OPTIMISING USE OF ANTIBIOTICS IN ENDOUROLOGY A Study Of Population-Based Bacteriologi

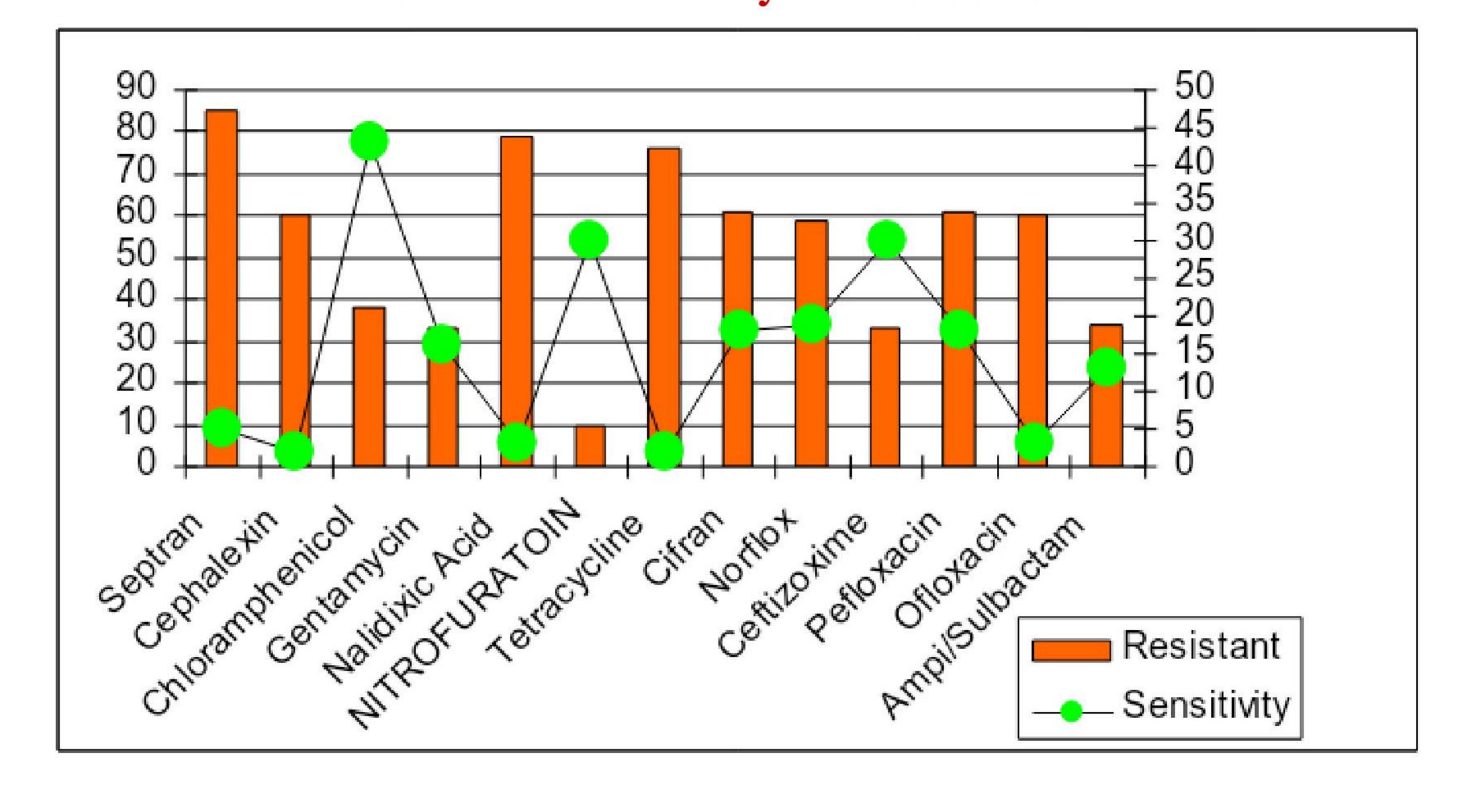
A Study Of Population-Based Bacteriological Surveillance For Limiting Antibiotic Resistance In India

PROF. DR. PRASHANT KUMAR PATTNAIK
DR. SATYAJEET PATTNAIK
S.S. UROLOGICAL INSTITUTE
MUMBAI

MATERIALS AND METHOD

- Community acquired Urinary tract infection was monitored in a population of **75,000 people** from Jan 2011- Dec 2017
- the common urinary pathogens with their sensitivity to antibiotics was determined.
- A total of **11,476 samples** of urine or urinary devices (stent tip, catheter tips, etc) were cultured and subjected to sensitivity.
- In another group, indoor patients undergoing any Urological intervention (which included indwelling catheters) were monitored similarly for pathogens.

E.coli sensitivity to antibiotics



DISCUSSION

- It is now well acknowledged that <u>overconsumption and misuse of</u> <u>antibiotics leads to development of microbial resistance.</u>
- The overwhelming reason to "optimize" the use of urinary antibiotics in a developing country, like India, is to contain costs.
- While the microbial pattern is not different from other countries³, the rapid resistance to newer antibiotics in India is worrisome.
- Nosocomial infections are more effectively contained by successful surveillance and prevention strategies³.

INTRODUCTION

- Unlike countries like Belgium and Netherlands, which maintain databases of Bacteriological Surveillance of their communities, there is a paucity of this kind of baseline information in a developing country like **India**.
- This knowledge of **urinary microbial flora** in the local community and the hospital environment, forms the basis for benchmarking antibiotic consumption and optimal antibiotic use^{1,2}.
- The data was queried for positive yield,
- ✓ whether the patient was on an antibiotic at the time of sample collection,
- ✓ the frequency of a particular microbe,
- ✓ <u>sensitivity/resistance</u> of each organism to each antibiotic and the community and hospital prevalence of a microbe.

Our results were compared to the microbial flora of the other local hospitals and literature. Antibiotic consumption patterns in the hospital were noted.

RESULTS

- The positive yield of culture of Urinary tract specimens was around
- 16-20% in the community-acquired specimens and
- 53% for hospital specimens.
- 52% of the patients were already started on antibiotics at the time of sample collection.
- E.coli was the commonest bacteria isolated (57%), followed by Kleibsiella (13.8%), Proteus (12.2%), and Pseudomonas (9.4%).

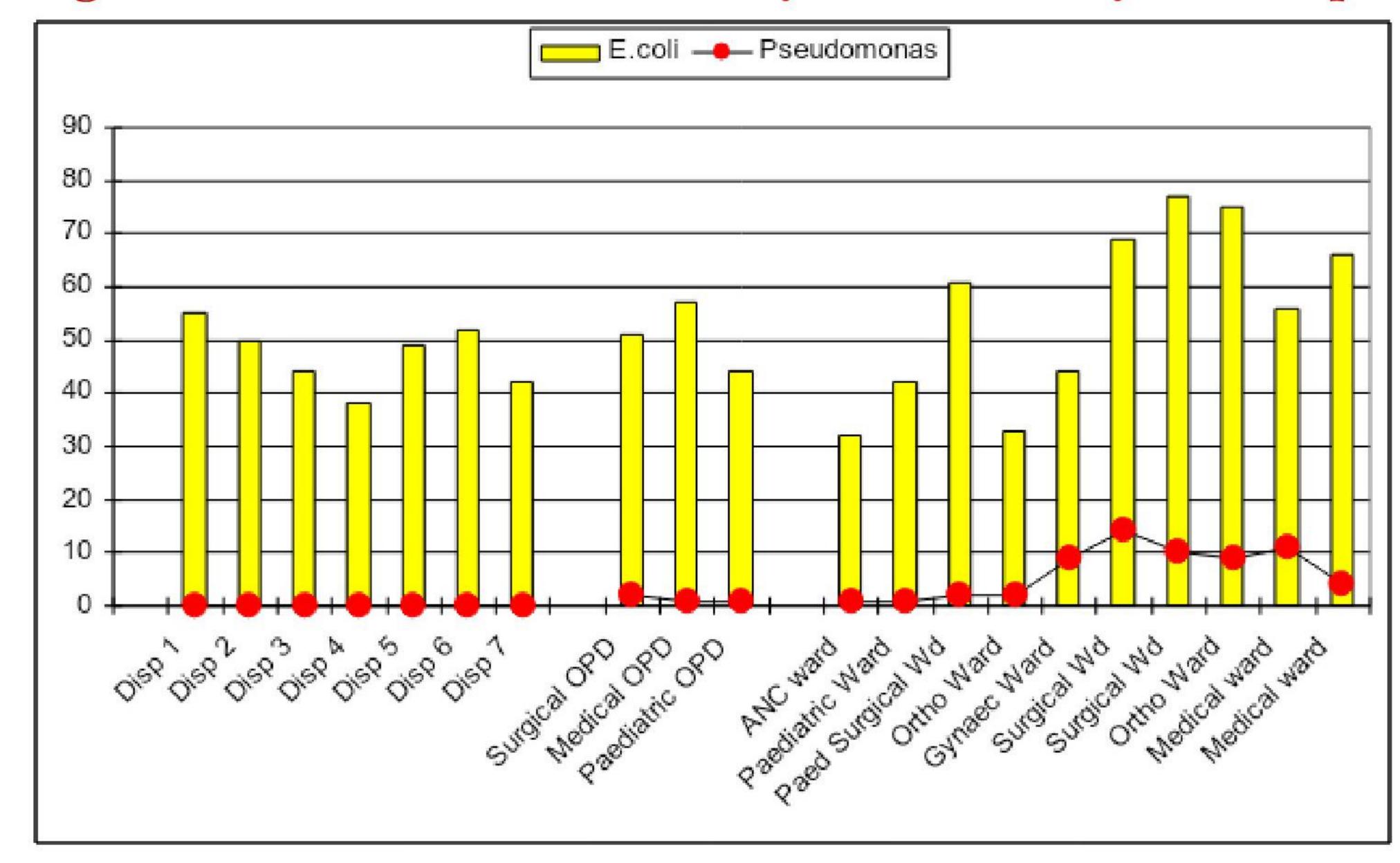
CONCLUSION

- Developing a Indian database registry is a national need alongwith improving surveillance of microbiologic and nosocomial infection data.
- While awaiting indigenous guidelines, we recommend the following strategies for optimum use of antibiotics in the Indian setting:
- 1. Bolus doses of the prophylactic antibiotic on induction of the endourological procedure,
- 2. Cycling of routine antibiotics for preventing resistance,
- 3. restricting the formulary,
- 4. effective use of Aminoglycosides as a single daily dose and
- 5. use of Nitrofurantoin for community acquired UTI.

AIMS OF THE STUDY

- In this seven-year prospective study,
- we analyse urinary specimens to determine the microbial flora and suggest strategies for optimal use of antibiotics to combat Urinary tract infections and prevent nosocomial infections³ in **India**.

Figure 1: E.coli distributed evenly in community and hospital



- E.coli was distributed evenly over the community and the hospital specimens.
- However Pseudomonas and mixed infections were found only in the subset of indoor cases with endourological intervention.
- Quinolones became rapidly resistant in nearly 50% of the cases.
- Nitrofurantion was sensitive in around 82%-86% of the cases over the study period, with development of slow resistance.
- It performed as well as Ceftizoxime.
- Gentamycin also showed resistance over the years, which forced its discontinuation of its routine use.
- On the other hand, discontinued antibiotics like Trimethoprim (98% organisms resistant) demonstrated a slow comeback, after 5 years of non-use.

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