ORIGINAL PROF-2198

# ANTIMICROBIAL RESISTANCE;

## Hospital staff awareness at a tertiary care health facility

Dr. Shaeeb Mustafa, Dr. Shabeer Ahmad Wani, Dr. Asiya Wali

ABSTRACT… Introduction: Antimicrobial resistance is a global problem and awareness of hospital staff to it is limited. Objective: To study the awareness among hospital staff at a tertiary care health facility regarding knowledge of antimicrobial resistance. Study Design: It is a prospective observational study. Setting: Sheri Kashmir institute of medical sciences which is a tertiary care medical centre in Indian part of Kashmir. Period: Study was done over 6 month period from January 2011 to june 2011. Materials and Methods: A study was conducted in a tertiary care hospital among the hospital staff through a personal interview regarding their knowledge about antimicrobial resistance. Results: 86% of the hospital staff interviewed considered antimicrobial resistance is a significant national problem but only 52% considered it a problem in their own hospital. Clinicians considered that antimicrobial resistance is a problem more than other professionals. Majority of health professionals including clinician's rating of the knowledge of awareness of antimicrobial resistance was average or low. The most important force/factor to prescribe any antibiotic was patient's condition, while clinician's profit interest is having the least influence. Conclusions: This study concluded that the knowledge of awareness of antimicrobial resistance among health care professionals indicate that it is a national problem but far less a problem at their own hospital. The in-service education regarding antimicrobial resistance among the hospital staff was not up to the mark.

Key words: Antimicrobial resistance, hospital staff, global problem

Article Citation
Mustafa S, Wani SA, Wali A. Antimicrobial resistance; hospital staff awareness at a tertiary care health facility. Professional Med J 2013;20(6): 951-955.

## INTRODUCTION

Antimicrobial resistance is a growing problem1. Although there is talk of trying to help the problem by incentivizing pharmaceutical companies to develop new antibiotics, the truth is that won't help much2.

While local residents and hospital wish that they had been notified about the threat of antibiotic resistance coming to their neck of the woods, the hospital have a point that antibiotic resistance is common enough that much that one should assume it is a risk anywhere3-5.

Little is known about the real economic and health impact in developing world. This study was aimed to explore the knowledge among hospital staff regarding antimicrobial resistance, and in future to formulate a strategy to improve awareness in order to fight antimicrobial resistance problem.

## METHODOLOGY

This study was conducted at a tertiary care hospital in a developing country amongst the hospital staff. A written approval was taken from ethical committee of the publication wing of the hospital for conducting the study and publishing its results. Hospital administration was contacted to randomly select 100 employees; 20 from each group of medical professionals, nursing, pharmacy, laboratory and administration. Face to face interview was conducted by senior author of the study. All employees were promised that their identity will be kept anonymous. A preset proforma was used comprising of six parts:- background information of the department, and a set of questions for medical/clinical professionals, nursing professionals, pharmacy professionals, laboratory professionals and representatives from various administrative departments.

This study was conducted on selected employees at a tertiary care hospital, and overall in no way it represents the awareness of hospital employees in developing countries towards antimicrobial resistance as employees of secondary and primary care health facility are considered be less aware about the

| Gender | Clinical | | Nursing | | Pharmacy | | Laboratory | | Administrative | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | n | % | n | % | n | % | n | % | n | % | n | % |
| Female | 5 | 25 | 16 | 80 | 3 | 15 | 9 | 45 | 6 | 30 | 39 | 39 |
| Male | 15 | 75 | 4 | 20 | 17 | 85 | 11 | 55 | 14 | 70 | 61 | 61 |
| Total | 20 | 100 | 20 | 100 | 20 | 100 | 20 | 100 | 20 | 100 | 100 | 100 |
| **Qualification** | | | | | | | | | | | | |
| Diploma | 4 | 20 | 18 | 90 | 12 | 60 | 15 | 75 | Not applicable | | 49 | 61 |
| Degree | 16 | 80 | 2 | 10 | 8 | 40 | 5 | 25 | Not applicable | | 31 | 39 |
| Length of services | **Clinical** | | **Nursing** | | **Pharmacy** | | **Laboratory** | | **Administrative** | | **Total** | |
| Average length of service in months | 45.09 | | 38.08 | | 47.05 | | 52.03 | | 61.05 | | 48.66 | |

**Table-I. Profile of the interviewed staff regarding antimicrobial resistance**

antimicrobial resistance.

## RESULTS

This study was conducted at a tertiary care health facility with more than 750 inpatient beds and more than 400,000 outpatients in one year. The study was aimed at determining the knowledge of various cadres of professionals in the hospital on antimicrobial resistance and antibiotic use. A total of 100 staff members were interviewed. Their brief profile is in Table I. All the professionals interviewed had been in employment on an average for more than three years.

### Awareness of antimicrobial resistance

Of the 100 persons interviewed only 6 indicated that they were unaware of antimicrobial resistance. All of them were from administrative section. However, over 80% of the respondents in each of the four cadres of health professionals interviewed ranked the level of knowledge about antimicrobial resistance and related issues average or lower (Table II). Furthermore, upto 60% of the clinical and pharmacy staff indicated that they were not aware of any national antimicrobial resistance efforts and only 50% recalled an awareness campaign being undertaken in the hospital. The most common containment efforts that the respondents could report on were National Control of development of resistance in Tuberculosis while the areas of training that these respondents most commonly cited were related to infection control.

The opinion of hospital staff on the extent to which they thought antimicrobial resistance is a problem are given in Table III. Over 80% of participants in each group felt that antimicrobial resistance was a significant problem at global and national level but only few were aware of its significance in their hospital. Clinicians were more likely considering it a problem than other professionals. Majority were of opinion that hospital must be missing case of antimicrobial resistance due to lack of system of monitoring the patients.

Majority of clinician reported that causes for failure to carry out required tests were financial constraints on part of the patients or error by clinicians.

Based on the response of clinicians and pharmacy antimicrobials are prescribed when they are needed and occasionally when they are not needed (Table -IV).

| Health professional group | No awareness | Low awareness | Average awareness | High awareness |
|---|---|---|---|---|
| Clinicians | 1 (5%) | 2 (10%) | 15 (75%) | 2 (10%) |
| Nurses | 2 (10%) | 3 (15%) | 8 (40%) | 7 (35%) |
| Pharmacy | - | 2 (10%) | 15 (75%) | 3 (15%) |
| Laboratory | - | 6 (30%) | 10 (50%) | 4 (20%) |

**Table-II. Level of Awareness of Antimicrobial Resistance and related Issues of Health Care Providers**

| | Clinical | Nursing | Pharmacy | Laboratory | Administrative |
|---|---|---|---|---|---|
| Antimicrobial resistance is a significant problem nationally | 20 (100%) | 18 (90%) | 19 (95%) | 19 (95%) | 10 (50%) |
| Antimicrobial resistance is a significant in this hospital | 15 (75%) | 10 (50%) | 11 (55%) | 11 (55%) | 5 (25%) |
| Hospital is missing Antimicrobial resistance cases | 18 (90%) | 15 (75%) | 16 (80%) | 13 (65%) | - |

**Table-III. Opinion of respondents about antimicrobial resistance**

| Practice | Mean | Frequency | %age |
|---|---|---|---|
| Patients demanding antibiotics | 3.27 | 12 | 54 |
| Prescribing antibiotics when not needed | 2.82 | 7 | 31.8 |
| Required antibiotics not available | 2.27 | 6 | 27.3 |
| Not prescribing antibiotic when needed | 1.59 | - | - |

**Table-IV. Opinion of Clinicians and Pharmacy Staff on How Common Certain Antibiotics are used in the Hospital**

*Frequency = number of respondents ranking a practice as common based on a score of 4 or 5 on a scale of 1-5; where 1 is never happens and 5 is very common happening.*

## Determining the Antibiotic Choice

The clinical, nursing and pharmacy professionals were interviewed regarding the antibiotic choice. Ranking of 4 or 5 were aggregated and percentage of those who considered a factor having significant influence determined (Table V). All the three groups of professionals were of the opinion that choice of antibiotic depended on clinical presentation and prospect of treatment failure.

## DISCUSSION

The professionals interviewed in this study for their awareness regarding antimicrobial resistance agreed that there was seriousness of the problem of antimicrobial resistance at a global and national level but was less of a problem to this hospital. Except for clinicians other health professionals did not consider it a problem in their hospital. This means that these professionals are unlikely to take initiative to curb the development of antimicrobial resistance. It is also critical that microbiological services should be strengthened and system put in place to produce surveillance reports5. Furthermore, information about cases of antimicrobial resistance in the hospital should

| Factor | Clinical (n=20) | Nursing (n=20) | Pharmacy (n=20) |
|---|---|---|---|
| Patient critically ill or immuno-compromised | 20 (100%) | 17 (85%) | 18 (90%) |
| Treatment failure | 18 (90%) | 16 (80%) | 18 (90%) |
| Culture results | 18 (90%) | 15 (75%) | 13 (65%) |
| Interaction with colleagues and consultants | 19 (95%) | 12 (60%) | 11 (55%) |
| Cost of the medicine | 17 (85%) | 15 (75%) | 16 (80%) |
| Profit to clinic | 2 (10%) | 3 (15%) | 4 (20%) |

**Table-V. Determining the choice of antibiotic**

be disseminated to all staff to ensure that everybody is aware of the problem.

As training level and campaigns on antimicrobial resistance appeared to be limited in the hospital staff which is the reason that employee's perception regarding antimicrobial resistance is that it is not a problem in this hospital. Awareness campaigns and education have proved effective in some parts of the world in improving antibiotic use6,7. All cadres of health professionals as well as administrative staff have a role to play in ensuring that antimicrobial resistance is contained and useful medicines are prescribed as long as possible.

It is difficult to change prescribing habits and reduce use of antibiotics4,7. Some hospitals around the world have been able to put in place some controls on the use of antibiotics8. Our study did not investigate the level of compliance with such controls; it is significant that these controls are in place. There are reports of inappropriate use of antibiotics which was higher for unrestricted antibiotics than restricted ones9,10.

Erbay et al10 demonstrated a better appropriate antibiotic use. Tunger et al11 also found the ratio of rational antibiotics uses was 45.7%.

In conclusion this study shows that awareness of hospital staff regarding antimicrobial resistance needs to be significantly improved in order to reduce the incidence at a local level. In addition it seems desirable that hospitals should conduct surveillance studies on antimicrobial usage, to identify unique indicators of inappropriate drug use which could be employed as educational tools to improve antibiotic use by physicians12,13. This approach will provide information on the efficacy of hospital's infection control program and restricted antibiotic policy.



## REFERENCES

1. Thoung M, Shortgen F, Zazempa V, Giroy E,Soussy CJ Brun-Buisson C. Appropriate use of restricted antimicrobial agents in hospitals: the importance of empirical therapy and assisted re-evaluation. J Antimicro Chemothe 2000; 46: 501-8.

2. Hoşo lu S, Esen S, Ozturk R, Altindis M, Ertek M, Kaygusuz S, et al. The effect of a restriction policy on the antimicrobial consumption in Turkey: a prospective country-wide study. Eur J Clin Pharmacol. 2005; 61727-31.

3. Editorials antimicrobial resistance.BMJ 1998; 317;609.

4. Bhutta AZ, Ali SA. Reducing antibiotic use is not enough to curb the rise of resistance in the developing world 2008. Available online.

5. WHO.WHO Global Strategy for containment of antimicrobial resistance. 2001.

6. Finch RG, Metlany JP, Davery PG, Baker LJ. Educational interventions to improve antibiotic use in the community. Lancet infect Dis. 2004; 4:44-53.

7. Nordberg P, Monnet DL, Cars O. Antimicrobial drug resistance: options for concerned action. Background document for WHO Project. Geneva 2005.

8. Ozgenc O, Genc VE, Ari AA, Sibel EI, Sacar S, et al. Evaluation of the therapeutic use of antibiotics in Aegan region hospitals of Turkey: A multicentric study. Indian J Microbiol 2011; 29(2): 124-29.

9. Ozkurt Z, Erol S, Kadanali A, Ertek M, Ozden k, Tasyaran MA. Changes in Antibiotic use, cost and consumption after an antibiotic restriction policy applied by infectious disease specialists. Jpn J Infec Dis 2005; 21:308-12.

10. Erbay A, Colpan A, Bodur H, Cevik MA, Samore MH, Ergonul O. Evaluation of antibiotic use in a hospital with an antibiotic restriction policy. Int J Antimicrob Agents 2003; 21:308-12.

11. Tunger O, Dinc G, Oxbakkaloglu B, Atman UC, Algun U. Evaluation of rational antibiotic use. Int J Antimicrob Agents 2000; 15:131-5.

12. Raveh D, Levy Y, Schlesinger Y, Greenberg A, Rudansky B, Yinnon AM. Longitudinal surveillance of antibiotic use in the hospital. Q J Med 2001; 94: 141-52.

13. Davey PG, Marwick C, Appropriate Vs. inappropriate antimicrobial therapy. Clin Microbiol infect 2008; 14:15-21.

AUTHOR(S):
1. DR. SHAEEB MUSTAFA
MBBS, MD (Internal Medicine)
Assistant Consultant Pulmonary and Critical Care Medicine
King Fahad Medical City Riyadh (KSA)
2. DR. SHABEER AHMAD WANI
MBBS, MS (Surgery), M.Ch (Plastic Surgery),
MRCS (Glasgow)
Associate Consultant Plastic Surgery
King Fahad Medical City Riyadh (KSA)
3. DR. ASIYA WALI
MBBS, MD (Community Medicine)
Lecturer (Community Medicine)
Faculty of Medicine
King Fahad Medical City Riyadh (KSA)

Correspondence Address:
Dr. Shaeeb Mustafa
Assistant Consultant Pulmonary and Critical Care Medicine
King Fahad Medical City Riyadh (KSA)
P.O Box No. 59046
Zip Code: 11525
shmustafa@rediffmail.com

Article received on: 04/02/2013
Accepted for Publication: 01/09/2013
Received after proof reading: 03/12/2013