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ANTIBIOTIC SENSITIVITY PATTERN AMONG HOSPITAL ACQUIRED INFECTIONS IN A TERTIARY CARE HOSPITAL: AN ATTEMPT FOR FORMULATING ANTIBIOTIC POLICY

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ABSTRACT

This study was carried out for a period of February 2013 to January 2014 to prepare and follow antibiotic booklet in our teaching hospital. Among 7364 samples received for culture and sensitivity, 1074 were diagnosed as hospital acquired infections, based on guidelines suggested by CDC. An infection group from selected surgical & medical wards consists of wound swab/ pus/ burns (388), sputum (188), urine (catheter tip culture, 498). Based on antibiotic sensitivity by Kirby - Baurer disc diffusion method, 1st, 2nd and 3rd line antibiotics were chosen. After wide discussion in several clinical meetings and based on pharmacokinetics of 1st, 2nd and 3rd line antibiotics and the drugs as agreed by clinicians in selected groups were taken to obtain agreed formulary in order to prepare a booklet. This was circulated among clinicians, junior doctors and staff members etc., as per the guidelines suggested by infection control committee.

KEYWORDS: Antibiotic sensitivity, hospital acquired infections, nosocomial infection, and antibiotic policy.

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INTRODUCTION

Uncontrolled misuse of antibiotics is responsible for a general pool of resistant strains in the microbial population. Antibiotic resistance develops through process of mutation, plasmid transfer (conjugation), transposition etc.[1] If this happens where antibiotic is commonly used, resistant strains will be selected and become prevalent. It is not possible to completely eliminate this evolutionary phenomenon, but it can be slowed or modified by prudent antibiotic use. This requires the inclusion of an antibiotic policy in the infection control programme. Infections acquired in the hospital account for major causes of death, morbidity, functional disability and economic burden among the hospitalized patients. These nosocomial infections (NI) occur among 7-12% of the hospitalized patients globally with more than 1.4 million people suffering from the infectious complications acquired in the hospital.[2] Differences in the hospital settings preclude the generalization of results from a hospital to the other hospitals.[3, 4] Therefore; a prospective study was undertaken in our medical college and hospital, Perambalur, to estimate the incidence of Nosocomial infections in the medical and surgery wards and also to study the antimicrobial susceptibility of the hospital isolates.

Aim

This was to prepare a booklet for antibiotic policy in an attempt to standardize the use of antibiotics and to reduce the risk of emergence of drug resistant organisms in teaching hospital. To formulate the initial empirical therapy based on the likely microbial etiology, antimicrobial susceptibility patterns and also to choose the antimicrobial agent with the narrowest spectrum, least toxicity and cost effective drugs once culture reports were available. The incidence and infection rate was estimated to assess the annual rate of Hospital Acquired Infections.

MATERIALS AND METHODS

A prospective study among 1074 in-patients, with the hospital stay of more than 48 hours in the selected medical and surgical wards of medical teaching institution, was undertaken during February 2013-January 2014. The patients were followed-up clinico-bacteriologically until they were discharged or until death during hospitalization or the development of NIs. The specific nosocomial infections were diagnosed as per the criteria laid by the Centre for Disease Prevention and Control.[5] Antibiotic susceptibility was tested by the Kirby-Bauer disc-diffusion method.[6] For those with positive culture reports, repeat cultures were made weekly, till discharge for an evidence of new infection. Those with the similar isolates with the same antibiogram at subsequent cultures were reported to have a single episode of infection. Isolation of more than two organisms from a sample was considered as an evidence of contamination, and the repeat sample was collected. The antimicrobial sensitivity was tested to the following antibiotics as per the relevance: AMP- Ampicillin, AMC– Amoxyclavm, Gen– Gentamicin, COT– Cotrimoxazole, E– Erythromycin, CD – Clindamycin, Ak – Amikacin, CIP – Ciprofloxacin, OF – Ofloxacin, LE– Levofloxacin, Va- Vancomycin, CTR– Ceftriaxone, CTX– Cefotaxime, CPM- Cefepime, CFS- Cefoperazone+Sulbactam, TI – Ticarcillin CAZ- Ceftazidime, IMP- Imipenem, MRP- Meropenem, PIT- Piperacillin+Tazobactam, OX– Oxacillin, LZ– Linezolid, NX– Norfloxacin, NA- Nalidixic acid and NIT- Nitrofurantoin. Incidence of NI was expressed as infection percentage (number of patients infected per 100 patients) and infection rate (number of episodes of NI per 100 patients).[7]

Kirby- Bauer disk diffusion method

Standardized inoculum was inoculated with the help of sterile cotton swab on the surface of the agar plate & the plate was allowed to dry for 3-5 minutes. Discs of antimicrobial agents were applied to the surface of the agar plate & incubated at 37°c. After 18 hours, the results were recorded by comparing with standard ATCC stains.

Minimum Inhibitory Concentration

Muller Hinton agar with 2% NaCl and inoculums of 10^4cfu/ml were used to detect MIC. Serial dilutions of antimicrobial agents were prepared 1.5ml of each dilution was added to 13.5ml of melted Muller Hinton agar suspension & poured into plates. Many strains isolated from hospital acquired infection such as urine, sputum, pus/ burns/ swab inoculated & incubated at 35°c. After 24 hours, the results were recorded. The MICs determining susceptibility thresholds for the different drugs were as follows: ≤64 µg/ml for piperacillin, <16 µg/ml for ceftazidime, < 8 µg/ml for imipenem, and < 2 µg/ml for ciprofloxacin etc.[8, 9]

RESULTS

Of the 7364 patients, 1074 developed 2499 episodes of NI. Thus the overall infection percentage (Incidence) was 18 + 2.5% and infection rate of 20.94 + 3.05 % infection per 100 patients.

Among 7364 samples sent to the laboratory for culture and sensitivity during the period of February 2013 to January 2014, 1074 samples were from hospital acquired infections, based on antibiotic sensitivity pattern 1st, 2nd and 3rd line antibiotics were as follows:

Pus sample

Staphylococcus aureus

First line drugs	Second line drugs	Third line drugs
Gen - 64%	VA - 84% } MRSA AK - 91%	LZ – 95%
E - 46%	LE - 84%	CFS - 83%
COT -71%	CTR - 73%	CD - 79%
	CTX - 71%	

Beta haemolytic Streptococci

First line drugs	Second line drugs	Third line drugs
COT - 60%,	CD - 90%	CFS - 100%
E - 40%	CIP - 70%	
	Va - 100%	
	CTR - 90%	
	CAZ - 70%	

Gram Negative Bacilli

First line drugs	Second line drugs	Third line drugs
Gen - 53%	CTR - 68.5%	Imp - 100%
COT - 47%	CAZ - 47%	PIT - 94.8%
	AK - 89.5%	CFS - 79%
	OF - 47%	CPM - 42. 8%

Pseudomonas

First line drugs	Second line drugs	Third line drugs
Gen - 53%	CIP-50	Imp – 91.6%
	CTX-50	PIT - 91.6%
	CTR-67	MRP-67%
	OF - 67%	
	CAZ - 74%	

Urine sample

Staphylococcus aureus

First line drugs	Second line drugs	Third line drugs
Gen - 61%	Va - 100%	CFS - 80%
OX - 44%	AK - 56%	LZ - 98%
		CD - 61%

Enterococci

First line drugs	Second line drugs	Third line drugs
Gen - 64%	Va - 100%	LZ - 95%
COT - 40%	AK - 40%	

Gram Negative Bacilli

First line drugs	2nd drugs	3rd drugs
Gen - 50%	AK - 73%	CFS - 77%
NIT - 81%		IPM - 100%

Pseudomonas

First line drugs	2nd drugs	3rd drugs
Gen - 80%	CTR-60%	CPM – 50%
NX - 40%	CTX-60%	CFS- 80%
	OF - 60%	
	AK-60%	
	CAZ - 80%	

Sputum sample

Staphylococcus aureus

First line drugs	Second line drugs	Third line drugs
Gen - 86%	AK - 57%	CPM - 71%
E - 57%	TI – 57%	CFS - 86%
COT-57%	CTR – 71%	CD - 71%
OX-86%	CTX – 71%	LZ – 86%
	CIP – 57%	
	CAZ – 71%	
	OF – 71%	
	Va – 100 %	

Beta haemolytic Streptococci

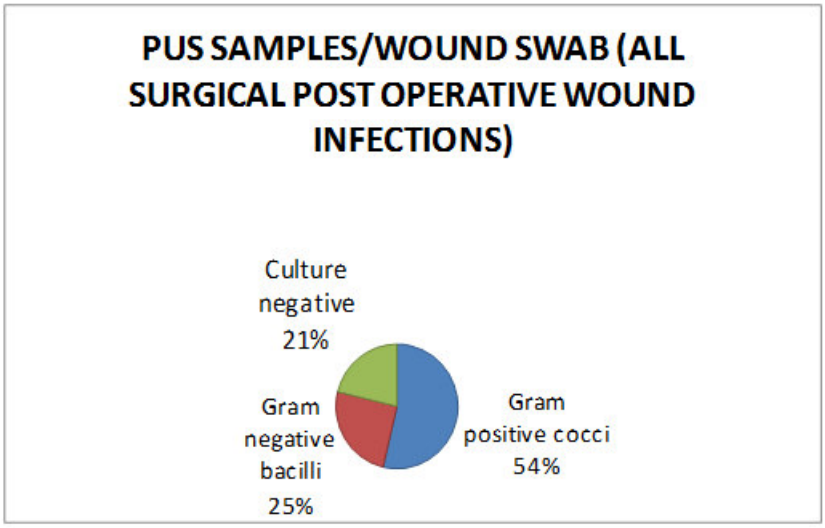
First line drugs	Second line drugs	Third line drugs
GEN - 63%	AK - 63%	CPM - 75%
	CTR - 50%	CFS - 87%
	Va - 100%	LZ - 87%
	CTX - 50%	

Pseudomonas

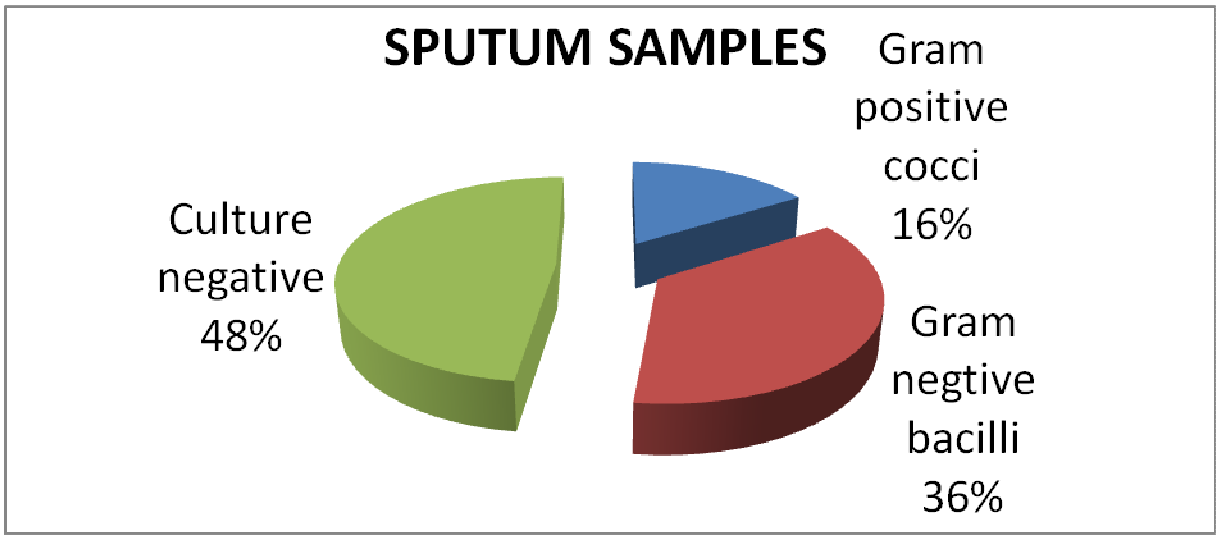
First line drugs	Second line drugs	Third line drugs
Gen - 83%	AK - 58%	PIT - 100%
CIP – 67%	CTR - 83%	CPM - 41%
OF – 67%	CTX - 75%	CFS - 83%
	CAZ - 75%	

Gram Negative Bacilli

First line drugs	Second line drugs	Third line drugs
Gen - 100%	AK - 78%	PIT-100%
CIP - 89%	CTR - 66%	CPM – 78%
OF - 89%	CAZ - 78%	CFS - 89%
		IPM - 100%



For a period of 1 year duration from Feb. 2013 to Jan 2014, out of 388 samples, 208[53.6%] were Gram positive cocci, 98[25.25%] were Gram negative bacilli. Remaining samples 82 were culture negative (21.13%). Out of 388 samples, 208[53.6%] were Gram positive cocci, Staph aureus 178[85.6%], Beta hemolytic Streptococci 20[9.6%], Enterococci 10[4.8%]. Out of 388 samples, 98[25.25%] were Gram negative bacilli, E.coli 40[40.8%], Pseudomonas aeruginosa 24[25%], Klebsiella pneumonia 14[14.3%], Citrobacter 10[10.2%], Proteus 48[8.2%], Acinetobacter 2[2%]. Staphylococcus aureus isolates were most resistant to ampicillin [89.8%], amoxyclav [77.5%], and ciprofloxacin [68.5%] and were most sensitive to amikacin [91.1%] and imipenem [85.4%]. Beta hemolytic streptococci isolates were most resistant to penicillin [80%], erythromycin [60%] and were most sensitive to vancomycin [100%], cafoperazone + sulbactam [100%] Esch.coli isolates were most resistant to ampicillin [94.73%], amoxyclav [89.4%]. All strains are sensitive to Imipenem [100%], followed by piperacillin and tazobactam [94.8%]. Pseudomonas aeruginosa isolates were most resistant to ciprofloxacin [50%], cefotaxime [50%] and were most sensitive to Imipenem [91.6%], piperacillin and tazobactam [91.6%]. Klebsiella pneumoniae isolates were most resistant to amoxyclav [85.7%], cotrimoxazole [71.5%] and cefipime [57.2%] and were most sensitive to Imipenem [100%], amikacin [100%] and piperacillin-tazobactam [100%] For a period of 1 year duration, out of 498 urine samples from catheter tip, 118[23.69%] were Gram positive cocci and 68[14%] were Gram negative bacilli. Remaining samples 312 (62%) were culture negative. Out of 498 samples, 180 [24%] were Gram positive cocci, Staph aureus 82[69%], Enterococci 26[22%], Beta hemolytic Streptococci 10[9%].Out of 498 samples, 68[25.25%] were Gram negative bacilli, E.coli 52[77%], Pseudomonas aeruginosa10 [14.70%], Citrobacter 4[6%], Acinetobacter2 [3%]. Staph aureus isolates were most resistant to ampicillin [87%], levofloxacin [78%], and erythromycin [76%]. All strains were sensitive to vancomycin [100%], followed by linezolid [98%] and imipenem [83%]. Enterococci isolates were most resistant to ampicillin [92%], amoxyclav [84%], penicillin[92%]. All strains are sensitive to vancomycin [100%], followed by linezolid [95%] and gentamicin [64%]. E.coli isolates were most resistant to ampicillin [96%], amoxyclav [96%], and nalidixic acid [96%]. All strains were sensitive to Imipenem [100%], followed by piperacillin+ tazobactam [96%] and nitrofurantoin [81%]. Pseudomonas isolates were most resistant to ticarcillin [80%], nitrofurantoin [60%], and nalidixic acid [60%]. All strains were sensitive to Imipenem [100%], followed by piperacillin + tazobactum [80%], gentamicin [80%] and cefoperazone+sulbactam [80%].



For a period of 1 year duration out of 188 samples, 30[15.95%] were Gram positive cocci, 68[36%] were Gram negative bacilli. Remaining samples 90 (48%) were culture negative. Out of 188 samples 30 [24%] were Gram positive cocci, Staph aureus 14[47%], Beta hemolytic Streptococci 16[53%]. Out of 188 samples, 68[36%] were Gram negative bacilli, Klebsiellapneumoniae24[35%], Pseudomonas aeruginosa20[29%], Citrobacter 10[15%], Acinetobacter8[12%], E.coli 6[9%] .Staph aureus isolates were most resistant to ampicillin[71%], amoxyclav[71%] .All strains were sensitive to vancomycin[100%], imipenem [100%], followed by linezolid[86%] and oxacillin [86%], cefoperazone+sulbactam [86%]. Beta hemolytic streptococci isolates were most resistant to cotrimoxazole [63%], ciprofloxacin[63%] and erythromycin [63%]. All strains were sensitive to vancomycin[100%], followed by linezolid[87%] and cefoperazone+sulbactam [87%].Klebsiella isolates were most resistant to ticarcillin [83%] and amoxyclav[67%]. All strains were sensitive to piperacillin+tazobactam [100%], followed by ceftriaxone [83%] and gentamicin [83%]. Pseudomonas isolates were most resistant to cefotaxime [55.3%]. All strains were sensitive to gentamicin [100%], imipenem [100%] and piperacillin+tazobactam [100%].

Hospital antibiotic policy

After wide discussion among the clinicians in clinical meetings and in a hospital acquired infection control committee conducted by Chairperson, Director and Dean. The following antibiotic policy is formulated for our teaching hospital:

URTI/LRTI	**Op**			**IP**	
	1 ST LINE DRUGS	**2ND LINE DRUGS**	**3 rd LINE DRUGS**	**1 ST LINE DRUGS**	**2ND LINE DRUGS**
GNB	T.Cephalexin (1g every 6 hr oral for 7 days)(OR) T.Cotrimaxole 5-7 days(400mg +80mg tds) (OR) T.Amoxyclav (T.625-tds 5to 7 days) (OR) T.Doxycycline 100 mg po bd	T.Levofloxacin 500mg bd for 5 – 7 days	T.Cefotaxime 100mg tid 5 days	Inj.Cefotaxime 2givbd 1-2 weeks **(or)** Inj.Cefoxitin 2g iv QID **(or)** Inj.Doxycycline 120mg bd**(or)** Inj.Gentamicin + injcefotaxime 1g IV **(or)** Inj.amikacin +	**For Pseudomonas**Inj.Pipeacillin + Taz (4.5 g IV q6h) **(or)** inj.Cefipime (1-2g IV q12hr) **(or)** inj. Imipenem (500mg IVq6h)(Pseudo) **(or)** Inj.Levofloxacin 750mg IVqd

				injcefotaxime	
GPC	T.Azithromycin (500mg po once followed by 250mg once daily dose for 3 or 5 days **(or)** Cephalexin (1g every 6 hr oral for 7 days) **(or)** T.Amoxyclav (T.625mg-tds 5to 7 days)	T.levofloxacin**(or)** T.oflaxcin 200 mg bd 5 days	T.linezolid		Inj.Vancomycin (MRSA) 500 mg to 2 g 6-8 hrs for 7-10 days **(or)** Inj.Linezolid(MRSA) (600 mg iv every 8 hrs

UTI	**Op**			**IP**
	1 ST LINE DRUGS	**2ND LINE DRUGS**	**3 rd LINE DRUGS**	
GNB	T.Nitrofurantoin 100 mg bd X 5 days **(or)** T.Cotrimaxole 5-7 days(400mg +80mg tds) **(or)** T.Cefixime 200 mg bd X5 days **(or)** T.Amoxyclav (T.625-tds 5to 7 days)mild to severe **(or)** T.Norfloxacin 400 mg bd X 7 days	T.Cefotaxime100mg 1-2 weeks oral **(or)** OfloxacinT.200mg bd 5-7 days **(or)** T.Levofloxacin 500 mg bd X 7 days	Inj.Meropenem 1g IV bdtds for 5-7 days	Inj.Ciprofloxacin iv-500mg bd**(or)** Inj.Amikacin (Inj.500 mg + 15mg/kg qid.IV) **(or)** T.Cefixime 200 mg bd X5 days
	OP 1ST LINE	**OP** 2ND LINE		IP
GPC	T.Norfloxacin400 mg bd X7 days**(or)** T.Cotrimaxazole (800mgsulfamethoxazole+160mg Trimethoprim) twice a day for 5 days **(or)** T.nitrofurantoin 100mg 4 times /day for 5 days**(or)**	T.Cefixime 200 mg bd X5 days		Inj.Amikacin (Inj.500 mg + 150mg/kg qid.IV) **(or)** Inj.Cefoperazone + sulbactam1.5g IV bd Or inj Azithromycin 500mg followed by 200mg once daily dose for 3 days or 5 days.
Note : ESBL producers – Impenem or Meropenem;for MRSA strains T.Linezolid or inj.Linezolid is used.				

Osteomylitis – cefixime + ofloxacin or Augmentin 625 TDS x 5 DAYS
Note :Osteomylitis – cefotaxime 1g iv bd for 21 days

Wound infections	Op			IP		
	1 ST LINE DRUGS	2ND LINE DRUGS	3 rd LINE DRUGS	1 ST LINE DRUGS	2ND LINE DRUGS	3 rd LINE DRUGS
GPC	T.Erythromycin (250mg + id) **(or)** T.Cotrimaxazole dose same as above**(or)** T.Cefotaxime. Dose same as above.	T.Cefixime 200 mg bd X5 days	T.Linezolid (oral every 8 hrs)	Inj.Ciprofloxacin iv – 500mgfor 5 – 7D **(or)** Inj.Cotrimaxole same as above or Inj.Ofloxacin 200mg 5-7days Inj.Cefuroxime 250mg bd 5 -7 days	injAmikacin (or) injCefotoxime (or) inj.ceftazidime	Inj.Piperacillin4 - 5 g IV q6h) inj.Cefipime (1-2g IV q12hr Inj.Impenem or Inj.Cefoperazone 1.5g +sulbactam IV bd or tid

For MRSA strains T.Linezolid for op cases and inj Vancomycin or Inj Linezolid.

Wound infections	Op		IP
	1 ST LINE DRUGS	2ND LINE DRUGS	
GNB	T.Cotrimaxazole – dose same as above T.Cefotaxime dose same as above -	T.Ofloxacin 200mg bid 5 days T. Levofloxacin 500mg bd	IV cefazoiln or Cefuroxime + Amikacin + Metronidazole(or) Inj cefotaxime+Metronidazole (or)inj ceftriaxone+metronidazole (or) Injceftazidime+metronidazole

Clean Wound			
	1 ST LINE DRUGS	2ND LINE DRUGS	3 rd LINE DRUGS
LSCS,Hysterectomy,normal vaginal dilation,cervicalencirclageetc, gastroduodenal,laproscopicprocedure,bilary tract procedure)	Inj. Cefotaxime 1g iv ½ hr before surgery followed by inj. Metronidazole 5oo mg iv tds OR inj.Ampicillin + sulbactam (OR) inj.Cefazolin 2g + Metronidazole 500 mg iv tds.	Inj.Cefaperazone + sulbactum Inj.Ceftriaxone 2g + Mero 500 mg	Inj.Meropenem 1g IV bdtds for 5-7 days

Contaminated (Infected) Wound		
	1 ST LINE DRUGS	**2ND LINE DRUGS**
Serosanguinous discharge	inj. Metronidazole 5oo mg iv tds X 5-7 days (or) inj .Augmentin 1 – 2g iv tds for 5 days (or) inj. Gen 80 mg iv (bd) for 5 days	inj. Piperacillin + Tazobactum 4.5 iv bd + inj. Metronidazole 5oo mg iv tds X 5-7 days

Clean contaminated Wound	1 ST LINE DRUGS	2ND LINE DRUGS
Hermoplasty,perineal tears Appendix	Metro 500 mg + Ampicillin 2g + sulbactam 1g (or) Inj. Cefotaxime 1g iv bdX 48 hrs (or) inj. Metronidazole 5oo mg iv tds X 48 hrs followed by oral inj.cefixime 200 mg bd X 5 days (or) inj.cefazolin 2g iv tds X 48 hrs (or) inj.ciprofloxacin 200mg iv bid for 5 days	Inj.Ceftriazone 2g + Metronidazole 500 mg (or) Inj.cefeperozone +sulbactam

Source: references nos. 10 and 11.
Note: (Opthalmology)

Clean wound – sub conj Inj. AK 125 mg (0.5ml) at the end of procedure
For Ophthalmic surgeries - clean wound- subconjunctival injections Amikacin 125 mg (0.5ml at the end of procedure). Contaminated infected wound – gentamicin, fluroquinolone (0.5 % norfloxacin)
Systemic – Ciprofloxacin (500 mg bd X 5), T.Cefixime (200 mg bd X5 days)
Some of side effects of drugs included in policy: Linezolid -myelosuppression, Piperacillin, Impenem, Cefepime– hypersensitivity, cotrimaxazole – hypersensitivity reactions, Fluoroquinolones-tendonitis, tendonrupture,T.cefotaxime (beta lactam drugs)-gastro intestinal disturbances, amino glycoside- renal parameters should be monitored.
Note: By Gram staining Gram positive cocci (GPC) or Gram negative bacilli (GNB) can be known with in 24 hrs for empirical therapy. C/s will be issued after 48 hrs and in **resistant cases** even after selecting antibiotic, based on C/s report, continue treatment according to clinical severity if the clinical condition permits send second sample for C/s and after 48 hrs collect the report, change the antibiotics according to c/s report.

DISCUSSION

Overall samples from all nosocomial infections (1074), infected samples were highest from surgical wards (89% culture positive) correlating with a similar finding by Rama Sikka, JK Mann, Deep et al.[12, 13] Current study shows the emergence of antibiotic resistance to base line antibiotics which were excluded from antibiotic policy.[14] In the present study, the overall infection percentage (Incidence) was 18 + 2.5% and infection rate of 20.94 + 3.05 % infection per 100 patients. Kamat US at et reported that the overall infection percentage was 20.68 ± 3.56% and infection rate of 33.93 ± 4.16 infections per 100 patients.[15] The isolated strains from NIs were routine strains such as Coagulase positive Staphylococci, Esch. Coli, klebsiella pneumonia, and pseudomonas aeruginosa that was usually prevalent in hospital environment. Coagulase positive Staphylococcus (86% from pus, 69% in urine, 47% in sputum samples) among gram positive and Esch. coli (pus 40.8%, urine77%, sputum7%) among Gram negative bacilli were being commonest isolated pathogens.[16] This was similar to study by Katarzyna Hryniewicza, Katarzyna Szczypabet al.[17] In our study 35.6% MRSA strains by oxacillin screening and 47.8% ESBL producers by cefotoxime screening were detected. Drug susceptibility of Ps. aeruginosa suggests

isolated strains in our study were S to Imipenam 90-100%, cefopodoxime+sulbactem-80% gentamicin 80% piperacillin + tazobactem 80% strains. Yehuda Carmeli et al. reported similar findings.[18] In general almost all strains from local area were S to Imipenem90-100, cefopodoxime+sulbactem- 80-100% gentamicin 60-80% piperacillin +tazobactem 80 -100% and they are treated as 3rd line antibiotics. MICs of different antibiotics for required pathogens were used to know the pharmacokinetics of the drug in order to prepare the present booklet. As the bacterial population exposed to insufficient concentration of drugs leads to development of resistant to that particular drug used for treatment. Therefore, MIC scores aid in improving outcomes for patients and preventing evolution of drug-resistant microbial strains.[19] In the present study, these antibiotics with maximum sensitivity were to be rarely prescribed. A similar indication also was made in tertiary hospital New Delhi.[20] Cycling of antibiotics that alternates antibiotic formulary every couple of months is to be followed. This technique alternates the formulary of antimicrobials between drug classes every couple of months and theoretically reduces the selective pressures of one antimicrobial class. Frequent antibiotic therapy constitutes an important and growing threat to the public health; rationalizing antibiotic therapy reduces the risk of development of Resistance.[21] After deriving antibiotic Sensitivity pattern and wide discussion in several HAICC meetings consisting of multidisciplinary team of clinical Microbiologist, Secretary, Director, Dean, Hospital superintendent, Clinical Pharmacologist, Epidemiologist, Orthopedecian, General surgeon, Obstetrician, Nursing Superintendent etc, antibiotic policy booklet was prepared. It took 7 months period to prepare booklet. This is prepared mainly for junior doctors because of criticism that specific policies for special units, which we argued would be under the responsibility of senior specialists and consultants. We were pleasantly surprised by the level of feedback that we obtained after preparing the booklet that was exactly correlating in a study by Borg et al.[22]

CONCLUSION

Among all samples including sputum, pus/ burn/ wound swab and Urine, coagulase positive Staphylococcus is the commonest isolate in current local area. It is showing 'sensitivity' to vancomycin, imipenem and Amikacin. (Second line antibiotics) 'Resistant' to Ampi and Amoxy +clav (base line). Next common isolate in urine and pus is Escherichia coli. It is Showing Sensitive to Imipenem, Piperacillin+tazobactam. Resistant to Ampicillin, Amoxycillin+clavulunicacid. In sputum sample, Klebsiella is the commonest. Isolate is Resistant to ticarcillin and amox+clav. Sensitive to PIT, CTR and Gentamicin. Thus for all emergency cases one of the second line antibiotics like Vancomycin, Imipenem, Piperacillin+tazobactem, ceftriaxone can be used. Base line drugs like Ampicillin and Amoxy+clav are of no use for local isolates. For routine isolates based on antibiogram Sensitive drugs can be aptly (based on pharmacokinetics, easy availability, side effects, route of administration etc) chosen and treated. Third line antibiotics are preserved as reserve drugs for emergency therapy. ESBL produces Imipenem or meropenem and for MRSA strains tablet linezolid or injection linezolid or inj. Vancomycin can be chosen after preliminary identification in cases of emergency. Experience of preparing a de novo antibiotic policy clearly gave interesting insight to the subject. High incidence of NIs and the etiological role played by the polyantimicrobial resistant strains of micro-organisms calls for the revival of the activities of the Infection Control Committee in the hospital. This is to ensure performance, quality assurance of diagnostic tests and susceptibility tests. There is also requirement of pre-licensing safety evaluation with consideration of development of resistance to human drugs. Pre-licensing safety evaluation and introducing legal requirements for marketing companies to collect appropriate evaluation and feed back may have great public health impact.

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