Opinion

Beyond the 'One-Size-Fits-All' approach: Refining antimicrobial stewardship in Sri Lanka through stratification and triangulation

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Abstract

The recent launch of the national antimicrobial stewardship (AMS) programme by the Sri Lanka College of Microbiologists and the Ministry of Health marks a pivotal step in combating antimicrobial resistance. However, the current strategy, characterised largely by broad educational workshops and uniform awareness campaigns risks unintended consequences. This article critiques the 'one-size-fits-all' methodology, highlighting how unstratified restrictions have precipitated supply chain disruptions and antibiotic access barriers, particularly in apex tertiary care institutes. The paper argues that the prevailing "One Health" focus, while essential for public health, occasionally conflicts with patient-centric safety, specifically in the management of sepsis and provision of care to patients with sepsis and septic shock who are treated at critical care units. I propose a refined framework that moves beyond 'low-hanging fruit' by triangulating AMS with diagnostic stewardship and sepsis stewardship. This approach respects the heterogeneity of critical care patients and ensures that the drive to preserve antibiotics for the future does not compromise the safety of the patient today.

Keywords: Antimicrobial Stewardship (AMS). Stratification, Triangulation

Introduction

The global urgency to mitigate antimicrobial resistance (AMR) has led to the recent formalisation of antimicrobial stewardship (AMS) programmes in Sri Lanka, spearheaded by the Sri Lanka College of Microbiologists and the Ministry of Health. While the foundational objective — to rationalise antibiotic use — is commendable, the implementation strategy has largely relied on a generalised, didactic approach involving workshops and broad awareness campaigns intended for all levels of healthcare.[1]

While effective for raising baseline awareness, this 'one-size-fits-all' model is proving insufficient for the complex landscape of Sri Lankan healthcare. Emerging evidence suggests that without refinement, these programmes are creating friction between supply chain mechanisms and clinical needs, particularly in apex institutions such as national hospitals and provincial general hospitals where more complex care is provided than in district-level

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institutions. This article argues for a recalibration of the national AMS strategy, shifting from generalised restriction to a stratified, patient-centric model that integrates diagnostic and sepsis stewardship.

The apex institute paradox: One size does not fit all

A critical flaw in the current rollout is the lack of differentiation between healthcare tiers. The antibiotic requirements of a primary medical care unit, base hospitals or a District General Hospital differ vastly from those of apex tertiary institutes like the National Hospital of Sri Lanka (NHSL).

Apex institutes manage a disproportionate load of immunocompromised patients, including solid organ transplant recipients, oncology patients undergoing chemotherapy, and complex surgeries such as cardiothoracic, vascular and neurosurgical cases. These cohorts often require immediate access to broad-spectrum carbapenems or novel beta-lactam/beta-lactamase inhibitors.[2] However, stewardship metrics designed to curb 'excess' use in general wards are often applied indiscriminately to these high-complexity units, creating an access barrier in instances where escalation of antibiotics is required.

This lack of stratification has triggered unintended supply chain disruptions. When national consumption data is suppressed by restrictive stewardship policies, forecasting models may misinterpret 'suppressed demand' as 'low demand.' Consequently, central procurement agencies may reduce orders, leading to shortages of critical reserve antibiotics at apex centres.[3] For a transplant patient with septic shock, an administrative barrier to antibiotic access is as lethal as the resistance mechanism itself.

The ethical tension: Public health vs. patient-centricity

Modern AMS programmes are often nested within the 'One Health' framework, which prioritises ecological preservation and the protection of antibiotics for future generations. While valid, this public health utilitarianism can diverge from the immediate ethical imperative of the clinician: to save the specific patient under their care.[4]

In the context of severe infections, restrictive AMS policies can inadvertently hinder patient safety. The pressure to de-escalate or withhold can lead to delays in appropriate therapy for critically ill patients. A system that prioritises cost-benefits and future resistance patterns over the immediate survival of a septic patient has lost its ethical mooring. Quality healthcare must be defined not just by the reduction of defined daily doses (DDDs), but by clinical outcomes and mortality reduction.

The critical care conundrum and 'low-lying fruit'

The argument that AMS should target 'low-hanging fruit' — such as reducing antibiotic use in uncomplicated upper respiratory tract infections — is not a feasible solution for apex critical care units.

Intensive care units (ICUs) deal with immense patient heterogeneity. A standardised protocol that works for community-acquired pneumonia in a general ward may fail catastrophically in a neutropaenic patient with ventilator-associated pneumonia. Critical care requires 'front-end'

loading of appropriate antibiotics. Restrictive policies that create administrative hurdles (e.g. pre-authorisation requirements for meropenem in the middle of the night) act as access barriers that directly compromise survival in sepsis. Furthermore, formulary restrictions on novel antibiotics targeting multidrug-resistant (MDR) and extensively drug-resistant (XDR) Gram-negative organisms have hindered access to safer and more efficacious therapeutic options. While formulary limitation is a standard strategy in antibiotic stewardship, it creates significant barriers to the effective management of MDR and pan-drug-resistant (PDR) isolates, which are becoming increasingly prevalent in contemporary hospital settings.[4]

The solution: Triangulation of stewardship

To resolve these conflicts, the Sri Lankan AMS program must move beyond isolation. Antimicrobial stewardship cannot function effectively without the simultaneous integration of diagnostic stewardship and sepsis stewardship.

1. **Diagnostic stewardship:** Restriction of antibiotics without rapid diagnosis is blind guesswork. To safely withhold or de-escalate antibiotics, clinicians in apex institutes need rapid access to biomarkers (e.g. procalcitonin) and rapid molecular diagnostics (e.g., PCR panels for resistance genes). Improving the 'speed of answer' allows for confident, safe narrowing of therapy, rather than administrative forcing.[5]

2. **Sepsis stewardship:** The management of sepsis requires the timely administration of antibiotics. AMS objectives must not collide with the 'surviving sepsis campaign' guidelines. A 'sepsis stewardship' programme ensures that while we stop antibiotics when unnecessary, we also guarantee their immediate delivery when indicated.

Conclusion and recommendations

The current AMS framework in Sri Lanka serves as a necessary foundation, but it requires urgent refinement to avoid compromising the functionality of apex institutes. We propose the following:

1. **Stratified objectives:** Develop distinct AMS key performance indices for apex hospitals, provincial hospitals, and outpatient/GP sectors. Apex centres should focus on appropriate use rather than reduced use.

2. **Supply chain protection:** Decouple stewardship consumption data from procurement forecasting for 'Watch' and 'Reserve' group antibiotics to prevent artificial shortages.

3. **Triangulation:** Mandate that AMS committees include diagnostic and sepsis leads to ensure policies do not hinder the management of sepsis mimics (such as catastrophic inflammation) or critical infections.

4. **Patient-centricity:** Re-align stewardship goals to prioritise patient safety and clinical outcomes over purely economic or ecological metrics.

Antimicrobial stewardship is vital but must not become a barrier to care. By recognising the unique demands of high-complexity patients and integrating diagnostic precision, Sri Lanka can build a stewardship model that is safe, sustainable, and truly effective.

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