

High antimicrobial resistance among cancer patients with urinary tract infection in Nepal

This is a summary brief whose aim is to communicate, in simple language, the results of operational research on antimicrobial resistance under various scenarios.

Reference: Shrestha G, et.al. Bacterial Profile and Antibiotic Resistance among Cancer Patients with Urinary Tract Infection in a National Tertiary Cancer Hospital of Nepal. Tropical Medicine and Infectious Disease. 2021;6(2):49.

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Key Messages

- Among cancer patients in a cancer hospital in Nepal, almost all urine samples with bacteria growth were resistant to at least one antibiotic (97%) and the majority were multidrug resistant (89%).
- Cancer patients are immunosuppressed and may require the repeated use of antibiotics in their care. Therefore, these patients are at particular risk of developing septicaemia, or even death, when resistant to antibiotics, especially to those used in common infections, such as urinary tract infections.
- The hospital management should initiate an antimicrobial stewardship programme for clinical and laboratory staff with a focus on cancer care to ensure the rational use of antibiotics among cancer patients.

What is the problem and why is it important?

Cancer patients commonly develop urinary tract infections. When these infections are resistant to antibiotic treatment, these patients are particularly at risk for negative treatment outcomes due to being immunocompromised, having complex treatment modalities, and requiring repeated antibiotic treatments. Negative treatment outcomes for urinary tract infections can include septicaemia and even death.

The treatment of cancer patients who develop multidrug resistant infections is very challenging and is possible only by few available 'Reserve' antibiotics which are last resort, expensive antibiotics.

High levels of antibiotic resistance can also increase its spread. Therefore, we investigated the prevalence of AMR among the cancer patients with urinary tract infections in the largest cancer hospital of Nepal.

How did we measure it?

We conducted this study in B.P Koirala Memorial Cancer hospital in central Nepal. We used laboratory and medical data of all (308) cancer patients

Groups of antibiotics

'Access': used against a wide range of commonly encountered susceptible bacteria.

'Watch': should not be used unless 'Access' antibiotics are not effective.

'Reserve': "last resort" options, when all alternatives have failed or are not suitable.

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undergoing tests for presence of bacteria in urine between July 2018 and June 2019. We included only the first available result for each patient. We reported on resistance to antibiotics based on sensitivity testing results and defined multidrug resistance as resistance to three or more classes of antibiotics.

What did we find?

- Almost a quarter (73/308) of urine samples of cancer patients showed bacteria growth.
- Almost all (97%) urine samples with bacteria growth showed resistance to at least one antibiotic, and the majority (89%) were multidrug resistant.
- We observed high levels of resistance for many commonly used antibiotics ('Access' and 'Watch'). For antibiotics belonging to a group categorized as higher risk for development of AMR ('Watch') but frequently used for treatment of urinary tract infections, we observed resistance between 63-100%.

Implications

- Antibiotic resistance among cancer patients requires rationale prescribing of antibiotics to ensure high quality patient care and control its spread. The Hospital Management Committee can institute a hospital antimicrobial stewardship programme (see Box 1). The National Advisory Committee on AMR should expand existing national stewardship efforts to include cancer health facilities to strengthen the responsible and effective use of antibiotics and prevent the emergence of drug resistant infections in cancer patients.
- High levels of multidrug resistance among cancer patients leads to use of only few available "reserve" antibiotics and may lead to negative patient outcomes, including death. Nepal's AMR Committee can advocate for global efforts to develop novel antibiotics to combat resistant infections.

Box 1. Actions for Hospital Management on Antimicrobial Stewardship

1. Continue to **monitor and report** on antibiotic use and resistance among cancer patients with urinary tract infections
2. Implement **facility-specific recommendations**, such as guidelines, for antibiotic prescribing and sensitivity testing for cancer patients with urinary tract infections based on known resistance patterns
3. **Educate staff** on rational antibiotic use, resistance, and optimal prescribing, including for antibiotics commonly used for urinary tract infections