

# Establishment of the First National Antimicrobial Resistance Surveillance Program in the Maldives and Initial Findings

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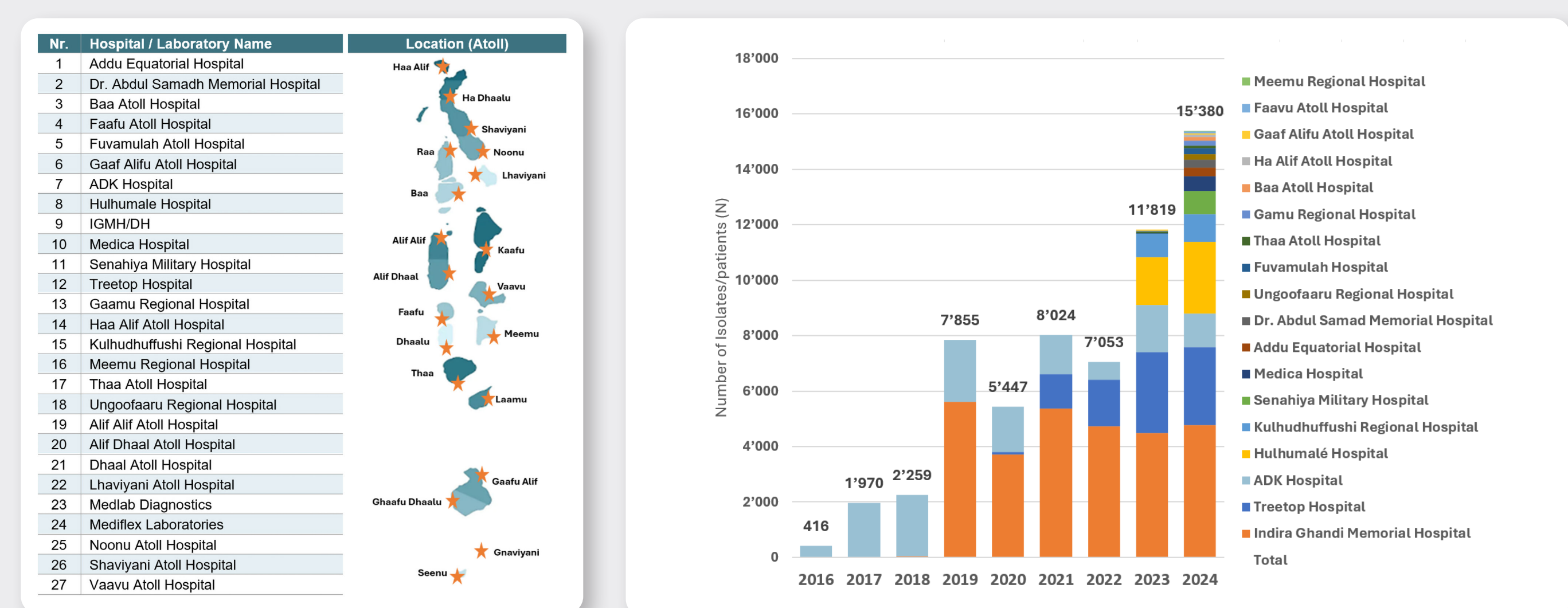
## Introduction

- Antimicrobial resistance (AMR) is a major threat to global public health.
- South Asia is one of three Super-regions with the highest forecasted AMR mortality rate by 2050; however, national-level AMR surveillance data is not available from all countries in the region.<sup>1</sup>
- The Maldives with its geographical distribution and resource limitations poses several challenges for establishing national AMR surveillance.<sup>2</sup>
- Despite high levels of antimicrobial usage, the country lacked standardized surveillance mechanisms prior to this initiative, resulting in a lack of national-level AMR data.

## Methods

- In 2024, the Maldives Ministry of Health, in collaboration with WHO and relevant stakeholders, developed the National AMR Surveillance Framework 2025–2027, outlining the strategic approach the government is taking to establish patient-based surveillance of AMR in the Maldives.<sup>3</sup>
- The framework adopted the WHO GLASS standard.<sup>4</sup>
- A baseline assessment was conducted, including stakeholder consultations, site visits and LAARC assessments.<sup>5</sup>
- Microbiological and clinical data were collected retrospectively for the period 2016–2024 from participating laboratories.
- WHONET was used for AMR data management/analysis.<sup>6</sup>

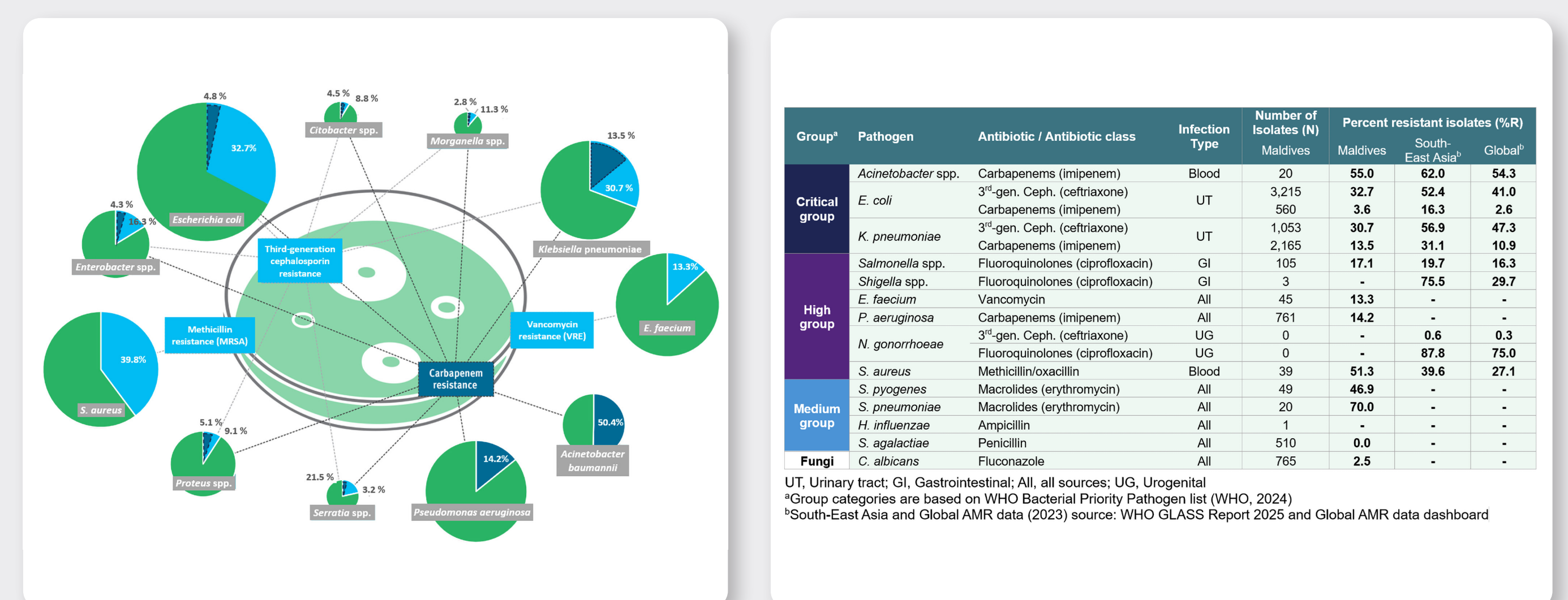
## Results 1



**Table/Figure 1.** Maldives National AMR surveillance sites, by Location (Atoll)

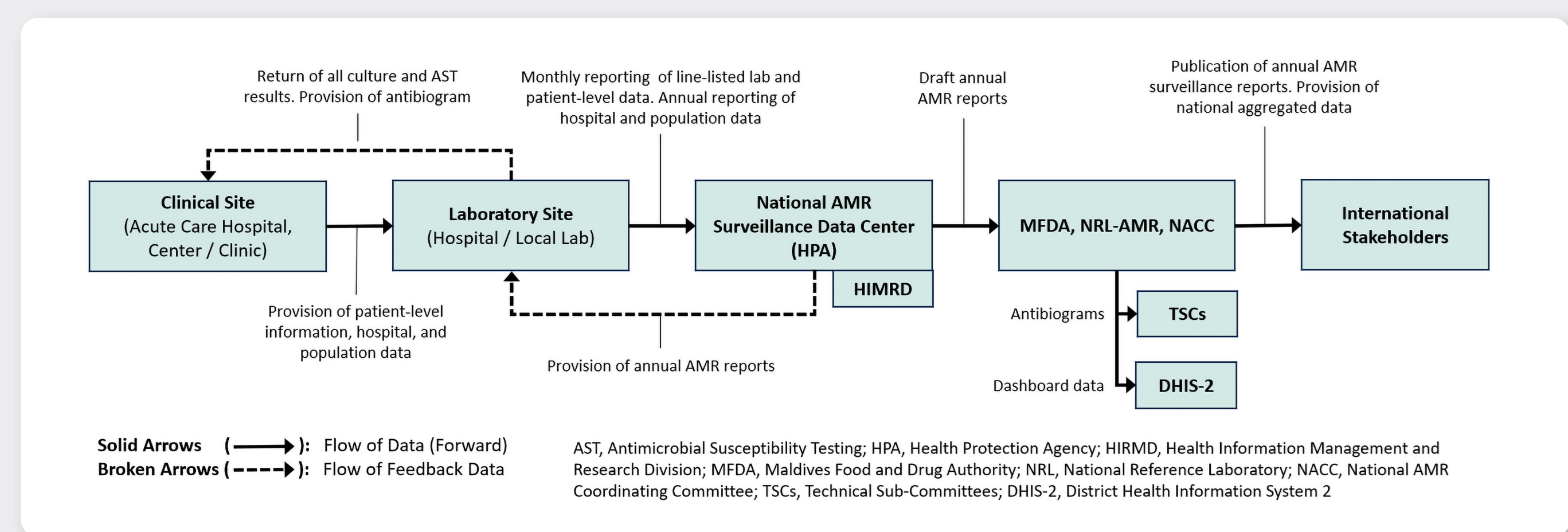
**Figure 2.** Distribution of isolates/patients, Maldives, 2016–2024, by year and surveillance site (n=56'005)

## Results 2

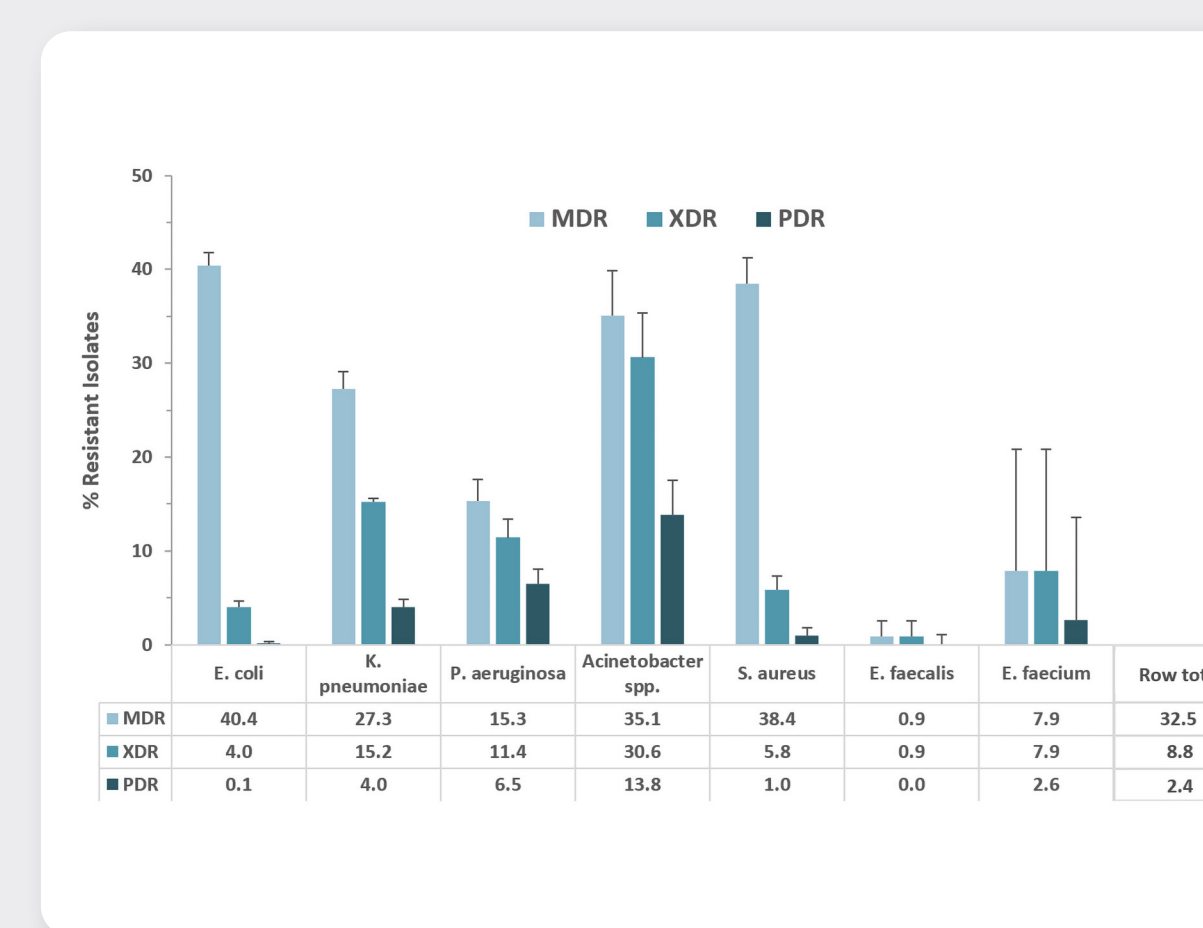


**Figure 4.** Percent of Isolates resistant (%) to 3rd-gen. cephalosporins, carbapenems, methicillin, and vancomycin, Maldives, 2024

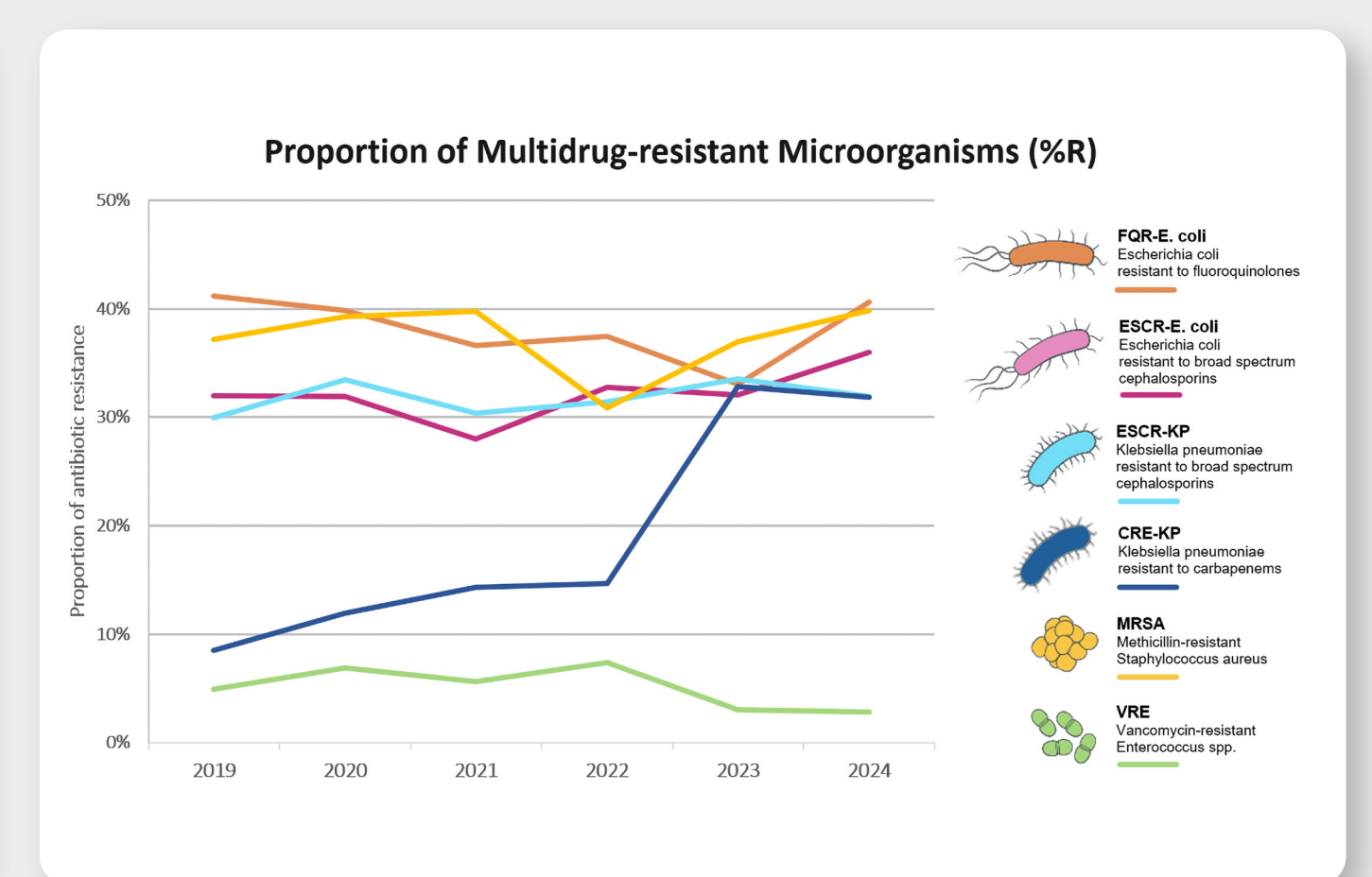
**Table 2.** Antimicrobial resistance among priority pathogens, Percent resistant isolates (%R), Maldives (2024), South-East Asia and Global (2023)<sup>8</sup>



**Figure 3.** AMR surveillance data flow within the Maldives AMR Surveillance System.



**Table 3.** Percentage of Isolates defined as MDR, XDR, PDR, Maldives, 2024. MDR, XDR, and PDR were defined as per Magiorakos et al., 2012<sup>9</sup>



**Figure 5.** Percentages of bacteria resistant (%R) to specific antibiotics, Maldives, Trend 2019–2024

- In 2025, a network of 27 AMR surveillance laboratories across all Atolls and administrative regions of the Maldives was established (**Table/Figure 1**).
- The selected sites are representative for the Maldives population in terms of geography, patient mix, and public-versus-private.
- For the reporting period 2016–2024, 18/27 laboratories (66,7%) submitted AMR data for n=56,005 non-duplicate isolates/patients to the National AMR surveillance program (**Figure 2**).
- The flow of AMR data is shown in **Figure 3**.
- The first national AMR Surveillance report was published in Dec 2025.<sup>7</sup>

- Analysis results show concerning high levels of resistance across AMR priority pathogens (**Figure 4, Table 2**).<sup>7</sup>
- Multidrug-resistance: Out of all AMR priority isolates (n=10,128, 100%), 32,5% (3,290) were classified as MDR, 8,8% (896) as possible XDR, and 2,4% (248) as possible PDR (**Table 3**).
- Resistance is increasing over time for 3<sup>rd</sup>/4<sup>th</sup>-generation cephalosporins, fluoroquinolones, and carbapenems (**Figure 5**).

## Conclusions

- Maldives has successfully established its first national AMR surveillance program, tailored to its unique vulnerabilities, and demonstrating the feasibility of a standardized mechanism to collect, analyse and report national-level AMR data.
- The findings reveal high, and in some cases increasing AMR levels, consistent with regional and global trends.<sup>7, 8</sup>
- The prevalence of AMR in the Maldives, based on this analysis, is generally higher than the global average, but lower than the regional average.
- Strengthening laboratory capacity, expanding surveillance coverage, standardizing testing practices, and enhancing stewardship and IPC programs will be essential to mitigate the growing threat of AMR and safeguard the effectiveness of antimicrobial therapy in the Maldives.

## References

- GRD 2021 Antimicrobial Resistance Collaborators. Global burden of bacterial antimicrobial resistance 1990–2021: a systematic analysis with forecasts to 2050. *Lancet* (2024)
- Ministry of Health. Maldives National Action Plan on Antimicrobial Resistance (2024–2029)
- Ministry of Health. Maldives National AMR Surveillance Framework (2025–2027)
- WHO. Global AMR and Use Surveillance System (GLASS)
- U.S. CDC. Laboratory Assessment of Antibiotic Resistance Testing Capacity (LAARC)
- WHONET. The Microbiology Laboratory Database Software. <https://whonet.org>
- Ministry of Health. Maldives National AMR Surveillance Report 2024
- WHO Global Antibiotic Resistance Surveillance Report 2025
- Magiorakos et al., *Clin. Microbiol. Infect.* 2012; 18: 268–281



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