengue. Nujum et al. studied the seroprevalence of dengue infections among pregnant women and their offspring. Seroprevalence of dengue was found to be 6.9% in antenatal women and 10.8% in cord blood, and maternal seropositivity was shown to be associated with low birth weight. The advent of antiretroviral therapy (ART) changed the face of HIV epidemic from a death warrant to a chronic manageable condition. The guidelines have undergone numerous updates in the last 2 decades, and the current guidelines recommend starting ART for all patients irrespective of their CD4 counts. An interesting systematic review and cost-effectiveness analysis by Patrikar et al. of the new World Health Organisation guidelines for India reports that incremental cost per additional life saved is around US$ 2500 (Rs 1.75 lakhs).

Fungal infections are ubiquitous in causing superficial skin infections. Vijendran et al. presented an interesting study report that the skin of patients with HIV may more frequently harbour common fungi than non-HIV individuals, with almost a fifth of them having fluconazole resistance. Invasive fungal diseases (IFDs) are difficult to diagnose and associated with high mortality rates, especially in the immunosuppressed. Early detection is crucial for appropriate antifungal therapy but difficult with existing methods. A molecular beacon assay has been evaluated as an alternative, and its efficacy is demonstrated by Kumar et al. It might be a promising tool for detecting and monitoring IFDs.

This cross section of articles represents but, a layer in the palimpsest of the choreography between man and microbes. While continuing to remind us of the challenges, the insights gained from these articles would help us refine diagnostic/treatment strategies and undertake suitable policy measures. This is a small but significant step forward in a long and ongoing struggle.

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