Medical Education

Continuing medical education on antiretroviral therapy in HIV/AIDS in India: Needs assessment and impact on clinicians and allied health personnel

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ABSTRACT

Background. Clinicians and associated health professionals charged with prescribing antiretroviral therapy (ART) deal with continuously evolving new drugs and combinations. To meet the needs of clinicians in India for ongoing education in this field, continuing medical education (CME) programmes on ART for HIV/AIDS were developed, conducted, evaluated and revised. Over a 2-year period, 2005–2007, 3 CME programmes for ART were conducted for physicians and a fourth (predominantly) for paediatricians.

Methods. Both 1- and 2-day CME programmes on various aspects of ART were held on weekends for professionals treating patients with AIDS in Delhi and adjacent states. Topics included characteristics of ART drugs, their dosages, monitoring and toxicity management, adherence, complications of therapy, dealing with treatment failure and HIV co-infections. These topics were addressed in lectures and group discussions and via case presentations. Programmes were evaluated by anonymous response to questionnaires, by a 1-year follow up of participants and by informal discussions with participants and faculty. Detailed analyses and a recommended format for these programmes are presented.

Results. The CMEs were attended primarily by clinicians (physicians and paediatricians). Nurses, laboratory scientists, and others involved in the treatment of AIDS also attended the programmes. An interactive workshop format was evolved with substantial time devoted to discussions and case analyses. One-day programmes such as the one included here can be comprehensive and effective. The educational needs of healthcare professionals who provide care and support to patients receiving ART were similar to those of the prescribing doctors. Because of new drugs being made available and with continued clinical experience, updated programme content was required each year. Participants preferred case-based interactive discussions rather than didactic lectures. Participants suggested that there should be more time for discussion after each talk.

Conclusion. Annual CME programmes focused on ART are required to meet the professional needs of clinicians in India for providing quality care management to patients with AIDS.

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INTRODUCTION

Since the first recognition in 1981 of acquired immune deficiency syndrome (AIDS) at the University of California, Los Angeles (UCLA),[1] the number of persons with HIV infection has increased to 40 million with the maximum disease burden being in India and the African continent.[2] Substantial progress has been made in the understanding of HIV infection over the past two-and–a-half decades. Antiretroviral drugs have significantly improved the quality of life of persons with HIV infection in industrialized countries.[3] Dramatic improvements in mortality and morbidity of HIV-infected individuals have been achieved as a result of highly active anti-retroviral therapy (HAART). Continued advances in medications, along with the inclusion of new antiretroviral agents in combination therapies targeting additional elements of the HIV life-cycle, could facilitate successful long term survival and management of HIV-infected individuals well beyond the current limits.[4]

In 2004, the Government of India initiated a national scale-up of the availability of free antiretroviral drugs.[5] As antiretroviral therapy (ART) is a continually evolving field there is a need to educate physicians in India about the latest developments in the treatment of people living with HIV/AIDS (PLHA). This will enable healthcare professionals in India to provide optimal care for PLHA. However, little is known about the needs of clinicians and about how instructors of HIV continuing medical education (CME) programmes model their courses. There are no studies that report on the perceived needs of clinicians and healthcare personnel from the Indian subcontinent for updates on advances in ART treatments. Thus, we planned a needs assessment and an evaluation of the impact of CME on ART for HIV/AIDS in Delhi and surrounding areas.

METHODS

A total of 4 CME programmes on ART for HIV were planned at the All India Institute of Medical Sciences (AIIMS), New Delhi for clinicians and allied healthcare personnel responsible for delivering ART to PLHA. People already working for HIV-

infected patients were selected after discussion between two of the organizers (SKK, SS) and they were asked to personally participate in the CME. Experts in the field of HIV at AIIMS and at the University of California, Los Angeles (UCLA) were consulted, and the contents of the first CME were prepared.

Needs assessment

Healthcare personnel who were providing ART to PLHA were invited to attend a 2-day CME at AIIMS in 2005. All those who attended the CME were asked to complete a questionnaire before the CME to assess their baseline knowledge. At the end of the CME, they were asked to complete another questionnaire to assess their knowledge, and the suitability of individual presentations, the impact of the CME on their knowledge and suggestions for future courses. The participants were given a predesigned proforma to evaluate the CME for its contents and record their level of satisfaction. An open-ended question provided them the opportunity to suggest modifications in subsequent CMEs.

In the subsequent CMEs in 2006 and 2007, the contents were modified based on the feedback received from the participants of the previous CMEs. At each CME, participants were asked to complete the pre- and post-CME knowledge questionnaires.

Assessment of impact

Knowledge gain was assessed by analysis of the pre- and post-CME knowledge questionnaire, and data from each CME were pooled to assess the overall impact. The participants were asked about improvement in their knowledge with regard to burden of disease, diagnostic tests, HIV in paediatric patients, opportunistic infections, antiretroviral drugs, diagnosis and management of drug-resistant infection, and methods of counselling and prevention of HIV infection.

Changes in their attitude and ability to manage PLHA in their practice were assessed from persons who had participated in the first CME and were invited after a year to complete another questionnaire to assess the impact of the information on changes in their attitude and ability.

A total of 4 CMEs were conducted from October 2005 to April 2007. After receiving feedback from the first CME, the faculty members were given suggestions on making their content relevant and up-to-date and they were requested to send their slides in advance. Speakers were asked to present relevant case summaries at the end of the presentations to provide carry-home messages. To encourage interaction of the participants with faculty, a discussion time after each presentation was planned and more interactive sessions including case studies were incorporated. Case-based interactive sessions involved presentation of cases by faculty members and interaction with participants in the form of question and answers, followed by final comments by expert who were identified in advance. The faculty included physicians and paediatricians, experts in AIDS from AIIMS and other local medical colleges in the Delhi area and at least one physician from UCLA with 10 or more years of experience in using ART.

A simple frequency analysis was done for all the variables. To assess any difference in the need and impact of CME, the group was divided into two. The first group (group A) included physicians (paediatricians and internists) and the second group (group B) included service providers (psychiatrists, nurses, clinical psychologists, dermatologists, gynaecologists and counsellors). Data analyses were done using STATA software, and to assess any difference the chi-square test was used.

RESULTS

There were 136 participants in the CMEs and all of them completed the questionnaires (Table I). Physicians and paediatricians constituted a majority of the participants (77; 57%). There were 92 men (68%) and 44 women (32%), and 89 participants filled the questionnaire 1 year later for assessment of the impact of the CME on their attitude and ability to manage PLHA.

A large portion of the participants (88%) were associated with government hospitals, whereas 5% worked with non-governmental organizations. The others worked in community health centres (3%), sexually transmitted disease (STD) clinics (1%) or were in private practice (3%). Also almost all of them (132; 97%) worked in an urban setting.

About 53% of the participants had attended to <10 HIV patients in the past month's practice, 34% had attended ≥10 such patients, 11.6% cared for >50 HIV patients but 13% had not attended to any HIV patient in the past month.

Needs assessment

Assessment of potential educational formats. A large number of participants (80%) considered the workshop and hands-on training format (practically seeing the patients, working in laboratories and counselling parents/patients) to be very useful. Other educational resources such as lectures, web-based learning (e-learning or online learning including online course content, discussion forums via e-mail, video conferencing and live lectures), self-study and distant learning were reported to be useful by 50%–70% of respondents. The workshop format (brief, intensive and interactive) and self-study (learning from the resources provided) were the preferred choices of the allied healthcare providers than of the physicians (Table II). Telemedicine was suggested as a potentially useful modality of instruction by 40% of participants.

Scientific content of CME. More than 90% of participants

TABLE I. Primary field of work of the participants in the various continuing medical education programmes

Field	Continuing medical education programme				
	First	Second	Third	Fourth	Total
Physicians	8	16	14	0	38
Paediatricians	6	8	3	22	39
Dentists	1	4	0	0	5
Psychiatrists	1	0	0	0	1
Nurses	3	1	2	5	11
Microbiologists	4	6	3	0	13
Clinical psychologists	2	1	1	0	4
Gynaecologists	3	4	2	0	9
Dermatologists	3	6	4	0	13
Counsellors	1	1	1	0	3
Total	32	47	30	27	136

TABLE II. Assessment of the format of the continuing medical education programmes

Format	Group A (*n*=77) Useful (%)	Group B (*n*=59) Useful (%)	p value
Lectures	67	67	1
Workshop	81	89	0.004
Web-based internet	59	54	0.284
Self-study	47	60	0.044
Hands-on training	82	81	0.5
Distant learning	59	54	0.28

TABLE III. Needs assessment of healthcare personnel for contents of the continuing medical education programmes

Content	Group A (*n*= 77) Important (%)	Group B (*n*=59) Important (%)	p value
Lectures	67	67	1
ART	97	97	1
Opportunistic infections	97	97	1
Adherence	100	94	0.6
Co-infection with tuberculosis	68	66	0.4
Prevention and behaviour changes	97	95	0.3
Treatment failure	100	97	0.1
Mental health	94	94	0.6
ART in women	93	92	0.5
ART in men	90	97	0.041
ART in children	84	92	0.06
People working with unorganized sector	70	90	<0.0001
ART in substance users	69	88	0.001
ART in commercial sex workers	67	89	<0.0001
ART in men who have sex with men	61	91	<0.0001

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suggested including topics on ART, opportunistic infections, adherence-related issues, tuberculosis, prevention of HIV and behaviour changes, treatment failure, and mental health and psychiatric issues. Many participants suggested including topics on care of people working in the unorganized sector, substance users, commercial sex workers and men who have sex with men (Table III).

Programme evaluation

Format, scientific contents and faculty of the CME. Almost all participants (>90%) said that the programme met their expectations and they were satisfied with the content. Almost all participants (>90%) rated the programme and contents as very good and were willing to recommend it to their colleagues. The majority (>95%) felt that the subject matter was useful in daily practice and was free from commercial influence (>80%).

Impact

On knowledge after each CME. Participants in group A (physicians) reported improvement in their knowledge about the burden of disease, diagnostic tests, HIV in paediatric patients, opportunistic infections, antiretroviral drugs, diagnosis and management of drug-resistant infection, methods of counselling and prevention of HIV in 70%, 40%, 50%, 76%, 70%, 96%, 84% and 30%, respectively. In group B (service providers) improvement was reported by 90%, 80%, 78%, 90%, 91%, 98%, 83% and 50%, respectively. This shows that group B reported uniform improvement across all the aspects discussed in CME while group A reported improvement in knowledge of opportunistic infections, antiretroviral drugs and diagnosis and management of drug-resistant infection.

Impact on attitude and ability to manage PLHA. The CMEs had a favourable impact on the self-reported knowledge of the participants. Their ability to provide HIV services properly, willingness to provide care to HIV-positive children, and ability to manage ART, treatment failure and opportunistic infections all improved as a result of the CME (Table IV).

TABLE IV. Evaluation of the impact of the continuing medical education programmes after 1 year

Impact	Group A (*n*=48)		Group B (*n*=41)		p value*
	Before (%)	After (%)	Before (%)	After (%)	
Knowledge of subject or topics					
Low	29	1	20	4	<0.0001
Medium	54	42	63	28	
High	17	57	17	68	
Overall ability to deliver services for HIV					
Low	31	3	20	4	<0.0001
Medium	53	53	49	22	
High	16	44	31	74	
Willingness to provide services to persons with HIV					
Low	12	1	13	2	<0.0001
Medium	42	20	25	14	
High	46	79	62	84	
Ability to assess risk and provide test counselling					
Low	17	3	12	0	<0.0001
Medium	52	28	31	20	
High	31	69	57	80	
Ability to manage antiretroviral therapy					
Low	29	9	20	3	<0.0001
Medium	45	51	56	30	
High	26	40	24	67	
Ability to manage treatment failure					
Low	54	16	53	15	<0.0001
Medium	40	47	38	44	
High	6	37	9	41	
Ability to manage opportunistic infections					
Low	28	5	23	0	<0.0001
Medium	58	28	44	36	
High	14	67	33	64	

* p value is for comparison between the two groups (not intra group)

DISCUSSION

The needs assessment and impact of the CME showed that clinicians and healthcare personnel providing ART to PLHA preferred a CME in the form of workshops and hands-on practice that allowed interaction with the course faculty and experts. Our CMEs had an impact on the knowledge and practice of the participants. Web-based training programmes and telemedicine were suggested as alternative modes of updating knowledge by many participants.[6]

We invited participants who were involved in the care of PLHA as we felt that the educational needs of those who were not working with PLHA were likely to be different from those who were already working with PLHA.

The feedback after our first CME programme suggested the need for adequate time after each presentation for discussion and the need for speakers to give a carry-home message for their case presentations. This approach helped in solving many problems faced by the participants in their daily clinical practice.

The design and evaluation of the CME programmes were done primarily by Indian physicians but the perspective of our UCLA faculty consultants who had larger experience in disease management and education in HIV was helpful and was incorporated into the programmes.

An effort was made to get speakers to emphasize on the practical importance in their sessions in the programme. Over time, the initial requests from the audience for more information on co-infections declined and discussions of antiviral therapeutic options and complications of therapy became more prominent.

Even after many months of actual experience in prescribing and managing ART and related issues, physicians responsible for the care of PLHA had questions about treatment related to changes in doses, alternative medications and management of complications of ART. The subsequent CMEs were focused for physicians with ongoing experience in treatment and increasing responsibilities for managing ART.

The contents suggested by participants reflected their type of practice. As the majority of participants were clinicians (internists, paediatricians and other clinical specialists), case presentations and clinical discussions were preferred. We suggest that programmes dealing with multiple aspects of HIV/AIDS may be useful for general awareness, but for advanced training it would be better to focus the programmes for particular groups of providers with common interests and experiences.

It was evident that the impact on practice was relatively more in group B as compared with group A.[7] As physicians were already using ART and had background knowledge compared with the others, the perceived impact was more in those who were providing services to PLHA.

Proposed model format for CME on ART

Based on the feedback and our experience we outline a 1-day CME for ART (Table V). The outline indicates essential components relating to major issues as well as advances in ART relevant to the available resources and local conditions. The provision for time for discussion (25%–50% of total presentation time), addition of a summary at the end of each presentation and a carry-home message through case scenarios were based on the feedback provided by the participants. Special topics such as ways to evaluate and improve treatment compliance, especially after 1 and 2 years of therapy, can be added.

TABLE V. A suggested format for a continuing medical education programme

30 minutes: Pre-test
Session 1
20 minutes followed by 10 minutes of discussion for each topic
• Monitoring of HIV infection: What is new?
• Changes in the ART programme of National AIDS Control Organization
• International advances in ART
Session 2
25 minutes: Antiretroviral drug resistance and failure
10 minutes: Discussion
20 minutes: Case scenarios related to clinical failure and their management presented by a fellow or participant, followed by discussion
25 minutes: HIV and tuberculosis co-infection
10 minutes: Discussion
60 minutes: Case scenarios on opportunistic infections (parasitic, viral, *Pneumocystis carinii* infection) with discussion
Session 3
25 minutes: Prevention of parent-to-child transmission (PMTCT) of HIV infection: Recent developments
25 minutes: Treatment of paediatric HIV infection: Recent developments
10 minutes: Discussion
30 minutes: Case scenarios related to (i) PMTCT and (ii) paediatric HIV
Session 4
30 minutes each with 10 minutes discussion
• Immune reconstitution syndrome
• Strategies for continuing education in a changing world
20 minutes: Post-test

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The needs for ongoing education of physicians providing ART for HIV in India can be met in several ways. An annual CME has the advantage of personal interaction among trainees and instructors.

Our study has limitations. The impact (knowledge as well as attitude and abilities) was assessed by self-reporting questionnaires. It could have been by assessment of knowledge and attitude using pre- and post-CME question/answer format.

In our experience, the structure of the programme evolved from addressing multiple aspects of HIV infection and AIDS to focusing specifically on ART and the clinical management of patients. Both 1- and 2-day lecture and case presentation formats were used. A 1-day format was compact and feasible and allowed sufficient time for participants to reflect and to interact with the faculty. Time for discussion and case presentations must not be sacrificed for lectures. Specialized areas such as laboratory evaluations, obstetrics, neurology, ophthalmology, psychiatry, dermatology, dental and other areas cannot be covered in one programme.

Conclusion

An interactive format for conveying new information on the major issues in ART of AIDS was effective and appreciated by participants in the CME programmes. Meeting the needs of physicians regarding the increasingly complex field of ART management will require regular CME programmes to deal with advances in treatment and toxicity management. Furthermore, the needs of specialized groups such as paediatricians, nurses, pharmacists, etc. also require focused CME programmes.

The principal conclusions are that CME programmes can improve the knowledge of physicians treating AIDS. CME is an important tool for implementing and advancing the use of ART and other AIDS treatment in India. As the benefits and limitations of available (first-line) drugs come to be appreciated, appropriate changes in therapy and introduction of second- and third-line regimens can be anticipated. The essential role of CME and other sources of professional education is self-evident. Support for widespread and continued beginners and advanced CME programmes on ART is advisable in India as is the case elsewhere in the world.

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