Summer Training at Care Hospitals, Hyderabad

IIHMR UNIVERSITY

CARE HOSPITALS

A STUDY ON ANTIMICROBIAL RESISTANCE AND RISK ASSOCIATED WITH UNNECESSARY ANTIBIOTIC PRESCRIBING

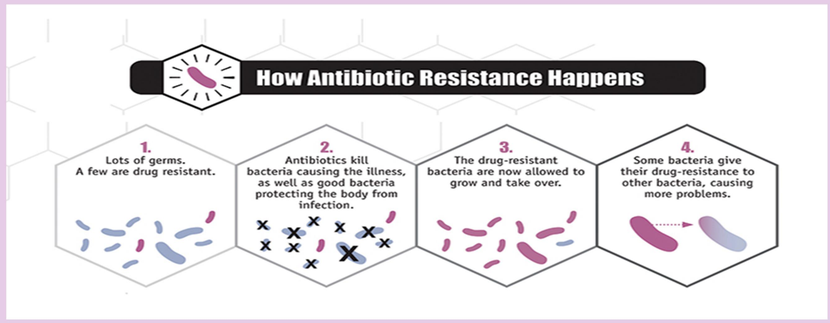
INTRODUCTION: Antimicrobial resistance is a global public health challenge, which has accelerated by the overuse of antibiotics worldwide. Increased antimicrobial resistance is the cause of severe infections, complications, longer hospital stays and increased mortality.

LITERATURE REVIEW:

- WHO's latest *Antimicrobial Resistance: Global Report on Surveillance*, released in February, highlighted that the information on resistance surveillance received from some 129 member countries showed very high rates of resistance in bacteria that cause common infections, including urinary tract infection and pneumonia, among others.
- Centres for Disease Control and Prevention (CDC) and Division of Healthcare Quality Promotion (DHQP) states that the use of unnecessary antibiotics is the single most important factor leading to antibiotic resistance around the world.
- CH.Unnikrishnam (Oct15,2014) states that the country's first official circular which was issued by the Central Drugs Standard Control Organization (CDSCO), in 2012, cautioned about development and spread of antimicrobial resistance due to overuse and misuse of antibiotics, and had estimated that 70-80% of prescriptions for antimicrobial drugs were probably advised unnecessarily by healthcare providers.

OBJECTIVES :

A. To study how antimicrobial resistance can be minimized.
B. To study how the unnecessary antibiotics prescription can be minimized.
C. To study how excessive costs can be minimized on following activities:
- Inappropriate /unnecessary therapy
- Suboptimal outcomes
- Toxicity & other adverse events
- Antimicrobial resistance



METHODOLOGY:

DURATION OF STUDY: One month from May 1st to May 31st

SAMPLE:

INCLUSION CRITERIA : Case files of patients who are on high end antibiotics and belong to the departments of

Nephrology
Internal medicine
Cardiology
CT-Paediatrics

SAMPLING METHOD: Stratified Random sampling

SAMPLE SIZE : Total no. of patient case files – 40 (10 from each department

AREA OF STUDY: All wards including critical care area

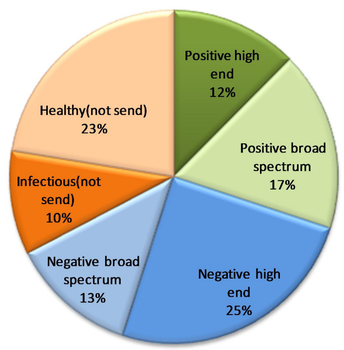
TYPE OF DATA : Primary and Secondary data

TECHNIQUE OF DATA COLLECTION :

- I have followed up the case files from the day of admission to the day of discharge.
- In each case file, I have noted down the patient's chief complaints, diagnosis, whether the culture has been sent before starting the high end antibiotics ,TLC count and other parameters of infection on the day of admission as well as on the day of culture been sent, dose ,duration, route of antibiotics administration, escalation and de-escalation of antibiotics based on antibiotic sensitivity report ,patient clinical signs and symptoms written down in progress notes ,patient condition and antibiotics prescribed while discharging the patient.

DATA ANALYSIS: By using MS Excel

Status Of Complaince & Non- Compliance



Among these cases 17 % of total cases are with unnecessary antibiotics , either it may be high end or broad spectrum.

High end antibiotics prescribed even the patient is sensitive to broad spectrum antibiotics

Case 1:

ANTIBIOTICS GIVEN	inj,meropenem 1 gm,IV,BD
OTHER ANTI-BIOTICS COULD HAVE BEEN GIVEN	piperacillin+tazo,ceftriaxone,cefaperazone+sulbactum,cefepime, ertapenem,imipenem,merapenem,amikacin,gentamycin,ciprofloxacin, trimethoprim+sulfamethaxazole

Case 2:

ANTIBIOTICS GIVEN	inj,invaz 1gm,IV,OD
OTHER ANTIBIOTICS COULD HAVE BEEN GIVEN	imipenem , mero-penem ,cefeperazone+sulbactum,ertape nem,amikacin, trimethoprim+sulfamethaxazol

Case 3:

ANTIBIOTICS GIVEN	inj,meropenem 500mg,IV,BD
OTHER ANTIBIOTICS COULD HAVE BEEN GIVEN	imipenem,ciprofloxacin,nitrofurantoin,norfloxacin,gentamycin, amikacin,ceftazidine,amox-clav,cotrimaxazole

Case 4:

ANTIBIOTICS GIVEN	inj,meropenem 500mg,IV,BD Inj.tigecycline 50 gm,IV,BD
OTHER ANTIBIOTICS COULD HAVE BEEN GIVEN	Sensitive to imipenem, mero-penem,cotrimaxazole,amikacin, tigecycline

High end antibiotics prescribed without culture being sent:

NAME OF ANTIBIOTIC	NUMBER OF DAYS GIVEN
Case 1 : tab.linezolid 600 mg,PO,BD	7 DAYS
Case 2 : inj.piptaz 4.5gm,IV,TID	4 DAYS
Case 3 : inj.cefepime+taz 1.125gm,IV,BD	5 DAYS
Case 4 : inj.piptaz 4.5 gm,IV,TID	3 DAYS

SUGGESTIONS:

- Order recommended cultures before antibiotics are given and start drugs promptly.
- Review should be done after 3 days of culture and for every seven days.
- Team of doctors and microbiologists should be there for reviewing. Online reviewing would help more than manual reviewing.
- Reassess within 48 hours and adjust Rx if necessary or stop Rx if indicated
- Except for 1st dose, when indent is went for 2nd dose ,only after assessing the patient file and condition, the process of issuing should continue.
- Manpower like clinical pharmacologists should be increased for doing audits.

SUGGESTIONS FOR DOCTORS BEFORE PRESCRIBING:

- Optimize IV to oral switch
- Higher dose shorter duration
- Quantify antibiotic use by DDD (Defined daily dose)& DOT (Days of therapy).

CONCLUSION:

The study concludes that the antibiotic resistance is no longer a prediction for the future; it is happening right now, and is putting at risk the ability to treat common infections in the community and hospitals. It has been found that the health care system is heading towards a post-antibiotic era, in which common infections and minor injuries, which have been treatable for decades, can once again kill. Perhaps the single most important action needed to greatly slow down the development and spread of antibiotic resistance infection is to change the way antibiotics are used. Stopping even some of the inappropriate and unnecessary use of antibiotics would help greatly in slowing down the spread of resistant bacteria.

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