The Silent Pandemic

A Pandemia Silenciosa

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doi: 10.48687/lsj.131

In 2019, near 4.95 millions of people all over the world lost their life in association with multidrug-resistant bacterial infections,[1] only 1.5 million less than the number of deaths caused by SARS-CoV-2 infection during this two years and half of COVID-19 pandemic.[2] This gives no room for doubt that antimicrobial resistance (AMR) is a threat to human life and a major global public health concern that must be taken seriously by everyone without exception.

A special report from the Centers for Disease Control (CDC) recently published[3] underlines that in USA resistant hospital-onset infections and deaths both increased at least 15% during the first year of the pandemic. This data represents a setback from CDC´s 2019 report that showed a 27% reduction in antimicrobial-resistant infections in hospitals between 2012 and 2017. [4] The antibiotic use in USA dropped in 2021 compared with 2019 due to less use in outpatient setting but, in 2021, the rebound verified placed that value 3% above the one of 2019.[3] Available data has shown an alarming increase in resistant infections caused by carbapenem-resistant *Acinetobacter spp* (78%), *Candida auris* (60%), carbapenem-resistant Enterobacterales, multidrug-resistant *Pseudomonas aeruginosa* and ESBL-*producing* Enterobacterales (32% each), vancomycin-resistant *Enterococcus* (14%) and methicillin-resistant *Staphylococus aureus* (13%). CDC pointed out some principal explanatory reasons for this phenomenon [3]: i) increased and inappropriate use of antimicrobials during the pandemic, ii) shift of resources from infection control to COVID-19 fight, iii) disruption of surveillance systems and treatment programs. This agency recognizes that, despite all the investments that have been done to combat antimicrobial resistance, SARS-CoV-2 pandemic emphasized that more work is needed.

In Europe, a decreasing AMR trend was noted for several bacterial species under surveillance by European Antimicrobial Resistance Surveillance Network during 2016-2020, except for carbapenem resistance in *E. coli, K. pneumoniae* and *Acinectobacter spp* and vancomycin resistance in E. *faecium,* for which there was an increase.[5] This is a major concern and demands attention. This data suggests that there is dissemination of resistant clones in healthcare settings for which we have limited effective treatment options and represents morbi-mortality and health-care costs increase. Concerted actions to combat AMR throughout WHO European region are required.

Regarding the use of antimicrobials in Europe, during the period of 2014-2020, there was a 23% decrease in the total consumption of antibiotics,[6] suggesting that the global and local initiatives towards a prudent use have had a positive impact, especially in community setting. Most of this decrease happened between 2019 and 2020, impacted by COVID-19 pandemic. Hospital data from this period should be read cautiously and deserve further analysis. The apparent decrease in hospital antibiotic consumption expressed in DDD per 1000 inhabitants per day can be an increase if expressed in DDD per 100 bed-days.[6] A special attention should be given to the type of antibiotics consumed. If we consider the WHO's AWaRe Classification and the target of 60% consumption of access agents, data shows that we are yet far from that target.[7] This means that there are plenty opportunities to improve prescribing. Additional studies show an increasing trend of broad-spectrum antibiotic consumption in hospitals, with greater use of carbapenemes and polymyxins, which use have increased by 10% and 67% between 2011 and 2020.[6] Antibiotic stweardship initiatives should be reinforced in the future.

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Recebido/Received: 26/09/2022 **– Aceite/Accepted:** 27/09/2022 **– Publicado online/Published online:** 05 /08/2022 **– Publicado/Published:** 30/09/2022

In Portugal, globally, AMR is in a decreasing trend since 2013 which highlights the efforts made by our country through the Infection and Antimicrobial Resistance Prevention National Program (PPCIRA). The worrisome exception is for carbapenem-resistant *K. pneumonia rate,* that increased from 2% to 11.6% between 2013 and 2020. Antibiotic consumption in Portugal remains below the european average. Nevertheless there is an increase of the ratio large-spectrum/narrow spectrum of antibiotics and a rise of carbapenem consumption in 2020 and 2021 which should raise concern.[8] Despite the good results achieved in the last 9 years, there is room for improvement, namely in citizen´s literacy, precribing/antimicrobial stewardship, information/surveillance systems, good practices dissemination and recognition.

The need to elevate infection prevention and control in global health and political agenda was highlighted in the Seventy--Fifth World Health Assembly held in May of 2022 in Geneve. The Global Strategy on Infection Prevention and Control is currently being drafted for consideration for next year Assembly. Aligned with global concerns and trying to prepare the upcoming chalenges in AMR field, the portuguese government recently published a document in Republic Diary – Despacho 10901/20224.[9] This document introduces some changes to PPCIRA, not only in the governance model, but also in its scope, fostering the strenghth of connections to primary and long-term care, the work in close proximity with quality and safety commissions and the development of intersectorial initiatives to implement a OneHealth National Plan.

The emergence of COVID-19 pandemic has demonstrated us how important is to prepare public health systems globally and locally to fight multiple threats simultaneously. Antimicrobial resistance will not stop. This silent pandemic will remain and the potential for increase is real. The investment in preparedness, planning and prevention seems to be crucial if we want to be ready to meet the new challenges that lie ahead.

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