Continuing Medical Education on Infectious Diseases: A Saudi University Hospital Experience

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Background: Continuing medical education (CME) is an important and useful activity for updating knowledge in order to improve for outcome of health care. A CME update symposium on Infectious Diseases was therefore organized at the King Fahd Hospital of the University (KFHU), Al-Khobar, Saudi Arabia. Participants included clinicians, laboratory personnel and nursing staff from different hospitals and universities in Saudi Arabia.

Objectives: To report the proceedings of the first CME on Infectious Diseases in the region and to evaluate it using a questionnaire-based feedback.

Methodology: This CME was evaluated on specific feedback obtained on standardized evaluation forms provided during the symposium. The responses of 194 participants were statistically analyzed for the various components of the symposium.

Results and Conclusion: Salient important issues covered during the program are presented. The CME included five sessions: hospital acquired infections, immunology, mycotic diseases, malaria, leishmaniasis and virology. Some lacunae were also identified. The evaluation of the scientific sessions showed a satisfaction level of 3.98 ± 0.59, on a scale of five. As this CME activity proved successful on many counts, it was concluded that it was worthwhile to conduct updates on infectious diseases on a regular basis.

Key Words: Saudi Arabia, Symposium, Continuing Medical Education, Infectious Diseases.

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INTRODUCTION

Continuing medical education (CME) is an important and useful activity in updating the knowledge of practitioners in any medical specialty. CME activities which enable or reinforce knowledge are known to induce a positive change in physician performance and health care outcomes. A CME activity can be conducted in any of several formats available. Traditional CME approaches include symposia, conferences and courses, which may include didactic or interactive presentations. This is the commonest format used and it serves the useful purpose of keeping the participants aware of the updates. Like all CME methods, it has its limitations, though it has been found to be more effective in an interactive format. Recent CME approaches include problem based learning and computer based self-study. Another recent trend is the shift in CME from external mandate and control (which ensures participation but not necessarily learning) to self-audit.

A deficiency found in CME activities in the field of infectious diseases in the Eastern Province was identified as a “felt need” by laboratory, nursing and clinical personnel affiliated to various healthcare delivery centers in the region, during personal discussions on many occasions. Based on this rationale, it was decided to plan and organize an interactive symposium on infectious diseases, as a CME activity. This format was preferred as it was considered convenient and time-tested, for use in the first such activity in the region. The aim of the CME was to update the knowledge of participants with reference to the important infectious and immunological diseases prevalent in the region and to allow an exchange of ideas and information between different categories of healthcare providers. The CME was intended to cover various aspects of these diseases, such as epidemiology, etiopathogenesis, diagnosis and management.

It is well known that unless people's preferences and difficulties are taken into account, CME program in which they participate are not likely to succeed. The choice of the content of such programs should be designed to meet the requirements of the learners. Therefore, it was also decided that this CME activity would be evaluated. On the basis of specifically elicited participant feedback to assess its success, and to guide the initiations in planning and conducting all subsequent CME activities in the important field of infectious diseases.

The symposium on infectious diseases was organized on 11th and 12th March, 1998, at King Fahd Hospital of the University, Al-Khobar by the Department of Microbiology, College of Medicine, King Faisal University in collaboration with the various departments of the college, Ministry of Health (Regional Laboratory and Blood Bank, Maternity and Children’s Hospital, and Qatif Central Hospital), National Guards Health Affairs, King Saud University, and King Faisal Specialist Hospital and Research Center.

The aim of this paper is to present the salient features of the CME and the results of its evaluation.

METHODS

The organization of the CME symposium was a coordinated effort by different health care institutions in the region, with the author in charge. After obtaining the necessary permission from the heads of the various institutions, an organizing committee was formed and a series of meetings were held to plan the program. The aims of the CME were identified as follows: (1) to update the knowledge of participants in various aspects of important infectious and immunological diseases prevalent in the region and (2) to allow the exchange of ideas and information on infectious diseases among the different categories of...
healthcare providers. The specific course objectives were that at the end of the CME, the participants should be able to: (a) identify the important infectious and immunological diseases in the region (b) understand the extent of the problem, the epidemiology and pathogenesis of each of these and (c) demonstrate familiarity with the latest approaches to their diagnosis and management.

With these aims and objectives in mind, it was decided that the participants would include all categories of healthcare professionals i.e. doctors, nurses and medical technologists; as well as students undergoing training in these professions. The contents of the CME sessions were finalized on the basis of the importance of various diseases in the region, as well as the subjects of the papers submitted in response to the call for abstracts after the first announcement. The scientific committee classified the papers accepted for presentation at the CME into 6 sessions: hospital acquired infections, immunology, mycotic diseases, malaria, leishmaniasis and virology. The teaching and learning method was in the form of short interactive lectures (15 to 20 minutes, depending on the topic) with adequate time set aside for discussions at the end. A chairperson would act as the moderator for the sessions and facilitate audience-speaker interaction. A rapporteur would assist the chairperson.

It was also decided to carry out a questionnaire-based evaluation of the CME symposium. The process of evaluation of the CME started during the program. Two evaluation forms were distributed to the participants: the first was to evaluate each session, and the second to evaluate the services provided during the symposium. The evaluation had been modified from a format utilized in an earlier analysis by Baskin et al (1980).10

The first form was handed to the participants at the beginning of the session for completion and later return to the registration desk. It consisted of two parts (a) demographic data i.e. age, education, occupation and place of work and (b) evaluation statements related to the sessions, which included 8 statements graded on a Likert scale (strongly disagree, disagree, neither agree nor disagree, agree and strongly agree; Appendix).

The second form also consisted of two major parts: the first was demographic (similar to form 1), but the second inquired about services provided, in four sections relating to: housing, exhibition, food and beverages, and transportation. Each section had four statements and the participants had to select one of five choices.

Descriptive statistics including frequency, arithmetic mean and standard deviation, were used to describe the respondents’ answers. T-test and analysis of variance were used to compare satisfaction scores. Chi-square test was used to assess the possible association between the qualitative variables. The level of significance was set at <0.05. Microsoft Excel software was used to enter the data, and SPSS (Statistical Package for Social Sciences) for analysis of the data.

RESULTS
The salient features of the proceedings (presentations and discussions) of the 6 sessions held during the CME are described.

(1) Hospital acquired infections session
There were six presentations during this session on the following topics: (a) Susceptibility to antibiotics of high level gentamicin resistant enterococcal strains from Saudi Arabia and Britain (b) The use and abuse of chemotherapeutic drugs (c) Tuberculosis drug resistance in the Eastern Region (d) The impact of antimicrobial resistance on treatment of nosocomial pathogens (e) Methicillin-resistant Staphylococcus aureus (MRSA) and
(f) Management of MRSA in infected burn wounds. The presentations and discussion during this session emphasized the emergence of high-level gentamicin resistance in local isolates of *enterococcus* and an increase in the rate of isolation of MRSA in the Eastern Province (e.g. data from the KFU Microbiology Department showed a dramatic increase of MRSA, from 2.2% in 1993 to 23% in 1995, with the incidence in the intensive care unit as high as 37%). However, a decrease in the isolation of *Mycobacterium tuberculosis* and in its resistance to first line drugs as reported by one of the speakers was unexpected and a surprise to the participants. Alternative drugs such as the topical drugs mupirocin, fusidin, and bacitracin were suggested for burns patients, in whom MRSA infection is common.

(2) Immunology session
Key presentations and their discussion focused on the emerging problem of HIV infection and the relevance of screening for both primary and acquired immunodeficiency disorders in the region. Data was presented on the prevalence and pattern of immunodeficiency disorders in Saudi Arabia. One study, conducted on 2000 individuals, stated that the prevalence of primary immunodeficiency in Saudi Arabia was 2.3% (humoral type in 1.7% and cellular type in 0.5%). The first case of HIV negative CD4+ T lymphopenia from the Kingdom was reported in another study on 723 adults with cellular immunodeficiency, in which 59 HIV positive cases were also identified.

(3) Mycotic diseases session
The papers presented in this session were: (a) Candida septicemia in term and preterm neonates in Maternity and Children Hospital, Dammam: a seven year study and (b) The surprising role of yeasts and yeast-like fungi revealed in a 13-year survey of skin fungal infections in Eastern Province of Saudi Arabia. An increasing trend in systemic and superficial mycotic infections was evident from this session. For example, one study in 1997 showed an increase of candida septicemia from 0.65% in 1991 to 4.3%. Fortunately, due to better diagnosis and drugs, the survival rates have increased. During the discussion the significant risk factors for candida septicemia were identified. These included longer hospital stay, higher number of antibiotic days, especially on broad-spectrum antibiotics, and surgery. In a large study from the region, *Pityriasis versicolor* was ranked as the commonest skin mycoses and was, interestingly, more frequent than dermatophyte infections.

(4) Malaria session
Three papers were presented in this session, namely: (a) Malaria and its control in Saudi Arabia, (b) Clinicopathological aspects of malaria and (c) The hematological aspects of malaria infection. The complete scenario of malaria in the Kingdom emerged during the presentations and subsequent discussion. It was reported to be still highly endemic in the Southwest region (Gizan and Asir) - 83%, 92% and 96% of total, indigenous and malignant cases, respectively, are reported from this area. The overall prevalence rate is, however, rather low compared to other countries of the world. *Plasmodium falciparum* accounts for 90% of malarial infections. The main vectors are *Anopheles arabiensis* and *A. sergentii*. Transmission generally occurs from October to April, with a perennial pattern in the South. The main problems of malaria control were identified as parasite resistance to chloroquine and vector resistance to insecticides. The discussion in this session endorsed these findings and also focused on the need to use insecticide impregnated bed nets for control, the status of vaccine development and
the possible therapeutic and prophylactic use of the new drug, Artemesinin.

**(5) Leishmaniasis session:**
Papers were presented on the clinical diagnosis, immunopathology and ultrastructure of cutaneous leishmaniasis; recent advances in chemotherapy for leishmaniasis; and epidemiology and control of leishmaniasis in Saudi Arabia. During this session, specific clinical features for diagnosis of cutaneous leishmaniasis in Saudi Arabia were identified (i.e. volcanic nodules, exposed site location, paired or clustered lesions, skin crease orientation, iceberg nodule, subcutaneous nodules and satellite papules). The present status of leishmaniasis in Saudi Arabia was highlighted. *L. major* and *L. tropica* cause cutaneous leishmaniasis, while *L. donovani* infantum is responsible for infantile visceral leishmaniasis in the Kingdom. Many rodent species including *Psammomys obesus* act as reservoir hosts. The discussions also focused on the need to have vaccines for control and less toxic but more effective drugs than the antimony compounds used at present, especially in view of emerging resistance.

**(6) Virology session:**
The titles of presentations in this session were: (a) HIV/AIDS: where we are and where we are going (b) Chemokine receptor CCR5 and its contribution to HIV infection in Saudis (c) Recent advances in diagnostic virology (d) Management of AIDS patients and (e) Chemokines and virus infections. Recent advances in HIV/AIDS pathogenesis, diagnosis and treatment were discussed in this session. The first study of its kind from Saudi Arabia, showing the relationship between the chemokine coreceptor, CCR5, and HIV generated interest. The use of new technology in the diagnosis of viral infections was also covered. The discussion highlighted polymerase chain reaction (PCR) as an important advance for detecting and quantifying a virus by the amplification of its genes. The discussion of this presentation session ended the academic part of the CME, and was followed by the concluding remarks and vote of thanks.

Post-CME activities included the evaluation of the symposium, based on the responses to the questionnaire. Of the medical professionals attending the symposium, 194 completed our evaluation forms. Their mean age was 37.5 ± 12.2 years with minimum age of 20 years and maximum of 60 years. With regards to education, about 40% held a Bachelor’s degree, 22% held a Masters’ degree, and nearly 20% had either fellowships and/or Ph.D. By occupation, 36% were medical technologists and nurses, 16% interns, residents or registrars, and 14% were University faculty. Of the participants, 24% were from educational institutes while 70% were from hospitals (Table 1).

Almost all the participants (97%) agreed that the topics in the symposium were appropriate; they had learned a lot by attending; and that the presentations were relevant (88%). Only 20% mentioned that the time allocated for the sessions was not appropriate. About 84% of the participants enjoyed the sessions, but 36% said the talks could have been better. About 73% agreed that the panel discussions were relevant, while 16% disagreed. An evaluation of the suitability of the audiovisual materials showed that 96% of the participants were quite satisfied. The satisfaction rating for the scientific sessions was 3.98 ± 0.59 (out of 5), with slightly (though not significantly) higher satisfaction among female participants. Analysis by occupation revealed that nurses were significantly more satisfied than other job categories (p = 0.02). No other significant differences were found on the data analysis.
Table 1: Demographic profile of symposium participants

| Demographic variable | No. (%) |
|----------------------|---------|
| **Sex:**             |         |
| Male                 | 62 (32.6) |
| Females              | 138 (67.4) |
| **Education:**       |         |
| Bachelors' degree    | 76 (39.2) |
| Diploma              | 14 (7.2) |
| Masters' degree      | 43 (22.2) |
| Fellowship           | 15 (7.7) |
| PhD                  | 23 (11.9) |
| Others               | 23 (11.9) |
| **Occupation:**      |         |
| Medical Technologists| 32 (16.5) |
| Nurses               | 37 (19.1) |
| Intern               | 1 (0.5) |
| Registrar            | 1 (0.5) |
| Senior Registrar     | 4 (2.1) |
| Resident             | 25 (12.9) |
| Assistant Professor  | 19 (9.8) |
| Associate Professor  | 6 (3.1) |
| Professors           | 2 (1.0) |
| Students and others  | 67 (34.6) |
| **Place of work:**   |         |
| Educational          | 47 (24.2) |
| Hospital             | 135 (69.2) |
| Primary Health Care  | 2 (1.0) |
| Others               | 10 (5.1) |

The evaluation of other services provided at the symposium on the basis of the second form was mainly meant to help with the administrative aspects of organizing any subsequent CME. The feedback from this evaluation was also satisfactory and useful (data not presented).

DISCUSSION

This symposium was of interest to a wide spectrum of laboratory and clinical personnel from various hospitals in the Eastern Province, as is evident from the occupations and educational qualifications of the participants, listed in Table 1. The interest of younger medical staff (interns, residents and registrars, students) is also obvious from Table 1. This was particularly gratifying, in view of the fact that a recently published study from our institution found a lack of adequate undergraduate exposure to the clinical laboratories and recommended orientation courses for new medical graduates. We expect that such CME programs, with an active involvement of laboratory and clinical personnel, would also go a long way in meeting this need. This is also suggested by the results of the evaluation of the symposium, which indicates a high level of satisfaction among most participants.

Traditional forms of CME (like symposia) not withstanding their limitations still serve an important purpose, in keeping participants updated in their respective fields. They are not likely to succeed if the choice of their content is not tailored to meet best, needs of the participants. Consequently, it is necessary to objectively evaluate CME courses.

Evaluation is often understood as a tool of external control rather than an instrument of self-control and feedback for the teachers and organizers of CME events. It was intended to serve as a mechanism to guide the organizers to improve on any future arrangement of CME activities. The evaluation indicated that the symposium had met the expectations of the participants quite successfully, as the high satisfaction rate (3.75 ± 0.96 out of 5) shows.

The evaluation also revealed areas of the CME, which have room for improvement, i.e. the quality of talks and selection of speakers, and the active direction and guidance of the discussions by moderators. The evaluation of this CME also helped us to realize the limitations of the questionnaire method of evaluation used. More insight can be gained by following techniques of evaluation that objectively measure participant’s post-CME performance and actual benefit in terms of practical health care outcome. It is now known that factors that increase learner moti-
vation depend not only on attendance at CME activities but also on the introduction of assessment mechanisms that objectively measure the actual desired advancement of the learners.9

The stratification of evaluation results on the basis of occupation did not yield any significant differences in the level of satisfaction between different groups, with the exception of a higher rating given to the CME by nursing staff (p=0.02). The finding that the nursing staff were even more satisfied with the symposium than other occupational groups indicates that it may be more advantageous to conduct separate CME activities for different occupational groups. Arranging multiple parallel sessions for different groups and dividing the participants into smaller groups based on qualifications and requirements are other options which should be considered for the future.

The cost of CME activities is heavy and can be a burdensome to the health authorities and medical institutions. Corporate sponsorship was obtained to part of the cost of the activity under discussion. Such contributions from the medical/pharmaceutical industry are acceptable, provided quality control is assured and a conflict of interest is avoided.9

We conclude from the successful evaluation of this first symposium that such an infectious diseases update CME, which encourages interaction between different groups of healthcare providers and helps them to learn together, should be regularly organized for the region in the future.

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