Cumulative antimicrobial susceptibility and resistance patterns in a private hospital in Sri Lanka

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Introduction

The WHO estimates, by the year 2050 over 20 million deaths globally will be due to infections caused by AMR organisms. Every person on earth should recognize the magnitude of this problem and the threats already started in their own body. The prescribers, the consumers, both have a huge responsibility to prevent further damage within you and the all living beings. To win this battle there is a way of living with microbes harmoniously as we did since the evolution of life. There are many projects related to human microbiome and important discoveries are available to readers to understand the microbiome. It was proved that the infant microbiome impacts the development of immune, endocrine and central nervous systems early in life. Prescribing medical professional has a role to make an adequate inquiry in to the fact that there is a definitive infection which would warrant antibiotics. Diagnostic service provides an annual report on antimicrobial patterns to the clinicians since 2016. These data is of 2018 compared with previous two years.

Objectives

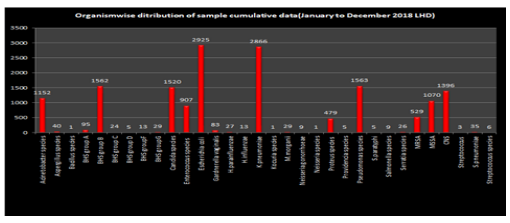
To provide cumulative annual antimicrobial patterns of the institute for the prescribing practitioners with highlights of resistance with suggestions and recommendations for best practices.

Methodology

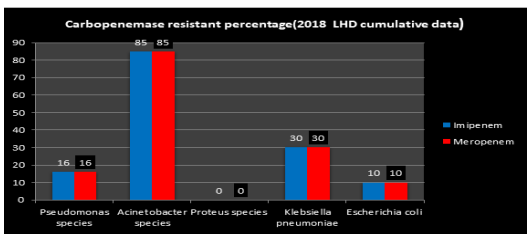
Data were filtered from the laboratory information system (CLIMS from SRL-India 2.0.2.0) in January 2019 for the year 2018 and was analyzed with Excel 2010.

Results

Graph 1.



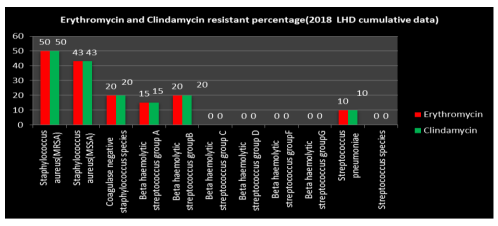
16, 500 samples grew organisms out of 50,000 total samples 2018. Urine cultures ranked highest; 10435 for the year. E.coli and klebsiella top the list nearly 3000 each. Over 1000 positives seen in Group B streptococci, pseudomonas, Candida, CNS and Acinetobacter.



Graph 2.

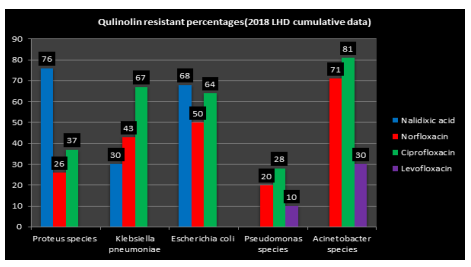
This denotes Carbapenem resistance in Acinetobacter which is 85% whilst Klebsiella is around 30%.For the Aminoglycosides Acinetobacter shows 70% resistance while klebsiella 35%

Graph 5



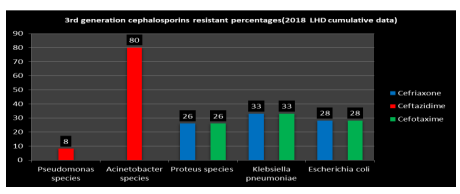
Erythromycin and clindamycin resistance (D form resistance) *Staph aureus* (MRSA) shows 50% while MSSA shows 43%. Group B strep and CNS shows 29% whereas *Strep pneumoniae* is 10%
MRSA, MSSA, CNS- all 3 remain 100% sensitive to mupirocin and Linezolid but showed resistance to Fusidic acid 35%, 16%, 43%

Graph 7



Ciprofloxacin resistance 81% by Acinetobacter, 67% by Klebsiella and 64% by E.coli. Nalidixic and Norfloxacin also similar but levofloxacin around 30%

Graph 8



Ceftazidime resistance 80% by Acinetobacter while other enterobactriae around 30%.
Candida species in general showed around 30% resistance to Clotrimazole, ketoconazole and fluconazole while being sensitive to all other antifungals.

Comparative data with 2017 1nd 2016 During the three years
Acinetobacter shows rise in resistance to carbapenem, aminoglycoside
-pseudomonas, proteus, Klebsiella and E.coli show gradual rise in carbapenem but below 50% resitance to aminiglycoside.
- D form inducible resistance)-MRSA 65% and highest in 2017 , MSSA and Streptococcus pneumoniae negligible resistance
-MRSA and other staphylococcus species shows resistance rising for fusidic acid but less than 35%.
-MSSA for fusidic acid remains around 10%
-Mupirocin and Linezolid still remains at a satisfactory susceptible level for all three types of organisms.

Conclusions and suggestions

These data of AMR pattern in a private hospital of Sri Lanka would not represent whole population. However it is noted during last three years the antimicrobial resistance is gradually increasing for most of the agents. Important points for all prescribers.:-Do not treat viral infections with antibiotics and do adequate tests to exclude. Most bacterial infections are self limiting. Use systematic sepsis assessment scores and evidence based policies and guidelines to use antibiotics. Devoid of polypharmacy. In life threatening severe sepsis early and suitable antibiotics are essential.
-Do not use prophylactics without guidance. When antibiotics are indicated for an established diagnosis, assure adequate doses, duration and adequate serum concentration and the concentration to the site of infection.