

Hajj Specific Appropriate Medication and Antibiotic Prescription: A Call for Development

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Monitoring medication and antibiotic prescription has been in the World Health Organization (WHO)'s agenda since the end of the 20th century [1]. As monitoring such prescriptions would provide indicators for irresponsible use of drugs, follow-up on related policy effects, and quality control. However, most guidance on the matter requires updating, due to improvements in health services in most parts of the world since then, such as the availability of hospital information systems (HIS) for developing countries [2]. The WHO suggested some indicators for investigating drug use within health facilities, in 1993 [3]. Now, nearly 3 decades away, this guidance was not updated as there are still no indicators that utilize the potential reporting by HIS. Moreover, the WHO considers HIS an important building block for any health system and has devised a manual for monitoring them, which is more recent than the previously mentioned guidance [4]. As an appropriate practice in investigating drug use in health facilities, the WHO should include the ability of HIS to assess the utilization patterns of medication and commodities in their HIS assessment tool [4]. However, not all localities have installed HIS within their facilities, such with some countries in the middle east [5]. Therefore, further studies are required to update indicators for

medication and antibiotic use, considering the specificities of local health profiles or contexts, such as Hajj.

Hajj is a large mass gathering event that takes place in Makkah, Saudi Arabia, every year. Excluding the recent coronavirus disease 2019 pandemic, more than 2 million pilgrims attend this event from more than 180 countries [6]. Traveling from both hemispheres and overcrowding during Hajj rituals may expose pilgrims to several health risks [7]. These health risks can be categorized by their origin into environmental, human, and emergent [7–12]. Most of them can be avoided and mitigated by careful planning, thorough governance, and appropriate practices [13–15]. Irrefutably, the Saudi government has covered the planning and governance part of risk management, and they are constantly updating their approaches. However, the challenges in Hajj are with health service providers to improve their methods and invest in appropriate practices.

There were reports from medical practitioners of crowding on their clinics during Hajj, which may over-stress the locally deployed health services for the event [16]. Such high number of medical complaints would require similarly substantial volume of dispensed medication, which the health authorities provide for free during

the event [17]. A recent study found that the average number of medications prescribed per hospital outpatient's visit during Hajj is 2.6 [18], which is over the reference value that has been used to compare, 1.6–1.8 medication per encounter [19]. Additionally, reports of pilgrims receiving antibiotic prescription during Hajj ranged 47–95% [18, 20, 21], higher than the same reference values used above, 20–26.8% of encounters [19]. However, unnecessary and overuse of antibiotics accelerates the timeline for organisms to develop antimicrobial resistance (AMR) [22]. The aforementioned studies were conducted on hospital outpatient clinics during Hajj [18, 20]. However, this setting reflects 13% of pilgrims receiving health services from the Ministry of Health during Hajj [23]. While the majority of pilgrims (79%) visit primary health-care settings in Hajj [23]. Hence, further studies are required, including primary care settings, to complete the picture of medication and antibiotic utilization in Hajj, and to assist in guiding health-care workers with evidence-based appropriate prescription practices.

Although Hajj is a unique mass gathering with multiple variables that expresses diversity in each season; however, it is a potential focal point for dissemination of infectious organisms and AMR globally [24–27]. Although respiratory complaints are common in Hajj; however, patterns of AMR bacteria associated with upper respiratory tract infections (URTIs) require further investigation [28]. Whereas regarding infectious diseases, Hajj-specific guidance and supporting decision tools, which do not hinder the normal flow of the event, are still yet to be developed. Hence, to our knowledge, there are still no guidelines or scoring systems for prescribing antibiotics for URTIs that are developed for Hajj context. Therefore, we conducted a trial during Hajj 2018 to assess the rate of appropriate prescriptions for URTIs in Hajj (not published). Based on the results, we will attempt to develop a tool to help health-care workers in their practices for prescribing antibiotics for URTIs in Hajj.

This is a call for fellow Hajj researchers to develop indicators, reference values, guidance, and assessment tools for prescribing medications and antibiotic utilization during the event. Challenges for such studies include low synergy levels between different service authorities, near absence for expenditure on research, and recent research focus shift from communicable to noncommunicable diseases during Hajj [29–31]. Fortunately, recent reforms have provided basis for mitigating such obstacles, that is, the Saudi 2030 Vision. The vision enforces several reforms, which include 3 main aspects that can help Hajj researchers: strong roots in serving pilgrims, fulfilling lives through health, and effective governance through transparency and engagement [32]. From field experience: this has yet to settle to cover research studies that are not bound by institutional privileges. Moreover, the field of Hajj research is dynamic, and each season may have different and unique research opportunities due to the constant shift of interests. Conclusively, a researcher must be vigilant, present, and attentive to the interferences that may arise while conducting Hajj research, such skills and attributes are further tuned with each season experienced.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

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Author Contributions

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