# Study on Antimicrobial Resistance and its Correlation with Antimicrobial Use

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**Background**

With the advent of antimicrobial agents, many deadly and crippling infectious diseases were treated and cured. But due to irrational use of antimicrobial agents the microbes were able to develop the antimicrobial resistance in the early stage than the expected time and frequency. This study was done with the objective of finding out the pattern and extent of antimicrobial usage and the extent of antimicrobial resistance in hospital out-patient department.

**Methods**

The study was done in Tribhuwan University Teaching Hospital from January to December 2001. The antimicrobial usage pattern was studied by analyzing 100 prescriptions in every two months for one year duration and the drug consumption was calculated in Defined Daily Dose for each drug. The antimicrobial resistance study was done by studying the antimicrobial resistance pattern of approximately 100 isolates in every 2 months for one year. The antimicrobial sensitivity test was done by using the disc diffusion method.

**Results**

The study revealed that for every prescription 0.8 antimicrobial agents was prescribed and of the total prescribed drugs 32% were antimicrobial agents. Amoxicillin was the most frequently prescribed antimicrobial agent. Among the most frequently isolated organisms, 59.3% of Staphylococcus was resistant to amoxicillin, 12.9% to ciprofloxacin and 12.9% of isolates were MRSA but only 7.9% of isolates were resistant to erythromycin. Among the gram-negative bacteria, 67.8% escheriachia coli were resistant to amoxicillin, 24% to ciprofloxacin and 45.6% to norfloxacin. In contrast, only 6.6% isolates of Salmonella typhi were resistant to Amoxicillin and all the isolates were sensitive to ciprofloxacin and ceftriaxxone.

**Conclusions**

There must be a hospital antimicrobial policy to treat the infections and physicians need to be educated on the local antimicrobial resistance pattern for rational prescribing.

**Keywords:** antimicrobial agents; antimicrobial resistance; antimicrobial usage; infections.