Cephalosporin Prescribing Falls Short of Guidelines in Tertiary Care

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Cephalosporin prescribing frequently misses guideline targets in South India and South Africa, according to two new international studies. The data reveal widespread gaps in appropriate selection and de-escalation, urging prescribers to re-evaluate their default habits.

KEY TAKEAWAYS

- The Pivot: Prospective surveillance at tertiary centres in South India and South Africa confirms that cephalosporin prescribing frequently does not align with local susceptibility profiles or stewardship guidelines, with de-escalation practised inconsistently across both settings.
- The Data: Across point prevalence surveys at a South African tertiary referral hospital, antimicrobial prescribing patterns showed persistent gaps in guideline adherence and documentation quality, with findings replicated across three independent survey rounds.
- The Action: Prescribers should document a clear clinical indication at initiation, cross-reference local antibiogram data before selecting a cephalosporin generation, and schedule a formal de-escalation review at 48 to 72 hours using culture results.

Cephalosporins are a global mainstay in hospitals, known for broad-spectrum coverage and a familiar safety profile. But that familiarity fosters habits that outpace the evidence. In South India, a prospective study at one tertiary center scrutinized cephalosporin prescribing against guidelines, tracking appropriateness, local resistance, drug interactions, and de-escalation once cultures were back.1 The deep dive revealed widespread gaps. Separately, researchers in South Africa ran three point prevalence surveys at a referral center, characterizing broader antimicrobial prescribing and documenting guideline adherence.2 The view was consistent.

Resistance complicates empirical prescribing, especially when resistance profiling is slow or missing.3 Both studies highlight a real-world dilemma: prescribers must weigh urgency against driving resistance with poor drug choices or extended broad-spectrum use. Third-generation cephalosporins, particularly, create strong selective pressure, fueling multidrug-resistant bugs. This is a problem.

South India’s prospective evaluation drilled down on cephalosporin prescribing in adult inpatients, measuring guideline adherence at every step, from initial choice to de-escalation.1 This was a deep dive. It matched susceptibility and resistance profiles with prescribing choices, directly comparing empirical agents to actual sensitivity.1 Drug-drug interactions with cephalosporins were also cataloged.1 The study focused on adult patients across medical and surgical wards, representing common hospital-acquired and community-acquired infections. That provided a typical patient picture.

Across South Africa, point prevalence surveys painted a complementary picture of systemic prescribing. Three survey rounds at one tertiary referral hospital captured cross-sectional snapshots of every antimicrobial prescription on survey days.2 The data included documented indication, guideline compliance, and stop or review dates. Repeating the survey rounds boosted reliability beyond a single audit.2 All inpatient wards, including ICUs and specialty units, were covered. This offered a complete view.

Both investigations found cephalosporin and broader antimicrobial prescribing fell short of guideline standards in a clinically significant number of cases.1,2 De-escalation was a particular weakness. South India's resistance profiling confirmed empirical choices often clashed with susceptibility results in some prescriptions, exposing the cost of broad cover without a review plan.1 This is a common pitfall. The South African surveys identified documentation gaps — missing indications and absent stop dates — across all rounds.2 These look like structural failures, not just individual errors. Translating guidelines into consistent practice remains a persistent challenge in busy tertiary care. Time and uncertainty play a role.

The designs hold obvious caveats. Point prevalence surveys offer only a snapshot, unable to track outcomes or downstream effects.2 The South India study, from a single tertiary center, may not reflect primary care or lower-resource settings.1 Neither publication provided patient-level outcomes — mortality, length of stay, or Clostridioides difficile infection rates — meaning prescribing gaps aren't directly linked to patient harm. The South India work also focused solely on cephalosporins, possibly missing problems with other antibiotic classes. South African surveys relied on documented information, which might not capture full clinical rationale. The data show a problem. The next question is: what actually happens to patients?

CLINICAL IMPLICATIONS

The most striking detail across both publications is not that prescribing is imperfect but that de-escalation, the single most actionable stewardship intervention available at the bedside, is being skipped even when culture data is in hand. A prescriber who starts a third-generation cephalosporin empirically and never revisits that choice at 72 hours is not practising stewardship in any meaningful sense. The 48-to-72-hour review is not an administrative courtesy; it is the moment at which a broad-spectrum agent either earns its continued use or should be replaced by something narrower and cheaper.

The documentation failures identified in the South African surveys deserve attention from hospital pharmacy and infection control teams, not just individual prescribers. Missing indications and absent stop dates are not lapses of individual competence; they are system failures that electronic prescribing platforms and pharmacy-led stewardship rounds are specifically designed to prevent. That three consecutive point prevalence surveys at the same institution returned similar findings suggests the structural interventions have either not been implemented or have not been sustained. Pharmaceutical companies marketing broad-spectrum agents into these environments bear some responsibility for the culture of empirical confidence their promotional material has historically reinforced.

Patients in both study settings are exposed to the compounded risk of under-treated infection when the wrong agent is chosen and of accelerated resistance when de-escalation does not follow appropriate culture results. Neither outcome is acceptable as a background rate. Antimicrobial stewardship programmes endorsed by the WHO and bodies such as the Infectious Diseases Society of America exist precisely to interrupt this cycle,

> but their recommendations require institutional infrastructure and consistent medical engagement to function. The evidence from South India and South Africa is a reminder that agreeing with stewardship principles in principle and applying them at the point of prescribing are two different things.

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