U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 030-03444/87001(DRSS)

Docket No. 030-03444

License No. 48-04193-01 Category G1 Priority 2

Licensee: Milwaukee County Medical Complex
8700 West Wisconsin Avenue
Milwaukee, WI 53226

Inspection Conducted: June 4, 5, 9, and September 30, 1987 (onsite)
October 1, 5, and December 7, 1987;
January 13 and 19, 1988. (In Region III office)

Inspection At: Milwaukee County Medical Complex

Inspectors: S. R. Lasuk S.R. Lasuk 9-14-88
Senior Radiation Specialist Date

Bruce J. Mallett for
M. A. Kunowski 9/13/88
Radiation Specialist Date

Bruce J. Mallett for
Reviewed By: D. G. Wiedeman, Chief 9/13/88
Nuclear Materials Safety Section 1 Date

Bruce J. Mallett
Approved By: B. S. Mallett, Ph.D., Chief 9/13/88
Nuclear Materials Safety and Date
Safeguards Branch

Inspection Summary

Inspection on June 4, 1987 through January 19, 1988
(Report No. 030-03444/87001(DRSS))
Areas Inspected: This was an unannounced special inspection initiated by allegations received by the NRC Region III office. The inspection included interviews of personnel and a review of procedures and records.
Results: The allegation was partially substantiated; however, no violation of NRC requirements was identified. Some concerns were identified and a licensee response was requested.

DETAILS

1. Persons Contacted

*James Youker, M.D., Chairman, Department of Radiology
*G. F. Carrera, M.D., Chief of Diagnostic Radiology
@*B. David Collier, M.D., Director, Section of Nuclear Medicine; Chairman, Radiation Safety Committee
*Robert Hellman, M.D., Assistant Director, Section of Nuclear Medicine
*Dr. "A", Section of Nuclear Medicine
*Thomas T. Lawson, M.D., Director, Section of Computed Tomography
@*Charles Wilson, Ph.D., Radiation Safety Officer; Chief of Medical Physics and Imaging Sciences
*John Moulder, Ph.D., Professor of Radiation Biology
*Shyam A. Rao, Ph.D., Professor of Radiochemistry
@*Arthur Krasnow, M.D., Staff Physician, Section of Nuclear Medicine
*Sara Arnold, M.D., Resident Physician, Department of Radiology
*Karl Schultz, M.D., Resident Physician, Department of Radiology
*Farrokh Dehdashti, M.D., Resident Physician, Section of Nuclear Medicine
*Frank Steffel, Chief Technologist, Sections of Nuclear Medicine, Ultrasound, and Computed Tomography
*Tom Joestgen, Senior Nuclear Medicine Technologist
@*Robert Yoss, Health Physics Technician, Radiation Safety Office
*David Peck, Nuclear Medicine Technologist
*David Ewey, Nuclear Medicine Technologist
*Kim Erkkila, Student, Nuclear Medicine Technology
*Julie Rodriguez, Student, Nuclear Medicine Technology
*Dolores Scharpf, Student, Nuclear Medicine Technology

*Denotes those persons interviewed on June 4, 5, or 9, 1987.
@Denotes those persons interviewed on September 30, 1987.

2. Purpose of Special Inspection

This was an unannounced, special inspection initiated to investigate allegations concerning a nuclear medicine physician functioning in the capacity of an authorized user at the Milwaukee County Medical Complex (MCMC).

Information in this report was compiled from MCMC's NRC license file at the Region III office, a review of records and interviews conducted during visits to the licensee's two hospitals on June 4, 5, and 9, 1987 and September 30, 1987, and a review of a January 13, 1988 letter submitted by MCMC in response to Region III's telephone inquiry.

3. Licensed Program and Background

MCMC possesses a Type A broad scope license which authorizes the use of any byproduct material between atomic numbers 3 - 83, inclusive, for medical research, diagnosis, and therapy. The majority of the radioactive material is used at the conterminous Milwaukee County Hospital (MCH), Froedtert Memorial Lutheran Hospital (FMLH), and the Medical College of Wisconsin (MCW), a degree granting medical school. Staff physicians at

MCH and FMLH (and at Children's Hospital and Zablocki Veterans Administration Medical Center, both in Milwaukee) are also faculty members at MCW.

The nuclear medicine department at MCH prepares doses for both MCH and FMLH. Approximately nine studies per day are performed at FMLH, and approximately 15 studies are performed each day at MCH. MCMC has an active nuclear medicine technology training program and residency programs in radiology and nuclear medicine for medical doctors. Currently, there are four nuclear medicine technology students, two nuclear medicine resident physicians, and two radiology resident physicians in the Nuclear Medicine Section. Students and residents divide their time between the nuclear medicine departments of MCH and FMLH.

Dr. James Youker is the Chairman of the Department of Radiology, which includes radiology and nuclear medicine at MCH and FMLH. Dr. B. David Collier is the Director of the Section of Nuclear Medicine, which consists of facilities in both hospitals. He and Dr. Robert Hellman are the two full-time staff physicians/authorized users in the Nuclear Medicine Section. Dr. Arthur Krasnow, who completed his residency on June 30, 1987, has joined the section as a staff physician. Dr. Krasnow told the inspector, on September 30, 1987, that he took the written examination in nuclear medicine on September 12, 1987, and is awaiting the results. Therefore, he is currently board eligible in nuclear medicine.

MCMC is currently operating under the latest renewal of its license, Amendment No. 54, issued March 6, 1987. Routine inspections of MCMC by the NRC are conducted approximately every two years. The last routine inspection was conducted on September 3 and 4, 1986; two violations were identified regarding frequency of dose calibrator linearity tests and area wipe tests. On July 22 and 23, 1986, an allegation similar to that listed in Section 2 of this report was investigated by the NRC. The allegation was not substantiated and no violations of NRC requirements were identified (see Attachment A).

4. Specific Allegations and NRC Findings

a. Allegation

Dr. "A" will be or has been performing the duties and functions of an authorized user as specified below, and he is not an authorized user on MCMC's NRC broadscope license.

(1) During the week of June 1-5, 1987, both of the licensed physicians/authorized users in the Nuclear Medicine Section at MCMC will be in Toronto, Canada, for the annual meeting of the Society of Nuclear Medicine. During their absence, Dr. "A" will function as an authorized user of radioactive material in humans, and has acted in this capacity during similar absences in the past.

(2) There is a document entitled, "Nuclear Medicine On Call Procedure for the Milwaukee County Medical Complex and Froedtert Memorial Lutheran Hospital," which lists Dr. "A" as one of the

Nuclear Medicine staff on call for supervising radiology or nuclear medicine residents in performing clinical nuclear medicine procedures on an emergency basis. The implication is that Dr. "A" is authorized to interpret and perform such procedures.

(3) There was a case in which Nuclear Medicine was crucial clinically and Dr. "A" was intimately involved in a clinical capacity. The case involved a patient at the VA Medical Center in Milwaukee, who was transferred to the Froedtert Memorial Lutheran Hospital (FMLH) where a lung scan was performed, on an emergency basis, on December 31, 1986. The alleger believed the scan was performed and interpreted under the supervision of Dr. "A" even though the dictated Nuclear Medicine/Radiology report was signed by Dr. Collier.

b. NRC and License Requirements

Authorized users of byproduct material under MCMC's NRC License No. 48-04193-01 must be a physician, dentist, or podiatrist as stated in 10 CFR 35.2. MCMC is authorized by License Condition No. 11 of its license to approve their own authorized users via their Radiation Safety Committee (RSC). In view of this broad scope authority, the approved users are not listed on this NRC license. (Note: For medical licenses of limited scope, authorized users must be approved by the NRC and are listed on the NRC license.)

In addition to naming their own users, other individuals at MCMC may use byproduct material under License No. 48-04193-01 as long as they use it under the supervision of an authorized user as specified in 10 CFR 35.11(b). The conditions of this use are specified in 10 CFR 35.25(a)(3) and include the licensee ensuring that the individual is properly trained, the individual follows the instructions of the supervising authorized user and periodic reviews of the individual's use are performed.

MCMC also requires that authorized users in the Nuclear Medicine Section be physicians licensed by the State of Wisconsin and be certified by the American Board of Nuclear Medicine or the American Board of Radiology in radiology.

c. Findings

Attendance at Meeting

On June 4 and 5, 1987, the NRC inspector (M. Kunowski) visited the licensee's facilities to investigate the allegations. Through interviews of personnel in the radiology department, the inspector learned that Drs. Collier and Hellman, the only two authorized users at that time in the Nuclear Medicine Section, were at the meeting in Toronto. Dr. Hellman returned to MCMC on Thursday, June 4, 1987, shortly after the inspector's arrival. In addition, the inspector learned that Drs. "A", Krasnow, Rao, and Wilson, and Mr. Steffel were also attending the meeting. These interviews plus interviews of Drs. Collier, "A", Krasnow, Rao, and Wilson on June 9, 1987

indicated: (1) on Monday, June 1, 1987, Dr. Collier was at MCMC until late afternoon; (2) Dr. Collier attended the meeting in Toronto from Tuesday, June 2, to Friday, June 5; (3) Dr. Robert Hellman attended the meeting in Toronto from Monday, June 1, to Wednesday, June 3. (4) Dr. Hellman worked at MCMC on Thursday, June 4 and Friday, June 5; (5) Dr. "A" worked at MCMC on Monday, June 1, and Tuesday, June 2; (6) Dr. "A" attended the meeting in Toronto from Wednesday, June 3, to Friday, June 5.

In summary, the two full-time users authorized at that time were both absent from MCMC on Tuesday, June 2, and Wednesday, June 3. Dr. "A" was present at MCMC on one of those two days - Tuesday, June 2.

Authorized Users

According to licensee representatives in the radiation safety office and the radiology department, Drs. Collier and Hellman were the only authorized users in the Nuclear Medicine Section of NRC-licensed radioactive material at that time. [Licensee representatives stated that as of July 1, 1987, Dr. Krasnow will be eligible for certification (board eligible) by the American Board of Nuclear Medicine and will be joining the nuclear medicine section as a staff physician.] They stated that Dr. "A" is not an authorized user of human-use radioactive material and is not licensed by the State of Wisconsin as a physician. Staff and resident physicians in the radiology department stated that on the rare occasions that both Dr. Collier and Dr. Hellman are absent from MCMC, another staff physician, usually Dr. Carrera or Dr. Lawson, "fills-in" for them, supervising the residents and technologists. According to radiology department personnel and a review of records, on Tuesday, June 2, Dr. Carrera supervised personnel in the Nuclear Medicine Section, reviewed cases at the end of the day with residents, and signed reports as necessary. On Wednesday, June 3, Dr. Lawson performed these duties. On Friday, May 1, 1987, another day when both Drs. Hellman and Collier were absent, Dr. Carrera functioned as the authorized user. Drs. Carrera and Lawson were authorized users on the MCMC license during this period according to MCMC's list of authorized users provided to the inspector. In addition, Dr. Hellman, indicated that either he (Dr. Hellman) or Dr. Collier review selected reports generated during their absences. This review is done upon their return to the Nuclear Medicine Section.

The inspector reviewed with radiation safety personnel, the criteria used by the MCMC's Radiation Safety Committee (RSC) in approving and reapproving authorized users of human-use nuclear medicine radioactive material. Licensee personnel stated that: (1) individuals who are board certified or eligible and who are licensed as physicians by the State of Wisconsin are automatically authorized to use radioactive material in nuclear medicine and oncology within the limits of the NRC license, and (2) documentation of these approvals does not appear in minutes of meetings of the RSC. Dr. Collier presented to the inspector a list of individuals (see Attachment B) that are authorized users of non-NRC licensed radioactive materials or radiation sources. Included on this list is the board specialty and year of certification of the individuals. The inspector expressed concern to Drs. Collier and Wilson that MCMC

was not documenting adequately the status of all the authorized users of nuclear medicine radioactive materials, including those users in the Nuclear Medicine Section, the Computed Tomography Section, and the Radiology Section. This leads to confusion for the staff at MCMC as to who the authorized users are. The two individuals acknowledged the inspectors concerns and this was accomplished in an October 29, 1987 meeting of the RSC.

(Subsequent information on authorized users is covered in this section under the heading, "Followup Onsite Inquiries"

Dr. "A" - Dr. Collier stated that Dr. "A" is a full professor of nuclear medicine and the Director of Research in the Nuclear Medicine Section (see Attachment C). Dr. Collier further stated that: (1) Dr. "A" was formerly licensed by the State of Wisconsin as a physician and originally received his medical degree in Turkey, (2) Dr. "A", from his office in the Nuclear Medicine Section at MCH, plans and directs nuclear medicine-related research, including research conducted by resident physicians, and writes papers for professional journals, and (3) Dr. "A" is actively involved in the classroom and clinical instruction of students in the nuclear medicine technology training program, and of residents in nuclear medicine and in radiology (see Attachment D for a description of the residency programs). Other staff physicians and scientists in the radiology department provided a similar description of Dr. "A"'s duties. Residents and staff physicians described Dr. "A" as a good teacher and advisor of residents concerning nuclear medicine.

In an interview on June 9, 1987, Dr. "A" stated that, because he is no longer licensed as a physician by the State of Wisconsin, he does not sign the final reports of nuclear medicine studies (human-use) performed at MCMC; he does not call the referring physicians to relay medical advice; and does not administer radioactive material to humans. Dr. "A" stated that he received his medical degree in Turkey, where he subsequently established a department of nuclear medicine at a university in Ankara. He stated that, from 1972 to 1975, he taught at MCMC (upon invitation) and was temporarily licensed to practice medicine by the State of Wisconsin; in 1975, he returned to Turkey to teach and practice medicine; and in September 1981, he returned to MCMC to teach and practice medicine. Dr. "A" added that in September 1982, he stopped practicing medicine because the State of Wisconsin had revised its regulations and his temporary licensure was now limited to one year; and, because of health and financial considerations, he could not afford the time that would be required for him to study for and pass the comprehensive exams required by the State of Wisconsin for licensure as a physician.

From the above statements of licensee representatives, the following was ascertained regarding Dr. "A" and his activities at MCMC:

(i) Dr. "A" is not currently licensed by the State of Wisconsin to practice medicine (he has, however, been previously licensed twice by the State of Wisconsin under a "temporary reciprocity"

program extended to visiting physicians from foreign countries).

(ii) Dr. "A" is employed by MCMC in a teaching capacity only; he no longer "practices medicine", nuclear or otherwise, i.e., he does not order patient scans nor does he interpret scans for the intent of diagnosis for subsequent patient treatment.

(iii) Dr. "A" interprets scans in his classroom and clinical instruction programs.

Followup Onsite Inquiries

On September 30, 1987, the inspector (S. Lasuk), visited MCMC to meet with Drs. Wilson and Collier for additional information, including (1) the licensee's procedure for determining who should be considered for approval as an authorized user of licensed material for human use, (2) a current list of authorized users in nuclear medicine, (3) any documents [e.g., completed applications, minutes of Radiation Safety Committee (RSC) meetings] showing when these individuals were approved as authorized users, and (4) the mechanism, if any, whereby an authorized user delegates his/her functions (responsibilities).

Further clarifying information was provided by Dr. Wilson in telephone conversations with the inspector on October 1 and 5, 1987.

Authorized User Procedure - Dr. Wilson stated that MCMC does not use applications, nor is there any written policy or procedure to follow, regarding which individuals are to be approved as Authorized Users for routine clinical use of licensed material in/on humans.

He added that physicians, licensed by the State of Wisconsin, who are board certified or board eligible are authorized to use licensed material for routine diagnostic and therapeutic purposes. However, for research work, all protocols involving the use of licensed material in humans are reviewed by the RSC and the investigator is authorized for only the use described in the protocol. The NRC is concerned that there is no written procedure for the RSC to maintain a current list of authorized users and relay those to MCMC staff. This is considered an open item and the licensee is expected to respond to this concern.

Current Authorized Users - The inspector was provided with the following list of current authorized users in Radiation Oncology, Nuclear Medicine, and Research. The numbers in parentheses are the approximate number of years the Nuclear Medicine physicians have been authorized users in the Nuclear Medicine Section.

(1) Radiation Oncology - Groups IV, V and VI

J. Frank Wilson, M.D. - Amer. Board of Radiology in Therapeutic Radiology
M. Greenberg, M.D. - Amer. Board of Radiology in Therapeutic

Radiology
J. Haas, M.D. - Amer. Board of Radiology in Therapeutic Radiology
N. Janjan, M.D. - passed written examine of Amer. Board of Radiology in Therapeutic Radiology
K. Murry, M.D. - Amer. Board of Radiology in Therapeutic Radiology
L. Olson, M.D. - Amer. Board of Radiology in Therapeutic Radiology
R. Byhardt, M.D. - Amer. Board of Radiology in Therapeutic Radiology
C. Lawton, M.D. - Amer. Board of Radiology in Therapeutic Radiology
R. Abrams, M.D. - Amer. Board of Radiology in Therapeutic Radiology

(2) Nuclear Medicine - Groups I thru V

B. David Collier, M.D. - Amer. Board of Nuclear Medicine, Amer. Board of Radiology in Diagnostic Radiology (8 yrs)
Robert Hellman, M.D. - Amer. Board of Internal Medicine, Amer. Board of Nuclear Medicine (4 yrs)
Authur Krasnow, M.D. - Amer. Board of Internal Medicine (less than 1 yr)
Thomas Lawson, M.D. - Amer. Board of Radiology. Specialty: Diagnostic Radiology (10-11 yrs)
Dennis Foley, M.D. - Amer. Board of Radiology. Specialty: Diagnostic Radiology (10-11 yrs)
Guillermo Carrera, M.D. - Amer. Board of Radiology. Specialty: Diagnostic Radiology (9-10 yrs)
James Youker, M.D. - Amer. Board of Radiology. Specialty: Diagnostic Radiology (22 yrs)

(3) Research Use in Humans - Authorization Users For a Specific Project

B. David Collier, M.D. - Nuclear Medicine A. Kissebah, M.D. - Clinical Research Center R. Kalkoff, M.D. - Clinical Research Center J. Aiman, M.D. - OB/GYN K. Soergel, M.D. - Gastroenterology

Dr. Collier said the first three medical doctors under Nuclear Medicine are the "regular" authorized users and the last four are "non-regular," or "backup," authorized users. He stated that it is highly unlikely that all seven doctors would be unreachable at the same time; however, if all seven were scheduled to be unavailable at the same time, he would appoint another physician to serve as the authorized user during that period.

Dr. Wilson also told the inspector that MCMC has an additional 20 to 25 physicians who are certified by the American Board of Radiology in Diagnostic Radiology and therefore, could be added to the list of authorized users under Nuclear Medicine since they meet the training/experience requirements in Subpart J of 10 CFR 35. However, they did

not deem it necessary to have more than the seven physicians on the call list.

The inspector asked if MCMC has a document showing the functions/ responsibilities of an authorized user in nuclear medicine; the answer was, "no".

Dr. Collier was shown a copy of an authorized user's special responsibilities, listed on Page 8 in Regulatory Guide 10.8, Revision 2, dated August 1987, and asked if the physicians under Nuclear Medicine have these responsibilities when serving in the capacity of an authorized user. He said, "Yes, all seven have these 'privileges'."

Dr. Wilson stated the responsibilities of an authorized user are delegated in the order in which the physicians are listed under Nuclear Medicine. That is, the responsibilities are not delegated to any individual who has not been designated as an authorized user.

Followup Telephone Interviews with Drs. Collier and Wilson

In a telephone conversation with Drs. Collier and Wilson on January 13, 1988, Region III's Materials Section Chief (D. Wiedeman) discussed further the allegations which the alleger claims indicate Dr. "A" was serving in the capacity of an authorized user. Drs. Collier and Wilson responded to these allegations and reviewed Dr. "A"'s position and responsibilities at MCMC. Their verbal comments are documented in a letter dated January 13, 1988, to Mr. Wiedeman from Dr. Collier (Attachment E).

Dr. Collier states he believes the Nuclear Medicine on call document where Dr. "A" is listed as a physician to call in case of an emergency was an informational document drawn up by the residents in Radiology to assist new residents in the evening during their first rotations through the emergency room; it was not a call schedule for authorized users. Dr. Collier included a copy of the official call schedule for the Nuclear Medicine Section covering the same period of July 1, 1985 through June 30, 1986; it lists various resident physicians but only Dr. Collier or Dr. Hellman as the staff physician on call.

In the case of the patient who received an emergency lung scan on December 31, 1986, Dr. Collier stated he was the authorized user and provided the official interpretation of the scan as shown in the written report. He said he also provided the initial interpretation of the scan before the official report had been typed.

d. Conclusion

(1) The two authorized users in the Nuclear Medicine Section at MCMC did attend a meeting in Toronto during the week of June 1-5, 1987. Dr. "A" was present at MCMC on only one day (June 2, 1987) that the two users were absent, and on that day an authorized user (Dr. Carrera) from another section of the

radiology department substituted for the absent authorized users.

This part of the allegation was partially substantiated in that both Drs. Collier and Hellman were absent from MCMC during June 1-5, 1987. However, Dr. "A" was performing the duties assigned under the supervision of an authorized user as allowed by 10 CFR 35.11(b). His work was also reviewed periodically by an authorized user as specified in 10 CFR 35.25(a)(3). The NRC expressed concern as to the adequacy of records and Radiation Safety Committee's designation of authorized users. This item has been resolved but will be carried as an open item for review during the next inspection.

(2) The use of the Nuclear Medicine on call document which Dr. Collier claims is informational creates a point of confusion for staff if it is utilized instead of the on call schedule. The NRC is concerned that MCMC ensure that all staff are aware of who authorized users are at the facility and what list is used to call out physicians during emergencies.

(3) The inspection did not verify whether Dr. "A" interpreted the lung scan referenced in the subject allegation prior to the official interpretation. Dr. Collier, an authorized user, performed an official interpretation of this scan. 10 CFR 35.11(b), issued April 1987, allows Dr. "A" to perform duties, even interpretation of scans, under the supervision of an authorized user. Therefore, under the current regulations, there would be no violation of NRC requirements even if Dr. "A" interpreted the scan prior to the official interpretation. No further action is planned regarding this matter.

6. Exit Interview

The findings of this special inspection were discussed in a telephone conversation between Drs. B. D. Collier and C. Wilson and Messrs. D. Wiedeman and S. Lasuk on May 20, 1988. The licensee representatives were informed that although the allegations were partially substantiated, no violations of NRC requirements were identified. However, they were advised that Region III's forthcoming letter will request a written response regarding (1) Dr. Youker's status as an authorized user, and (2) NRC's concerns regarding the lack of a MCMC procedure to approve and maintain a current list of authorized users, and (3) NRC's concern over multiple lists for physicians on call.

Attachments:
A. Page 4 from NRC Region III Inspection Report No. 030-03444/86001(DRSS) re Inspection at MCMC on July 22-23, 1986.
B. Radiology Staff (Full-Time)
C. Two letters dated 1/2/85 to "A," from B. David Collier, M.D.
D. Nuclear Medicine Section, Radiology

Attachments (Continued)

Resident Tutorials, plus other
training program information.

E. Letter dated 1/13/88 to Darrel Wiedeman
from B. David Collier, M.D.

F. Identification of Dr. "A" (Exempt from Disclosure)

Dr. B. David Collier, Director of MCMC's Nuclear Medicine Section and Chairman of the Radiation Safety Committee, concurred with Dr. Rao that distribution of xenon-133 in saline was considered several years ago, but the idea was dropped and no such distribution ever took place.

Conclusion

All interviewed representatives of Milwaukee County Medical Complex, Mt. Sinai Medical Center and Syncor agreed that, to their knowledge, there had been no distribution of xenon-133 in saline from MCMC to Mt. Sinai Medical Center.

This allegation was not substantiated; no violations of NRC regulations or specific license conditions were identified.

b. Allegation 2: It was alleged that an authorized user in the MCMC nuclear medicine department was not licensed by the State of Wisconsin to practice medicine.

Findings: On July 23, 1986, the NRC inspectors met with B. David Collier, M.D., Director of MCMC's Nuclear Medicine Section and Radiation Safety Committee Chairman, and an authorized user, and James Youker, M.D., Chairman of MCMC's Department of Radiology, to discuss this allegation.

Dr. Collier stated that the allegation was "totally untrue". He explained that the authorized users in Nuclear Medicine must be approved by the Radiation Safety Committee, whose prerequisites include 1) State of Wisconsin medical licensure, and 2) Board Certification (American Board of Nuclear Medicine). Dr. Collier further stated that only 2 physicians have been authorized for nuclear medicine use at MCMC, himself and Robert S. Hellman, M.D.

Dr. Collier presented evidence of State of Wisconsin medical licensure (State of Wisconsin Examining Board Certification for the Practice of Medicine and Surgery) for himself and Dr. Hellman, as well as Board Certification in nuclear medicine and Radiation Safety Committee approval.

Drs. Collier and Youker both mentioned that one individual, , M.D., is employed by MCMC but is not licensed by the State of Wisconsin to practice medicine. They stated that is Clinical Director of Nuclear Medicine Residents, and serves as Head of Education Programs (Dr. does not practice medicine, nuclear or otherwise, and serves in a teaching capacity only). Dr. Collier stated that Dr. would not be approved as an authorized user of nuclear medicine at MCMC because he did not meet their prerequisites (i.e., Wisconsin medical licensure and Board Certification).

Attachment A

(From Report of Special Inspection conducted July 22-23, 1986).

I. RADIOLOGY STAFF (Full-Time)

List professional FULL-TIME staff members under whom the work of the resident staff (Fellows, etc.) is performed.

Name	Degree	Primarily At Hosp. # 1, 2, 3, 4	Specify: * Diagnostic Radiology Sub-Spec. Area	Certified By ABR (Or Other Board) Date
Youker, James E.	MD	1	Diagnostic-Cardiac-Chest	1960
Carrera, Guillermo F.	MD	1	Diagnostic-Skeletal	1976
Czervionke, Leo	MD	1	Diagnostic-Neuro	1983
Daniels, David L.	MD	1	Diagnostic-Neuro	1979
Dodds, Wylie J.	MD	1	Diagnostic-GI	1969
Finger, William A.	MD	1	Diagnostic-General	1963
Foley, W. Dennis	MD	1	Diagnostic-Dig.Imag.	1977
Gonyo, James E.	MD	1	Diagnostic-General	1967
Goodman, Lawrence R.	MD	1	Diagnostic-Chest	1973
Haughton, Victor M.	MD	1	Diagnostic-Neuro	1974
Kneeland, J. Bruce	MD	1	Diagnostic-MR	1982
Lawson, Thomas L.	MD	1	Diagnostic-Dig.Imag.	1970
Lipchik, Elliot O.	MD	1	Diagnostic-Int.Angio.	1964
Middleton, William	MD	1	Diagnostic-Dig.Imag./GU	1985
Pojunas, Kathleen W.	MD	1	Diagnostic-Neuro	1983
Shaffer, Katherine A	MD	1	Diagnostic-ENT/Mammo/Neuro	1974
Smith, David F.	MD	1	Diagnostic-Dig.Imag/Angio	1981
Stewart, Edward T.	MD	1	Diagnostic-GI	1971
Thorsen, M. Kristin	MD	1	Diagnostic-Dig.Imag/Chest	1981
Williams, ALan L.	MD	1	Diagnostic-Neuro	1974
Wilson, Charles R.	Ph.D.	1	Medical Physics	~~1960~~ 1976
Unger, George F.	MD	2	Diagnostic-General	1962
Barthelemy, Carl R.	MD	2	Diagnostic-Skeletal	1981
Chiang, Lan CHang	MD	2	Diagnostic-General	1964
Chintapalli, Kedar N.	MD	2	Diagnostic-CT/US	1980
Erwin, Constance R.	MD	2	Diagnostic-General	1960
Ignacio, Alfredo	MD	2	Diagnostic-General	1974
McManus, John T.	MD	2	Diagnostic-GU	1968
Olson, David L.	MD	2	Diagnostic-GI	1985
Schreiber, Eric	MD	2	Diagnostic-Int.Angio.	1983
			Spec. Comp. in Nuc.Med	1984
Collier, B. David	MD	1	Nuc. Med.	1978
Hellman, Robert S.	MD	1	Int. Med./Nuc.Med.	1981/83
Isitman, Ali	MD	1	Nuc. Med	1973
Palmer, David	Ph.D.	1	Nuc.Med.Physics	
Rao, Shyam	Ph.D.	1	Radiopharmacist	
Tikofsky, Ronald	Ph.D.	1	Nuc.Med-NeuroPhysiol	
Sty, John R.	MD	3	Diagnostic-Peds	1974
Starshak, Robert	MD	3	Diagnostic-Peds	1976
Wells, Robert	MD	3	Diagnostic-Peds	1984
Hopwood, Larry E.	Ph.D.	1	Rad. Biology	
Moulder, John	Ph.D.	1	Rad. Biology	
Hyde, James S.	Ph.D.	1	Rad. Biology	

* Include subspecialties, e.g., nuclear radiology (medicine), neuroradiology, ultrasonography, radiological physics, etc.

Attachment B

MEDICAL COLLEGE OF WISCONSIN

Department of Radiology
Section of Nuclear Medicine

January 2, 1985

, M.D.
Nuclear Medicine Division

Dear Dr. :

This is to reconfirm your appointment as Director of the Animal Imaging and Research Facility of the Nuclear Medicine Section located in the Allen Bradley Research Laboratory. We hope that you will accept this reappointment to this position which you have filled since September 1 of 1982. Acting as Director of Animal Research, it is anticipated that you will propose and execute basic science research dealing with radiopharmaceutical development and radiopharmaceutical diagnostic efficacy. In addition, it is anticipated that you will instruct nuclear medicine residents in these techniques. Finally, collaboration with other departments wishing to use isotope imaging and in vitro kinetic studies as part of their research protocols will be under your direct supervision.

If these arrangements are suitable, please sign and return the copy of this letter keeping the original for your records.

Yours truly,

B. David Collier, M.D.

B. David Collier, M.D.
Director, Nuclear Medicine

BDC:mms

Names of parties and certain other identifying details have been redacted in order to prevent a clearly unwarranted invasion of the personal privacy of the individuals involved.

Attachment C

Milwaukee County Medical Complex
8700 West Wisconsin Avenue
Milwaukee, Wisconsin 53226
(414) 257-5968

MEDICAL COLLEGE OF WISCONSIN

Department of Radiology
Section of Nuclear Medicine

January 2, 1985

, M.D.
Nuclear Medicine Division

Dear Dr. :

This is to reconfirm your appointment as Director of Research in the Nuclear Medicine Section of the Medical College of Wisconsin. We hope that you will reconfirm your appointment to this position which you have filled since September 1 of 1982. Your duties will include planning and execution of clinical research along with resident research instruction.

If this arrangement is suitable, please sign and returr the copy of this letter keeping the original for your records.

Yours truly,

B. David Collier, M.D.
Director, Nuclear Medicine

BDC:mms

Names of parties and certain other identifying details have been removed in order to prevent a clearly unwarranted invasion of the personal privacy of the individuals involved.

Milwaukee County Medical Complex
8700 West Wisconsin Avenue
Milwaukee, Wisconsin 53226
(414) 257 5968

NUCLEAR MEDICINE SECTION

RADIOLOGY RESIDENT TUTORIALS

While on the three month Nuclear Medicine Rotation Radiology residents will receive individual instruction in the clinical aspects of instrumentation, physics, radiopharmaceuticals, radiation protection, and computer science. While participating in either routine or simulated activities of the Nuclear Medicine Section within each of these areas, the Radiology resident will gain hands-on experience to supplement the knowledge gained by reading Mettler's Essentials of Nuclear Medicine Imaging and Chandra's Introductory Physics of Nuclear Medicine. For each of the weekly tuitorial sessions outlined below, the Radiology resident is expected to make appropriate entries in a laboratory notebook to be handed in at the completion of the three month rotation.

The Radiology resident is expected to handle all assigned clinical responsibilities and scheduled departmental activities in addition to completing these tutorials. The resident should contact the instructor for each tutorial to arrive at a mutually convenient time. In addition, the instructor may wish to assign readings or exercises to be completed before meeting with the resident.

I. RADIOPHARMCEUTICALS - Under the direct supervision of Dr. Shyam Rao or the appointed supervisor of the Radiopharmacy, the Radiology resident will be become actively involved in preparing radiopharmaceuticals. The Radiology resident will be expected to report to the Radiopharmacy at approximately 7:15 AM each morning for one week. On at least one morning, the resident is required personally to prepare all routine radiopharmaceuticals and draw all patient doses until 11:00 AM. Enter in your notebook the names of the radiopharmaceuticals which you prepared along with patient names and doses.

II. INSTRUMENTATION AND PHYSICS - Under the supervision of Dr. David Palmer and Mr. Frank Steffel, the Radiology residents will become familiar during the second and third weeks of the rotation with the operation of a gamma camera. On one morning the Radiology resident will report at 7:15 AM to observe quality control procedures. On a subsequent morning the Radiology resident under the supervision of a

Attachment D

nuclear medicine technologist will perform the quality control procedures. Enter an additional copy of the flood into your lab notebook. Discuss why the gamma camera is or is not ready for clinical use on that day. The Radiology resident also will perform a routine total [illegible]v bone scan along with spot views for a patient undergo[illegible] evaluation for possible bone metastases. Enter into yo[illegible] notebook a brief description of the case including the history, physical findings, and summary of bone scan results.

III. I-131 THYROID UPTAKE - Under the supervision of Mrs. Linda Jefferson or the nuclear medicine technologist performing thyroid uptakes, the Radiology resident will first observe and then perform a thyroid uptake. Enter into your notebook a description of the thyroid uptake procedure, of the calculations for your patient's thyroid uptake, and a brief summary of history, physical findings, results of the I-131 thyroid uptake, and clinical significance of the uptake results.

IV. THYROID SCAN - Under the direct supervision of Dr. Ali Isitman and a nuclear medicine technologist in general scanning for the week, perform a technetium-99m pertechnetate thyroid scan. A brief description of the history, physical findings, scan results, and clinical significance of the scan results should be entered into your notebook.

V. RENOGRAM ANALYSIS - A previously acquired and analyzed renogram will be assigned to you by Dr. Collier. Under the direct supervision of Dr. Collier and either Mr. David Ewey or Mr. Chuck Dellis, perform a computer assisted analysis of the renogram data. Describe the principals of the examination and include a copy of the results for this patient in your notebook.

VI. RESTING MUGA COMPUTER ANALYSIS - Under the direct supervision of Dr. Hellman and either Kay Schabenlender or David Peck, analyze the Resting MUGA data which has been supplied to you. In addition to using the fully automated cardiac software, examples of analysis using manually drawn regions of interest for the left ventricle and repositioned choices for background substraction, center the left ventricle, and left ventricular apex should be performed. In your notebook, describe briefly the principals of the examination and attach copies of the results for the analysis indicated above.

Completion of these exercises and submission of the laboratory notebook for approval by Dr. Collier or another Nuclear Medicine attending physician is required for successful completion of the three month rotation. In the event that for a portion of your rotation you are assigned to Dr. Zielonka's laboratory at the Wood VA Medical Center, it may not be convenient for you to complete all of these exercises at the Milwaukee County Medical Complex. Contact Dr. Akhtar who will arrange for you suitable opportunities to complete the exercises at the Wood VA Medical Center.

In addition, for each week that you are assigned to the Milwaukee County Medical Complex you are required to enter one case into the Nuclear Medicine teaching file. The cases are to be approved by the senior Nuclear Medicine resident at the Milwaukee County Medical Complex. Enter the name, clinical subject matter, and teaching file code for each of these cases into your laboratory notebook.

MEDICAL COLLEGE OF WISCONSIN

Department of Radiology
Section of Nuclear Medicine

NUCLEAR RADIOLOGY AND MAGNETIC RESONANCE IMAGING RESIDENCY PROGRAM OF THE AFFILIATED HOSPITALS OF THE MEDICAL COLLEGE OF WISCONSIN

INTRODUCTION

The one-year nuclear radiology program of the affiliated hospitals of the Medical College of Wisconsin trains radiologists in the diagnostic use of radionuclides and magnetic resonance imaging. The program is designed to meet the requirements of the AMA Residency Review Committee for Nuclear Radiology and to qualify suitable applicants with backgrounds in diagnostic radiology for subspecialty certification by the American Board of Radiology. Applicants to this program must have completed a three or four year radiology residency which included at least three months of training in nuclear medicine. Resident physicians under the direct supervision of the Medical College of Wisconsin faculty gain clinical experience by participating in the over 11,000 nuclear medicine and 2,000 magnetic resonance imaging procedures performed by the affiliated institutions. Instruction in physical sciences, instrumentation, mathematics, computer science, radiation biology, radiation protection, and radiopharmaceuticals is provided by the Medical College of Wisconsin basic sciences and clinical faculty.

PROGRAM STRUCTURE

While a number of institutions participate in this residency program, a required curriculum and series of clinical rotations assures all residents of the necessary basic instruction. All residents spend a minimum of eight months in clinical nuclear medicine rotations at the Milwaukee County Medical Complex and the Froedtert Memorial Lutheran Hospital. These two hospitals are physically connected and on a day-to-day basis residents are involved in the teaching and research activities of both laboratories. Dr. B. David Collier, who is Director of the Nuclear Radiology Training Program is responsible for the residents' instruction at these two institutions. A Nuclear Medicine faculty of three full time physicians and three full time Ph.D. medical scientists are available at this clinical site. Instrumentation includes nine nuclear medicine gamma cameras, advanced computer systems and a dual photon bone mineral analyzer.

All residents spend at least two months at the Milwaukee County Medical Complex Magnetic Resonance Imaging Center. Experience in head, spine, and general body magnetic resonance imaging is provided. In addition, all residents attend a tutorial on the physics and instrumentation of magnetic resonance imaging. An additional month of MRI experience is available as an elective. However, more than three months cannot be spent in MRI without jeopardizing the resident's qualifications for subspeciality certification in Nuclear Radiology.

Milwaukee County Medical Complex
8700 West Wisconsin Avenue
Milwaukee, Wisconsin 53226
(414) 257-5968

All residents are required to spend one month in pediatric nuclear medicine at the Milwaukee Children's Hospital. Dr. Jack Sty is Director of Nuclear Medicine at this 150 bed children's hospital.

During the one-year Nuclear Radiology Program, one month is available for elective time. Residents frequently choose to spend a portion of their elective time in the St. Mary's Hospital Nuclear Medicine Section under the direction of Dr. Philip Ruetz. Dr. Ruetz offers the residents instructions in both nuclear medicine techniques and ultrasound imaging. Elective time may also be spent in MRI, the CT/Ultrasound Section of the Milwaukee County Medical Complex, the Diagnostic Radiology Section at the Milwaukee County Medical Complex, the Nuclear Medicine Section at Milwaukee Children's Hospital or in clinical or basic science research.

The faculty of the Nuclear Medicine Section undertakes a written evaluation of the resident performance at least four times a year. These written evaluations are discussed with residents making good progress in the program at least once a year. Recognizing that there may be considerable variability in the residents background and aptitude, flexibility has been incorporated into the curriculum. For example, residents with a limited background in mathematics and the fundamentals of physics may be assigned tutorial work which will bring them up to the level of competence required by the American Board of Radiology. Residents who have advanced to degrees in physics or engineering will be assigned a special, more challenging curriculum.

COURSE OF STUDY AND METHODS OF INSTRUCTION

Training in basic nuclear sciences is conducted principally in lectures and laboratory sessions which are supplemented by departmental and interdepartmental conferences. The core curriculum of basic nuclear science classroom and laboratory experiences is summarized below.

Physics and Instrumentation

David Palmer, Ph.D.
Charles Wilson, Ph.D.
James Hyde, Ph.D.

Total Number of Hours - 75

Radiation Biology

Larry Hopwood, Ph.D.
Charles Wilson, Ph.D.

Total Number of Hours - 20

Radiation Dosimetry

b. David Collier, M.D.
David Palmer, Ph.D.
Charles Wilson, Ph.D.

Total Number of Hours - 15

Radiation Protection and Emergencies

Shyam Rao, Ph.D.

Total Number of Hours - 10

Statistics and Computer Science

Robert S. Hellman, M.D.
Lisa Ann Trembath, B.S.

Total Number of Hours - 20

Nuclear Chemistry

Shyam Rao, Ph.D.

Total Number of Hours - 20

Clinical Nuclear Medicine and MRI

B. David Collier, M.D.
Ali Isitman, M.D.
Robert Hellman, M.D.
Bruce Kneeland, M.D.
Alan Williams, M.D.
Victor Haughton, M.D.
Guillermo Carrers, M.D.

Instruction in imaging centers on the formal afternoon clinical tutorial. From the beginning of the training period, the resident is expected to attend these tutorials. At least one and sometimes as many as three staff physicians supervise these sessions. The resident is allowed a short introductory period to become familiar with scan interpretation. The introductory period ends when the resident has mastered normal and morbid imaging anatomy. Subsequently, the resident is responsible for obtaining clinical information by history, physical examination, and chart review. Staff physicians instruct residents both in clinical techniques and image interpretation. Multimodality correlations are

emphasized. The close working relationship with ultrasound, transmission CT, and diagnostic radiology along with the availability of MRI is a particular strength of the Nuclear Radiology Program. Interdepartmental conferences are an important part of the teaching program. Nuclear Medicine residents regularly attend interdepartmental oncology, cardiology-cardiothoracic surgery, and orthopedic-imaging conferences on a weekly basis. Less frequently attended are pathology, thyroidology, pulmonary medicine, emergency medicine, and general surgery interdepartmental conferences. Attending physicians in the various clinical specialities along with attending physicians from the Nuclear Medicine Section conduct the case presentation and didactic sessions.

Resident presentations of clinical and selected basic science topics are scheduled weekly. Residents are assigned up to four articles from current literature which they are expected to supplement with their own literature review. Recent topics included SPECT thallium myocardial imaging, pulmonary embolism, digital filtering, and cost effectiveness of special imaging.

RESEARCH OPPORTUNITIES

Nuclear Radiology residents are encouraged to participate in ongoing research projects. Recent successful resident research projects include SPECT imaging of pseudoarthrosis and low back pain, SPECT and MRI imaging of the temporomandibular joints, parathyroid imaging by MRI, CT, Ultrasound and scintigraphic techniques, and Indiun-111 autologous platelet scintigraphy for detection of renal transplant rejection. In addition to these clinical protocols, a large field of view gamma camera and computer system are devoted exclusively to animal research in the Allen Bradley Research Laboratory on the Medical College campus. Recent successful student or resident investigations include animal studies of bone graft healing, growth plate damage and CSF dynamics.

OPPORTUNITIES AFTER THE RESIDENCY

Upon completing the program, residents will be prepared for subspecialty examination in Nuclear Radiology by the American Board of Radiology. Former residents of the Medical College of Wisconsin Nuclear Medicine Radiology Training Program now hold sought after positions both in academic nuclear medicine and in private practice. During their training, residents are advised of career oppoptunities by the Director of Medicine, and they are encouraged to use the job placement services provided by the Society of Nuclear Medicine and the American College of Radiology.

MEDICAL COLLEGE OF WISCONSIN

Department of Radiology
Section of Nuclear Medicine

NUCLEAR MEDICINE RESIDENCY PROGRAM OF THE AFFILIATED HOSPITALS OF THE MEDICAL COLLEGE OF WISCONSIN

INTRODUCTION

The two year nuclear medicine program of the Affiliated Hospitals of the Medical College of Wisconsin trains physicians in the diagnostic and investigational use of radionuclides. The program is designed to meet the requirements of the AMA Residency Review Committee for Nuclear Medicine and to qualify suitable applicants for certification by the American Board of Nuclear Medicine. As stated in the Essentials of Accredited Residencies ACGME, two years of prior medical training are recommended before nuclear medicine training:

> "A minimum of 4 years of residency of training is considered necessary to train a physician in the specialty of nuclear medicine. This training should include at least 2 years of satisfactory preparatory training in programs accredited or accepatable by the Accreditation Council for Graduate Medical Education. Such programs shall provide broad experience in clinical medicine which the primary emphasis in on the patient and the patient's clinical problems. The satisfactory completion of the equivalent of an accredited transtional year program is recommended as the minimum

primary patient care experience. Preparatory training may come or may not, be within the specialities of radiology, pathology, or internal medicine. It is recommended that the preparatory postdoctoral training precede training in nuclear medicine."

Resident physicians under the direct supervision of the Medical College of Wisconsin Faculty gain clinical experience by participating in the over 17,000 in vivo procedures and over 75,000 in vitro laboratory procedures performed by the affiliated institutions. Instruction in physical sciences, instrumentation, mathematics, computer science, radiation biology, radiation protection, and radiopharmaceuticals is supervised by the Medical College of Wisconsin Faculty, Dr. D. Palmer (physics) and Dr. S. Rao (radiochemistry).

PROGRAM STRUCTURE

While a number of institutions participate in this residency program a required curriculum and series of clinical rotations assure all residents of the necessary basic instruction. All residents spend a minimum of 5 months, a portion which may be elective time in the clinical rotation at the Milwaukee County Medical Complex and the Froedtert Memorial Lutheran Hospital. These two hospitals are physically connected and on a day-to-day basis residents are involved in the teaching and research

activities of both laboratories. Dr. B. David Collier who is Director of Nuclear Medicine at both of these institutions, and Dr. R. Hellman, who is Director of the Nuclear Medicine Residency Training Program are responsible for the quality of resident instruction at these two institutions. In addition, residents may to spend up to 5 months in the Zablocki VA Medical Center Nuclear Medicine Laboratory, which is directed by Dr. Jason Zielonka. The teaching experience at the Zablocki VA is intended to supplement the activities at the Milwaukee County Medical Complex and the Froedtert Memorial Lutheran Hopsital. By frequent exchanges of the attending physicians between the various principal nuclear medicine laboratories in the program, joint conferences, and tutorials scheduled on a weekly and biweekly basis, the residency experience at these three locations is carefully integrated.

All residents are required to spend one month each year in pediatric nuclear medicine at the Milwaukee Childrens Hospital. Dr. Jack Sty, Director of Nuclear Medicine at the 150 bed Childrens Hospital, is a well known authority in pediatric nuclear medicine. During the second year of the residency, residents will spend three months assigned to radioimmunoassay laboratories at Zablocki VA and Milwaukee County Medical Complex to meet nuclear medicine board requirements.

During the two year nuclear medicine program, one month per

year is available for elective time. Residents frequently choose to spend a portion of their elective time in the St. Mary's Nuclear Medicine Section under the Direction of Dr. Philip Reutz. Dr. Reutz offers the residents instructions in both nuclear medicine techniques and ultrasound imaging. Elective time may also be spent in the CT/Ultrasound Section at the Milwaukee County Medical Complex, the Diagnostic Radiology Section at the Milwaukee County Medical Complex, the Nuclear Medicine Section at the Milwaukee Childrens Hospital or in clinical or basic science research.

COURSE OF STUDY AND METHODS OF INSTRUCTION

Training in basic nuclear sciences is conducted principally in lectures and laboratory sessions which are supplemented by departmental and interdepartmental conferences along with presentations by residents. Recognizing that there may be considerable variability in the residents background and apptitude, flexibility has been incorporated into the curriculum. For example, residents with a limited background in mathematics and the fundamentals of physics may be assigned tutorial work and special problems which will bring them up to the level of competence required for the American Board of Nuclear Medicine. At this same time residents with advanced degrees in physics or engineering will be assigned a special more changing curriculum.

The faculty and the subjects that they teach are as follows:

Physics and Instrumentation	David Palmer, Ph.D. MCMC Charles Wilson, Ph.D. MCMC Jason Zielonka, M.D., Zablocki VA Robert S. Hellman, M.D., MCMC
Radiation Biology	Larry Hopwood, Ph.D., MCMC John E. Moulder, Ph.D., MCMC Charles Wilson, Ph.D., MCMC
Radiation Dosimetry	B. David Collier, M.D., MCMC David Palmer, Ph.D., MCMC Charles Wilson, Ph.D., MCMC Robert Stiglitz, B.S., Zablocki VA
Radiation Protection and Emergencies	Shyam Rao, Ph.D., MCMC Robert STiglitz,B.S., Zablocki VA
Nuclear Chemistry/ Radiopharmaceuticals	Shyam Rao, Ph.D., MCMC
Statistics and Computer Science	David Palmer, Ph.D., MCMC Jason Zielonka, M.D., Zablocki VA Robert Hellman, M.D., MCMC Charles Kronenwetter, M.S. Zablocki VA
In Vitro Techniques	Ali Isitman, M.D., MCMC En-lin Yeh, M.D., Zablocki VA B. David Collier, M.D, MCMC Linda Jefferson, NMT, MCMC Thomas Kleist, NMT, Zablocki VA

Clincial nuclear imaging instruction centers on the formal afternoon clinical nuclear medicine tutorial in each of the nuclear medicine laboratories. In the beginning of the training period, the resident is expected to attend these tutorials. At

least one and sometimes as many as 3 nuclear medicine staff physicians supervisory sesssions. The resident is allowed a short introductory period to become familiar with the interpretation of scintigrams. The introductory period ends when the resident has mastered normal and morbid anatomy as imaged by nuclear techniques. Subsequently the resident is responsible for obtaining clinical information by history, physical examination, and chart review. Staff physicians instruct residents both in clinical techniques and scintigraphic interpretation. Correlation with other laboratory imaging techniques is emphasized, and a close working relationship with ultrasound, transmission CT, diagnostic radiology and more recently MRI is a particular strength of the program.

Interdepartmental conferences are an important part of the teaching program. Nuclear medicine residents attend interdepartmental oncology, cardiology/cardiothoracic surgery, and orthopaedic imaging conference on a weekly basis. Attending physicians in the various clinical specialities along with the attending physicians from the Nuclear Medicine Section conduct case presentation and didactic sessions.

Staff and resident presentations on selected clinical, basic science and social science topics are scheduled weekly. Residents are given 4 or more articles from current literature which they are expected to supplement after their own literature

review. Recent topics have included: thyroid carcinoma, pulmonary emoblism, digital filtering, and cost effectiveness of special imaging. A copy of the schedule of the nuclear medicine basic science and clinical tutorials for the residents in the July 1985 to June 1986 academic period is included with this program description. In addition this schedule shows the typical conference schedule.

RESEARCH OPPORTUNITIES

Residents are encouraged to participate in ongoing research projects. Clinical investigations related to single photon emission computed tomography (SPECT), picture acquisition and communication systems (PACS), and magnetic resonace imaging (MRI) currently are being conducted. Ongoing research projects include: pancreatical biliary tract motor function in health and disease, morbidity and prognosis of cerebrovascular disease related to regional cerebral blood flow determination, serial quantitative assessement of bone remodeling associated with spinal fusion, and the utility of SPECT in diagnosis of skeletal disorders. In addition to a dedicated clinical research center at the Froedtert Memorial Lutheran Hospital for human studies, a gamma camera/nuclear medicine computer are available in the Allen Bradley Research Laboratory which is actively used by a number of basic science investigators for animal studies.

Resident participation in ongoing research projects is considered important. One of the projects completed by a nuclear medicine resident was a prospective study of parathyroid imaging between nuclear medicine, CT, Ultrasound, and MRI imaging modalities. A second example is a recently completed project by one of our nuclear medicine fellows which demonstrated an important role of Indium-111 labeled platelets for evaluation of renal transplant rejection.

OPPORTUNITIES AFTER THE RESIDENCY

Upon completing the program residents will be prepared for the speciality examination by the American Board of Nuclear Medicine. The former residents of the Medical College of Wisconsin Nuclear Medicine Residency Training Program have gone on to responsible positions in both academic nuclear medicine and private practice. During their residency, residents are advised of career opportunities and are encouraged to use the job placement provided by the Society of Nuclear Medicine.

9/1/86

NUCLEAR MEDICINE SECTION
CONFERENCES AND TUTORIALS FOR RESIDENTS

July 1986 through June 1987

I. MCMC-VA COMBINED NUCLEAR MEDICINE GRAND ROUNDS
8-9 AM on the 2nd (Nuclear Medicine Conference Room at MCMC) and 4th (10th Floor VA) Thursdays of each month.

II. RADIOCHEMISTRY CONFERENCE
Instructor: Shyam Rao, Ph.D.
Thursdays 9:00 to 9:45 AM, MCMC

III. SKELETAL IMAGING CONFERENCE
Instructors: B. David Collier, M.D. and Bill Carrera, M.D.
11 AM to 12 noon, Wednesdays of each month, MCMC

IV. PHYSICS AND INSTRUMENTATION
Instructor: David W. Palmer, Ph.D.
8:00 to 9:30 AM every Friday beginning Feb. 5, 1987.

V. RADIATION BIOLOGY
Instructor: John E. Moulder, Ph.D.
Tuesdays beginning Feb. 1987, 7:30-9:00 AM, MCMC

VI. COMPUTERS IN IMAGING AND NUCLEAR MEDICINE
Intructor: Jason Zielonka, M.D. Place-MCMC
10 Lectures, 8:00 to 9:00 AM beginning Sept. 2, 1986.

VII. CLINICAL PHYSICS, INSTRUMENTATION, AND RADIATION BIOLOGY
200 Hours
Instructors: VA Staff
Schedule and Place to be announced by Dr. Zielonka.

VIII. CLINICAL TUTORIALS
Mondays 8-10 AM.

DATE	PLACE	TOPIC	INSTRUCTOR
July 7	MC	Lung Scan	Collier
July 14	MC	GI Bleeding	Hellman
July 21	Columbia	Hepatobiliary Scan	Yeh
July 28	MC	Lung Scan	Isitman
August 4	VA	Testicular Scan	Krubsack
August 11	VA	Renal Transplant	Collier
August 18	VA	Skeletal Oncology	Akhtar
August 25	MC	Infarct Avid Scan	Hellman
Sept 1	HOLIDAY		
Sept 8	MC	Introduction to Nuclear Cardiology	Collier
Sept 15	MC	Brain Scan	Tikofsky/Ruetz
Sept 22	VA	Thallium Scan	Zielonka
Sept 29	VA	Gated Blood Pool Scan	Krubsack
Oct 6	MC	Thyroid Scan	Isitman
Oct 13	MC	Instrumentation/MRI	Palmer
Oct 20	MC	Renal Introduction	Hellman
Oct 27	VA	Gallium Scan I	Zielonka
Nov 3	MC	Hyperthyroidism-Dx/Rx	Isitman
Nov 10	VA	Thyroid CA-Dx/Rx	Akhtar
Nov 17	St. Mary	Ultrasound	Ruetz
Nov 24	VA	Pediatric Nuclear Medicine	Zielonka
Dec 1	--	RSNA	

DATE	PLACE	TOPIC	INSTRUCTOR
Dec 8	VA	GI Function Studies	Krubsack
Dec 15	MC	Orthopedic Bone Scintigraphy	Collier
Dec 22	VA	IN-111 WBC Scan	Zielonka
Dec 29	MC	Clinical Software	Almasi
Jan 5	MC	Computers/Image Enhancement	Hellman/Palmer
Jan 12	VA	T.M.J. Imaging	Krasnow
Jan 19	Columbia	Gated Blood Pool/ Echocardiology	Yeh
Jan 26	VA	Cisternograhy	Krubsack
Feb 2	MC	Clinical Decision Making	Collier
Feb 9	VA	Liver/Spleen-I	Zielonka
Feb 16	VA	Liver/Spleen-II	Akhtar
Feb 23	MC	Gallium-II	Isitman
March 2	GSMC	Sports Medicine	Veluvolu/Whalen
March 9	VA	Parathyroid Imaging	Krubsack
March 16	MC	Bone Mineral Instrumentation	Charles Wilson
March 23	MC	Bone Mineral Clinical	Collier/Carrera
March 30	VA	MRI	Zielonka
April 6	VA	Bone Marrow Imaging	Akhtar
April 13	VA	Lung Scan	Krubsack
April 20	Columbia	Private Practice Nuclear Medicine	Yeh/Ruetz

DATE	PLACE	TOPIC	INSTRUCTOR
April 27	MC	Filtering	Nowak
May 4	MC	Monoclonal Antibodies	Collier
May 11	MC	Periph. Vascular Disease	Isitman
May 18	VA	RIA-Introduction	Akhtar
May 25		HOLIDAY	
June 1		SNM	
June 8	St. Mary	Nuclear Therapeutics	Ruetz
June 15	MC	Adrenal Scans	Hellman
June 22	VA	Nuclear Oncology	Zielonka
June 29	MC	Interventional Nuclear Medicine	Isitman