

AMERICAN COLLEGE OF NUCLEAR PHYSICIANS (ACNP)

1991 DOE DAY SYMPOSIUM

DOE/ER/61133--T1

PROPOSAL:

To develop and produce an educational conference on "AIDS and Nuclear Medicine".

The DOE Day Symposium on "AIDS and Nuclear Medicine" will have a faculty of seven prominent physicians discussing the content as outlined below.

CONTENT/SCOPE

Since first described in 1981, the acquired immunodeficiency syndrome (AIDS) has become the medical dilemma of the century. An estimated five to ten million people have been exposed to the AIDS retrovirus, and the economic consequences of this exposure are staggering. AIDS has been the topic of conferences and symposia worldwide. This symposium, to be held on January 25, 1991, at the 17th Annual Meeting & Scientific Sessions of the American College of Nuclear Physicians, will expose the Nuclear Medicine Physicians/Radiologists to their role in the diagnosis of AIDS, and will educate them on the socioeconomic and ethical issues related to this problem. In addition, the Nuclear Medicine physicians/radiologists must be aware of their role in the management of their departments in order to adequately protect the health care professionals working in their laboratories. Strategies are currently being developed to control the spread of bloodborne diseases within the health care setting, and it is incumbent upon the Nuclear Medicine community to be aware of such strategies.

Currently AIDS has become a major cause of morbidity and mortality in the United States. The nationwide morbidity and mortality rates will increase over the next few years. It currently is now the leading cause of death in the country among hemophiliacs and users of illegal intravenous (IV) drugs. The initially documented cases in 1981 have grown, and, as of July 4, 1988, a total of close to 70,000 adults and children have been reported as AIDS cases to the Centers for Disease Control (CDC). The CDC have studied the epidemiology of the human immunodeficiency virus and has determined that its transmission is primarily through sexual contact, exposure to blood and blood products, and from mother to child during the prenatal period.

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CONTENT/SCOPE CONTINUED

In the United States, sexual transmission of HIV has been mostly among homosexual men. The Public Health Service now estimates that currently a total of between 1 and 1.5 million people in the United States are infected with HIV. Mathematical models are being developed to predict the future course of HIV infection (AIDS in the United States), and it is hoped that the Public Health Service is developing a strategy for controlling HIV infection and AIDS through education and counseling. The international epidemiology of AIDS is a completely different issue, although, related reports to the World Health Organization suggest that at least five (5) million people worldwide are infected by the AIDS virus and a million new cases of AIDS are likely within the next five (5) years. The importance of this topic is therefore quite timely. It is known that anyone, regardless of age, sex, or sexual orientation can contract HIV if exposed to it through a known transmission route.

The human immunodeficiency virus itself, or HIV, follows the broad outline of the life cycle of a retrovirus. The cellular and molecular biology of the AIDS virus is genetically complex with an array of regulatory genes enabling it to remain latent or replicate at various rates. This fact apparently underlies key features of the disease.

The clinical course of the disease is also variable, but many of its manifestations include Kaposi's sarcoma, Pneumocystis carinii pneumonia, intestinal colitides and a various other assortment of systemic manifestations. Nuclear Medicine's role includes Gallium Scintigraphy in patients with adenopathy, central nervous system imaging to determine AIDS related dementia, Gallium Scintigraphy in the diagnosis of Pneumocystis carinii pneumonia, hepatobiliary imaging to evaluate gastrointestinal disease, and a variety of other imaging techniques. The role of the radiologist has become extremely important with inclusion of chest radiography, computed tomography and magnetic resonance imaging becoming extremely crucial in the evaluation of the patient with AIDS. "The skills of the radiologist have become central to the crusade against AIDS," and this has been documented in a recent article in Diagnostic Imaging by Lori d'Agincourt. Several texts have been written referable to the role of the radiologist in the evaluation of the AIDS patient.

Although their knowledge is far from complete, the Nuclear Medicine Physician and radiologist is making progress against AIDS in several areas. Chest radiography together with

CONTENT/SCOPE CONTINUED

computerized tomography is employed for the evaluation of opportunistic infection and AIDS-related tumors (i.e. lymphomas) in conjunction with Gallium Scintigraphy. In a study of 35 AIDS patients, a Chicago group reported that AIDS lymphomas are primarily extranodal with a high rate of pleural effusions and pulmonary infiltrates; Gallium Scintigraphy assists in this diagnosis. Certain findings are characteristic of septic emboli and Kaposi's sarcoma. Nuclear Medicine plays an important role in the evaluation of extracutaneous Kaposi's sarcoma with gallium scintigraphy assists in this diagnosis. Certain findings are characteristic of septic emboli and kaposi's sarcoma. Nuclear Medicine plays an important role in the evaluation of extracutaneous Kaposi's sarcoma with Gallium Scintigraphy finding abnormalities in lungs, lymph nodes, oral cavity, and skin.

Neuronuclear Medicine using single photon emission computed tomography (SPECT) and cranial computed tomography are evaluating neurological deficits in patients with AIDS and AIDS-related complex (ARC). Because of its ability to detect functional changes, Nuclear Medicine is proving that it can play a vital role in the understanding of how HIV affects the brain. SPECT has the ability to detect the brain abnormalities before the onset of symptoms, and these findings may be the first sign of AIDS in an HIV positive person. SPECT detects AIDS-related encephalopathy using iodine-123 isopropyl amphetamine (I-123 IMP). It correlates well with neuropsychiatric testing and developing symptomatology. This technique is also being utilized to monitor therapy response with the determination of optimal drug regimens. Brain perfusion and metabolic studies - PET - have been used to monitor the brain's response to AZT, azidothymidine, and have exhibited interesting results. Gastrointestinal and hepatobiliary problems are among the most common complaints in AIDS affecting up to 90% of patients. Barium studies, CT, and ultrasound are used for diagnosis, and Nuclear Medicine is currently making contributions to hepatobiliary disease detection in this patient population.

Two other applications of Nuclear Medicine in the evaluation of the AIDS patient include cardiac imaging for AIDS-related congestive cardiomyopathy and bone and joint imaging for the evaluation of rheumatologic disorders associated with the disease.

CONTENT/SCOPE CONTINUED

This list is by no means complete. The multi-organ and system involvement of HIV disease involves a multi-imaging approach, and Nuclear Medicine is certainly contributing vital information for diagnosis and treatment.

Not only is it important for the Nuclear Medicine Physician to become involved in diagnosis, but infection control policies designed to minimize spread of HIV are also of importance. It is crucial to note the modes of transmission and the CDC recommendations referable to health care workers. It is especially important for those workers assisting in invasive procedures and in those procedures which involve blood products to be aware of the risks. Nuclear Medicine involves such risks. Since one mode of transmission for HIV is bloodborne, precautions that prevent transmission of the hepatitis B virus may also be extrapolated to prevent transmission of HIV. These precautions should be strictly enforced and practiced with all patients. A discussion of these precautions will be included in the Symposium. A brief review indicates that all health care workers should use appropriate barrier precautions and should use extraordinary care to prevent injuries to hands caused by needles, scalpels and other sharp instruments or devices during procedures. No health care worker who has lesions or a weeping dermatitis should perform or assist in invasive procedures or in the direct patient care activities or handle equipment used for AIDS patient care. Standard sterilization and disinfection procedures appear to be adequate for instruments and devices contaminated with blood or body fluids. In case of parental exposures, certain recommendations serve as general guidelines which the health care worker should strictly follow.

It is well known that the HIV virus is causing extensive socioeconomic problems relative to the federal budget. A recent article by Winkenwerder et al. in the New England Journal of Medicine dated June 15, 1989, specifies that the aggregated public and private national spending for HIV health care is currently inadequate and substantially more resources are needed. Cost projections indicate that the expenditures of the Public Health Service referable to AIDS spending was nearly \$1 billion in 1988, which was approximately 7.9% of the Public Health Service budget, and by 1992, there will be approximately an expenditure of \$2.2 billion or approximately 13% of the Public Health Service budget.

By the end of 1989, more than \$5.5 billion will have been spent by the federal government for AIDS since 1982 as quoted by Winkenwerder et. al. Of this amount, approximately 90% will have

CONTENT/SCOPE CONTINUED

been spent by the Department of Health and Human Services with nearly 60% by the Public Health Service. The Federal Government will continue to bear significant financial burden for medical care especially if the projections hold true with approximately 1.0 to 1.5 million Americans who are now infected with the HIV virus eventually becoming ill and requiring significant health care. It is for the Nuclear Medicine Physician to become aware of the economic climate in which AIDS is being addressed and it is especially timely for the American College of Nuclear Physicians to be aware of this information due to its socioeconomic emphasis.

The ethics of the disease should also be considered if one is going to deal with the epidemic as it stands to date since one cannot deal with health care and economic issues without discussing the ethics of a disease which has reached epidemic proportions. The speaker, author of *Private Acts, Social Consequences*, will discuss this issue, emphasizing that the Nuclear Medicine physicians are to not only think of HIV disease from a scientific but also from "a human point of view."

The above-mentioned summary addresses the major focus of the AIDS Symposium to be held on Friday, January 25, during the ACNP Annual Meeting and Scientific Sessions. This background material, although brief, will serve as a general introduction; the Symposium will target the major issues of epidemiology, socioeconomics, ethics, and the Nuclear Medicine role of AIDS.

REFERENCES:

1. Heyward WL, Curran JW: The Epidemiology of ADIS in the U.S. *Scientific American* 1988; 259 (4) : 72-81.
2. Redfield RR, Burke DS: HIV Infection: The Clinical Picture. *Scientific American* 1988; 259 (4): 90-98.
3. Weber JN, Weiss RA: HIV Infection: The Cellular picture. *Scientific American* 1988; 259 (4): 100-109
4. Finebert HV: The Social Dimensions of AIDS. *Scientific American* 1988; 259 (4): 128-134
5. Winkenwerder W, Kessler AR, Stolec RM: Federal Spending for Illness Caused by the Human Immunodeficiency Virus. *New England Journal of Medicine* 1989; 311 (6) : 90-98
6. d'Agincourt, L: Imaging's Role in Crusade Against AIDS. *Diagnostic Imaging* 1989; 11 (6): 90-98.
7. Hendrix, LE: Infection Control Minimizes Spread of HIV. *Diagnostic Imaging* 1989; 11 (6): 102-107.

Program Record:

The Program will have an executive summary of the meeting, prepared by the program chairman, summarizing the individual papers for submission to DOE after the program's conclusion. The program will also be audio taped for future reference.

FRIDAY, JANUARY 25, 1991 -- TOPICS/AGENDA

- o SYMPOSIUM: AIDS & NUCLEAR MEDICINE  
Richard C. Reba, M.D., FACNP, CHairman
- o Update on AIDS Epidemiology  
Harold W. Jaffe, M.D.
- o 1981 - 1991: 10 years of the AIDS epidemic. Is There Still a Role for 67Ga Scanning?  
Carlos Bekerman, M.D., FACNP
- o Comparison of 111 Indium WBC and 67 Gallium Scanning in Febrile Patients with AIDS  
Stanley Goldsmith, M.D., FACNP
- o Positron Emission Tomography in AIDS Dementia and Related Neoplasia  
Steven M. Larson, M.D., FACNP
- o Radionuclide Evaluation in HIV Dementia  
Ronald L. Van Heertum, M.D.
- o Experimental Methods for AIDS and its Complications  
John G. McAfee, M.D.
- o Questions & Discussion

American College of Nuclear Physicians  
1991 DOE Day Symposium

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American College of Nuclear Physicians  
1991 DOE Day Symposium

Explanation of form ER F 4620.1

B.5 Staff

Staff time has been estimated based on past experience. There is time involved for the Executive Director, Symposium Coordinator, Symposium Registrar and secretarial support services. This includes pre-conference work, such as speaker contact, etc., day to day monitoring of progress or arrangements, on-site management of program and post conference responsibilities.

E.1 Staff Travel

Cost of travel for staff as listed above.

F.1 Materials and Supplies

This item includes cost of basic office supplies, registration supplies, signs, photocopying and room rental for the Symposium.

F.2 Program Brochures

Each year, the ACNP prints approximately 17,000 preliminary program brochures and 17,000 final program brochures, at a cost of approximately \$6,250. This figure includes the cost of a writer/editor to develop and lay out the program, and to work with a printer.

These program brochures are mailed by the printer using labels the ACNP purchases and supplies to them. Since the Annual Meeting program is also sent as an insert to the newsletter, we have apportioned a part of the newsletter mailing cost to the DOE Day Program Budget. Other mailing lists include: Medical Journals and publications both in the United States and abroad: the electronic media, and chief executive officers and representatives of other health-related associations.

It is necessary to purchase mailing labels each year to promote the DOE program. Based on the subject matter, we may purchase labels from several sources in the medical specialities and sub-specialty groups. These labels cannot be duplicated for future use.

F.6 Audio Visuals

During the presentations, the use of audio-visual equipment will vary. We have always needed dual projection/screens, microphones both at the head table and in the aisles for questions and answer sessions, overhead projector, flip chart/blackboard and a video player with either a very large screen or three to four monitors in the room. We have had occasion to also use eight or 16mm projectors and

F.6 Audio Visuals Cont'd

transparencies. We also hire a technician to be on hand throughout the program to operate the equipment and make repairs should there be a failure. Additionally, this cost is increased because we have to rent the equipment for two days as speakers want to review their materials and run through their presentations before actually giving them. We often have to pay for a room for this purpose as there are no food functions involved, a requirement of hotels if a room rental charge is to be waived.