

Masters Education in Occupational Environmental Health

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Abstract

The University of Pennsylvania School of Nursing's Occupational Environmental Health Nursing Program admitted its first students in the fall of 1986. The program was established because of the huge industrial base in the Pennsylvania, southern New Jersey and Delaware region which spanned every category of business; agriculture, forestry, fishing, mining, construction, manufacturing, transport, communications, utilities, wholesale and retail trade, finance, insurance, real estate, services and public administration. A second reason was the lack of occupational and environmental health professionals contributing to an under-served population in the region's workforce. There has been an emergence of small businesses in the region, which generally have few health care services for employees and are in need of creative and practical means to satisfy the demands of employees and regulation. The University of Pennsylvania's Occupational Environmental Health (OEH) Nursing Program remains the only OEH nursing program in the region and has been called upon routinely by business to offer assistance. The most frequent request is for graduates to assume a role in providing or managing health care within an industry. Rather than decreasing over the last few years, these requests have become more numerous as employers have become aware of the talents of master's prepared OEH nurses, the nurse managed model and the burdens of escalating health care costs.

The OEH nursing program has been structured over this grant period as a four semester, one and a half-year curriculum. Program options were either study leading to an Adult Nurse Practitioner or Administration/Consultation executive. The Administration/Consultation option addresses the health care needs of corporate America and the workforce offering management and financial course work, interdisciplinary work with Wharton management professionals and an MSN/MBA with The Wharton School of Business. Graduates from the OEH adult nurse practitioner option can sit for national certification as adult nurse practitioners. Likewise, graduates from the Administration/Consultation option can sit for national certification in administration. An additional option allows the OEH primary care student to take additional course work to become a family nurse practitioner assisting those graduates working in settings where family care is provided such as migrant and rural sites. Graduates from both options can sit for national OEH credentialing once practice requirements are met.

The Occupational Environmental Health Program has graduated sixty four OEH nurses with twenty-eight graduating within this grant period. Program recognition has flourished both regionally and nationally. Applicants to the program have resided in all parts of the country and in Canada, Europe, and the Far East.

Significant Findings

The goal of the Occupational Environmental Health Program (OEH) is to educate and graduate highly qualified occupational and environmental health nurses at the master's level. The program prepares post-baccalaureate nurses to practice as master's prepared occupational environmental health nurses who are able to care for, and promote health in the workforce and in communities. The program also admits post masters students, those who have completed a master of science degree in nursing in a discipline other than OEH as well as BSN/MSN students, those students having an undergraduate degree in a field other than nursing and matriculate into the School of Nursing in an articulated and accelerated nursing program leading to the OEH masters degree.

Graduates

- There have been twenty-eight graduates from the OEH program during this grant period.
- Twenty-three OEH students graduated from the adult nurse practitioner option.
- Two of the primary care graduates completed study as family nurse practitioners.
- Five students graduated from the Administration/Consultation option.
- Two of the twenty-eight graduates were admitted as post-masters students
- Three graduates were admitted as BSN/MSN students.

National presence

- Graduates of the OEH program during this grant period are working in nine different states across the United States.
- OEH positions held by these graduates are in hospital based OEH programs, Corporate based programs, entrepreneurial or contract programs.
- OEH positions held by graduates from this grant period span from Corporate Vice President for Health and Safety of a large international firm or President of entrepreneurial company or lobbyist to Nurse Practitioner in an OEH contract company
- Students work with large multinational corporations on projects and site work.

International presence

- Eight graduates from this grant period have positions in multinational companies and have had opportunities to present in corporate wide forums.

Graduate program ratings

- Graduates from the OEH program rated their program the highest in a School of Nursing survey of all graduate programs.
- Employers of the OEH program graduates rated them highest in a survey of employers of School of Nursing graduates.

Student experiences and opportunities are many and varied.

- Interdisciplinary opportunities with industrial hygiene students

- Interdisciplinary opportunities with Wharton Business School students
- Interdisciplinary opportunities with occupational medicine
- Interdisciplinary opportunities with students throughout the School of Nursing
- Clinical site placements with expert practitioners in major OEH settings.
- OSHA internships in Washington D.C.
- OSHA area office internships in Philadelphia and New Jersey
- Washington D.C. trip visiting prominent OEH leaders.
- Corporate projects
- Multiple plant walk throughs in a variety of industries
- Multiple credentialing options
- Multiple dual degree options

Faculty strength and outreach has been a driving force at the School of Nursing. The OEH program has had a national and international presence.

- Smithsonian exhibit on public health nursing inclusive of OEH nursing as its origin
- Philadelphia Museum of Art exhibit the Nightingale's Song examines the history of nursing over six centuries and four continents
- USAID grant in environmental health in central Europe
- International presentations and meetings on occupational and environmental health
- Development of an environmental nursing toolbox with ATSDR and AOEC
- Interdisciplinary curriculum with Temple University Environmental Health Program (Industrial Hygiene)
- Interdisciplinary curriculum development for MPH program at the University of Pennsylvania with OEH as a core, team taught with faculty from the School of Nursing, School of Medicine and School of Arts and Sciences.
- OSHA satellite program site for health care professionals.

Curriculum revisions to better support students and the School of Nursing are ongoing.

Overview of Program

The goal of the Occupational and Environmental Health Program (OEH) is to educate and graduate highly qualified occupational and environmental health nurses at the master's level. The program prepares post-baccalaureate nurses to practice as master's prepared occupational and environmental health nurses who are able to care for and promote health in the work force and in communities. Post masters students and BSN/MSN students although not as frequently enrolled, add to the admissions of the program as well as to the education and texture of the pool of students. Diverse backgrounds bring much to the classroom.

Nurses matriculating into the occupational health program can choose to enter the program in one of two educational options, Administration/Consultation or Primary Care. The administration/Consultation option emphasizes management, finance, consulting, program development, surveillance methods and health policy. While the primary care option stresses prevention, diagnosis and treatment of people at risk for occupationally or environmentally related disease, disability, injury and lifestyle hazards. Both options focus on occupational and environmental hazards and disease, the health of workers and communities, and most importantly primary prevention. Secondary and tertiary prevention are also part of the curriculum. Primary care students successfully completing the program are eligible for certification as adult nurse practitioners in the state of Pennsylvania and the American Nurses Association certification exams. Primary Care option Students may choose to prepare as family nurse practitioners and become ANA certified. The Administration/Consultation option students may pursue a dual degree – a MSN/MBA in conjunction with the Wharton School of Business. Occupational Environmental Health Program graduates can also be eligible for certification as Occupational Health Specialists through the American Board of Occupational Health Nurses once completing some additional requirements.

Background

The University of Pennsylvania School of Nursing's Occupational Environmental Health Program admitted its first student in the fall of 1986. The first master's prepared occupational health nurse graduated in 1987. The program was established because of the huge industrial base in the Pennsylvania, southern New Jersey and Delaware region, which spanned every category of business; agriculture, forestry, fishing, mining, construction, manufacturing, transport, communication, utilities, wholesale and retail trade, finance, insurance, real estate, services and public administration. A second reason was the lack of occupational and environmental health professions contributing to an under-served population in the region's workforce. There has been an emergence of small business in the region, which generally has few health care services for employees and is in need of creative and practical means to satisfy the demands of employees and regulation. The University of Pennsylvania's Occupational Environmental Health Program remains the only occupational health nursing program in the region and is called

upon routinely by business to offer assistance. The most frequent request is for graduates to assume a role in providing or managing health care within an industry. Rather than decreasing over the last few years, these requests have become more numerous as employees have become aware of the talents of the master's prepared occupational health nurses, the nurse managed model and the burdens of escalating health care costs.

The OEH program at the University of Pennsylvania has been NIOSH evaluated and approved since inception. It remains the only NIOSH training project in nursing. Although the OEH program has ongoing curricular updates and improvements addressing the needs of the School of Nursing, the discipline of OEH, the needs of students and the community at large, the quality of the education provided and the success of its graduates remained positive and continues to progress.

Faculty Strength

The faculty of the University of Pennsylvania School of Nursing is nationally and internationally respected. It is distinguished by its reputation and strength in multiple areas. Its members have received honors and awards coveted by nursing leaders. Faculty members have served in leadership positions in national and international health care organization. The following faculty members have a primary role in the Occupational Environmental Health Program.

Karen Buhler-Wilkerson, RN, PhD, FAAN is the Program Director of the Occupational Environmental Health Program. Dr. Buhler-Wilkerson is a full time faculty member holding the rank of full professor. She has been associated with the OEH program since its inception. She is a nationally recognized scholar and brings many years of experience and expertise on public health to this position. Dr. Buhler-Wilkerson is currently the Director of the Center for the Study of the History of Nursing at the University of Pennsylvania School of Nursing. As full time professor, public health expert and past division chair, she is able to fully comprehend the needs of the program and assist with the direction and progress of the program's objectives within the scope and long range plans of the School of Nursing. Dr. Buhler-Wilkerson has had a formal exhibit at the Smithsonian Institution in Washington D.C. that depicted the history of public health nursing in this country. In conjunction with the curators at the Philadelphia Museum of Art, she had the only exhibit of its kind at a major art museum in the world. The Nightingale's Song Exhibition examines the history of nursing over six centuries and four continents. Occupational environmental health nursing's origins were in public health nursing and in the United States financially supported by industrialists as indicated in the Smithsonian exhibit and Philadelphia Museum of Art exhibition.

Kay M. Arendasky, MSN, CRNP continues to serve as the Associate director for the Occupational Environmental Health Program on a full time basis. Her extensive occupational health experience includes directing and implementing the first full service on-site contractual occupational health facilities in the region, as well as directing and managing large off-site occupational Health centers. She has been a speaker for OEH

organization as well as other nursing organizations and industry. She is frequently contacted by corporate settings to assist in developing and implementing occupational health services. Again, this year she has been asked by several regional organizations to provide information and assistance for nurse managed centers. She has been an occupational health and safety consultant, has developed, and marketed occupational health and safety services. She has expanded the program's interdisciplinary efforts. Because of her long-term position with the program, Kay Arendasky has provided the beneficial continuity needed for the expansion and progression of the program. With the team in place, providing long-term support, critical knowledge base and position, the Occupational Environmental Health Program is well situated to continue advancing its goals.

Cynthia Scalzi, PhD., RN is the director of the Nursing Administration Program and responsible for those Nursing administration courses attended by OEH students in the Administration/Consultation option. As an Associate Professor, Dr. Scalzi has joint appointments with the School of Nursing and the Wharton School of Business and is a Senior Fellow of the Leonard Davis Institute for the Health economics. Dr. Scalzi has researched the need for the advance management training of nurses in OEH settings and approaches to the integration of needed content and experiences within graduate level nursing administration program. Dr. Scalzi has also served on an expert panel for the National Institute of Nursing Research (NINR) examining future needs on the area of community based nursing models of health care delivery. She authored the section of the NINR report on programs and development of new programs. Dr. Scalzi works closely with the OEH faculty to incorporate the course enhancements necessary to meet the needs of the OEH graduate student. She serves as the faculty interface with the Wharton Business School.

Eileen Sullivan-Marx PhD. CRNP is the Director of the Adult Nurse Practitioner Program and coordinates the Occupational Environmental Health and Adult Nurse Practitioner Option within primary care program. She has extensive clinical experience as a nurse practitioner in private practice and nurse managed centers. She is recognized as an expert in health care reimbursement issues and serves as a member of the payment review task force with the American Medical Association. She is a consultant and advisor for the American Nurses Association on reimbursement issues as well as regional health care and policy organization. Dr. Sullivan-Marx is a major supporter of nurse managed models and has been instrumental in the advancement of nurse practitioner regulatory reform. Dr. Sullivan-Marx is a national speaker on reimbursement and regulatory issues. She has devoted much time and resources to addressing health care policy as it pertains to nurse practitioner practice. Dr. Sullivan-Marx oversees course work offered to all master's students in Adult Primary Care. She and OEH faculty regularly review applicable OEH information.

Robert Patterson, ScD., CIH is a full Professor and Director of Environmental Studies at Temple University. He serves as Program Director for Temple's Industrial Hygiene Program. He has managed a two million dollar research program on the health effects of an electromagnetic field and has received national honors and recognition. Dr. Patterson

teaches the Industrial Hygiene class and coordinates both the Toxicology course and the Industrial Safety course taken by OEH nursing students at Temple.

In addition to the primary faculty listed above, students interchange with many more faculty within the School of Nursing, at clinical sites, additional schools within the University and interdisciplinary universities sites as well as the community.

Program progress

The University of Pennsylvania School of Nursing's Occupational Health Program remains a topped rated educational program for nurses interested in quality offerings, diverse opportunity, and multiple credentialing. The unique configuration of the Occupational Environmental Health Program supports educational pathways preparing advanced practice OEH nurses to meet the challenges and needs of this demanding profession. The University of Pennsylvania's Occupational Environmental Health Program remains the only occupational health nursing program in the region and is called upon routinely by business to offer assistance.

The Occupational Environmental Health Program at the University of Pennsylvania is a leader in the nation in offering the number of educational and credentialing choices: primary care with certification as an adult nurse practitioner or with an additional semester, family nurse practitioner certification, plus Administration/Consultation leading to credentialing in nursing administration. In addition, a course of study is offered leading to a combined MSN/MBA. With the addition of our MSN/MPH option we offer an extensive high quality occupational and environmental education. The MPH program at the University of Pennsylvania will begin accepting students for fall of 2002. Courses developed for the MPH program may be offered in advance. The MPH program housed in the School of Medicine is a University wide cooperative effort with all schools represented in planning and operation.

The Occupational Environmental Health Program (OEH) with its unique configuration within the School of Nursing has served as a model during administrative and academic restructuring. OEH has shared courses and curriculum providing students with multiple options as previously discussed. The Adult Nurse Practitioner program is the number one rated program in the nation in the most recent US News and World Report survey. In May of 2000 it celebrated its silver anniversary. The Health Care and Nursing Administration Program is the number three rated program in the nation in the same survey

Nursing master's programs require a minimum of 12 course units (C.U., with 1 course unit = 3 credit hours) in an approved sequence of study. These programs can be completed in 3 semesters, or 1 calendar year of full-time study. A full-time course of study is defined as 3-4 course units per semester. Occupational Environmental Health requires 16 CUs, or 4 semesters, with full-time students completing the program in a year and a half. Most students complete degree requirements in 2 to 3 calendar years.

Although each occupational environmental health option has specific courses, students share common courses in each of three areas: nursing research and science core and occupational environmental health content. These common courses serve as the unifying structure for the Occupational Environmental Health graduates enabling them to function within the workplace with mutual understanding and complimentary action.

Critical to professional programs is the availability of clinical placements that offer students supervised experiences with skilled preceptors. The OEH options have a total of 770 and 440 clinical/fieldwork practicum hours in Primary Care and Administration/Consultation option, respectively. The program's development of quality clinical sites has been resoundingly successful. The wealth of varied sites has permitted the program to tailor site placements to meet individual student's learning needs and special interests. These sites include hospital affiliated occupational health clinics, health units within corporations, corporate level occupational health departments, federal and local OSHA offices, private practices and consulting firms. Corporate settings have also been rich in diversity, including pharmaceutical, chemical, oil refining, meatpacking, food processing, insurance, public utility, and manufacturing companies. The ongoing expansion of our clinical placements has had a secondary and beneficial effect, namely an expansion of the network of employers who provide meaningful input to the program, facilitation of the recruitment of students, identification of future employers of OHN graduates.

The selection of preceptors is as important as the development of clinical sites. Preceptors are chosen on the basis of professional reputation interest in nursing education, willingness to evaluate students and their own education as part of our faculty, and accessibility to materials or patients needed for students to learn skills. We look for preceptors who have ability to deal with questions and delays in practice created by students, and who truly enjoy student interaction. Our preceptors are eligible for faculty appointment in the School of Nursing if they are nurses with a master's degree in nursing or a physician. There are some preceptors without master's degrees in nursing who are not eligible for faculty appointment. Their contribution lies in appropriate credentialing and years of experience in their role. Preceptors are not paid directly for their work.

Several methods have been used to assure continued support quality and participation of preceptors: (1) preceptor training programs, (2) access to continued education program, (3) preceptor information packets for use by preceptors and students (4) site visits and phone communication to maintain contact and answer questions, (5) preceptor access to course work on campus, and (6) evaluation conferences with both students and preceptors. The task and ongoing monitoring of preceptorship activity requires a great deal of faculty time to ensure quality of education.

It is the philosophy of the School of Nursing to include research information and projects at all levels of education and in appropriate course work. Since the initiation of the School of Nursing's doctoral program, master's theses have not been included in the graduate school's curriculum. Students in OEH have ample opportunity to address research issues in multiple course offerings and as research assistants. All graduate

students are required to take Research Methods and Design, a course requiring the student to develop a research proposal and demonstrate practical applications for research method. Students develop a formal research proposal within the Epidemiology course that can be a basis for a future project. Faculty in Epidemiology has commented on the OEH student's excellent efforts. Beginning research is embodied in the occupational health core courses, both theory and clinical. Students are expected to explore an issue, define a question and support an approach. This is done through papers, presentations, and video with a critique. Clinical projects are chosen in conjunction with the preceptor and OEH faculty. Projects must be meaningful to the site and meet graduate expectations. Often, these are research projects. Additional courses requiring research projects are dependent on the option chosen by the student. All students are required to use research based information when developing program projects. Several occupational health students have held research Assistant positions. These positions have not been supported by NIOSH but have been most helpful assisting students in their use of research and in providing tuition benefit. Administration/Consultation option students have access to Wharton's Leonard Davis Institute for health care research through their course work.

The Center for Health Outcomes and Policy Research is pursuing several lines of occupational health research within the School of Nursing. Linda H. Aiken PhD., Director and Julie Sochalski PhD., Co-Director are experts in health policy and health policy research. Studies relating to the health of health care workers are underway, pending or planned. Plans for future occupational health grants are being formalized which will include opportunities for both faculty and students.

As part of some course work, students are expected to write an article for publication. Students in the Administration/Consultation option involved in this course work as well as those not enrolled in these courses have had articles on health issues published.

Recruitment of students continues to be a major goal for the OEH program. With the need for quality educated OEH nurses rising each year and the clear message from corporations and health care entities that masters prepared OEH nurses are in demand, recruitment is the only way to insure that those with appropriate skills are entering the field of practice. There have been more full time students in the program during this grant period than in previous grant periods, a trend encouraged. Still, the OEH program remains small and cannot meet the demand as requested. There have been many avenues pursued to increase enrollment. NIOSH tuition funding is a positive step on the way to improved recruitment.

Activities throughout the project period to improve the curriculum continue to be within three areas.

Clinical site development – OEH clinical sites are developed annually as discussed earlier. Both the site and preceptor are reviewed for quality. Preceptors are nurse practitioners, nurse administrators and physicians. Annually, we conduct a preceptor workshop with the Primary care program and in conjunction with the Board of

Overseers Scholar Lecture. The continued participation of preceptors in this program attests to its success. Even though we have an abundance of occupational health clinical preceptors, we have continued to generate new sites when an experience has excellent value. In order to give each student the highest quality clinical experience, clinical assignments are changed with each semester. Clinical assignments are chosen to offer the student the maximum diversity of industry and preceptorship. A student with a nurse practitioner preceptor will be changed to a site with a physician preceptor for style comparison and philosophy. Site change also includes a change in industry type to maximize learning. During each semester's clinical placement, we visit each student a minimum of two times. During the visit, preceptors are asked for input and identification of strengths and/or weaknesses seen in the students and in the program. Although these visits are costly in terms of faculty time, they are proportionately important to the ongoing viability of multiple clinical placements and the relationships we have with the industrial community. Please note that the preceptor list found in appendix M includes those preceptors for OEH. OEH Primary Care students spend half of their clinical time in two semesters placed in non OEH sites to assure a thorough clinical education. For example, one day a week is spent in an OEH site and one day in another primary care site.

Ongoing course development- We continue to offer two OEH nursing courses: N679, Issues in Occupational Health and N680, Advanced Practice in Occupational Health. N680 is divided into clinical practice and classroom seminars addressing occupational exposures, hazards and opportunities. These seminars are led by faculty and students, allowing students an opportunity to explore in depth selected occupational environmental exposure categories. Implications for nursing practice, including direct patient care as well as programmatic issues are explored with each seminar. An additional benefit of student led seminars is that it helps students select and prioritize pertinent information, prepare major presentations and deliver organized and time appropriate materials. Students, although concerned with the magnitude of the task, have consistently rated the experience as positive, having high educational merit... As part of N679, we arrange four to seven interdisciplinary plant walk throughs with the industrial hygiene students from Temple University. In addition, as part of N679, a two day trip to Washington D.C. visiting agencies involved in occupational environmental health is required. Students have greatly appreciated this trip and we are grateful to have NIOSH funding for this.

The Temple University Industrial Hygiene Program continues to be affiliated with the School of Nursing Occupational Environmental Health Program. Industrial Hygiene, Industrial Safety, and Environmental Toxicology are taken at Temple. Interdisciplinary plant walk throughs are arranged by Penn faculty. Auditing of Temple classes by Penn faculty is educational and provides quality assurance measures for Penn.

Epidemiology remains a required course in the OEH curriculum. The course's popularity continues to grow and draws students from varying programs within the School of Nursing and the University. An epidemiologist and exceptional teacher in our standing

faculty will continue to teach this course on a permanent basis and will be part of the MPH curriculum.

Ongoing development and refinement of OEH in Primary Care and Administration/Consultation - Occupational environmental health faculty have taken an active role in both these options to assure quality and to be a viable, contributing emissary for occupational environmental health needs and issues. OEH faculty lecture, generate clinical sites and do site visits for OEH students doing course work in these options. OEH faculty also collaborates with course directors on content and assignment issues. This investment on the part of the OEH program has yielded a positive return. Occupational environmental health interests and needs have been brought to the forefront and there is a growing appreciation for the effect and diversity of occupational and environmental factors in people's lives.

Occupational environmental health objectives, projects and readings continue to be incorporated within both the didactic and clinical objectives of the Primary Care and Administration courses. Specifically, content in each of the options is regularly reviewed. Occupational environmental health information is featured in each course taken by occupational health students. As indicated in other sections of this proposal, occupational environmental health students are valuable assets in classes. They have been noted to bring an interesting and expanded view of both health care and administration. This, in concert with the theoretical material presented, offers all students within these classes profitable information as indicated in both faculty and student commentary. Most of the papers and projects done by the occupational health students have content about worker or occupational health problems related to health. We have provided resources from the community, our graduate pool, the medical school, and the advisory committee for these students, to enable them to complete work at a high level of competence. Students also make very good use of the OSHA library facilities, which are located only a few blocks from the School of Nursing.

Clinical preceptorships have continued to increase. New clinical sites are opened each year. Forging new relationships with nurse practitioners, physicians, industrial hygienist and safety professionals has served multiple purposes: recruitment, visibility, networking, company and preceptor recognition of the quality of graduate prepared occupational health nurses, job opportunities, quality experiences for our students.

Systematic evaluation of students, course work, faculty, program and graduates is ongoing. OEH participates in a University wide evaluation program. Students are asked to evaluate each course with a numbered system and add commentary as desired. OEH scores in the high range. Second, the School of Nursing participates in a broad evaluation process including all graduates of its baccalaureate, masters and doctoral programs. This evaluation conducted approximately every three years focuses on education, preparation for employment, and positions hired. During this grant period OEH scored the highest of all 26 graduate programs. The same results were found in an employer survey conducted by the School of Nursing. Third, OEH students are asked in most of their classes to evaluate each individual class for content, relevance and presentation. This information is

used to add or modify content. Fourth, students in OEH have opportunity to evaluate presentations of student colleagues. By beginning the process of collegial evaluation in the academic environment, students learn proper and constructive peer review while faculty receives additional information concerning student needs. The impact and quality of the program is also addressed through its clinical preceptor program. Preceptors evaluate student performance and preparation for practice. In addition, the OEH Advisory board comprised of multidisciplinary professional leaders, review content for appropriate preparation of graduates for tomorrow's occupational environmental requirements. Evaluations reflect increased satisfaction with the occupational environmental health nursing courses, the Temple University courses and continued praise for the program. OEH faculty continues to be contacted by industry and graduates regularly regarding the high caliber of our student's preparation. Information on student performance in Temple courses is routinely sought and is positive.

Tracking of employment in occupational environmental health settings, noting the types of positions secured is done each year for new graduates along with a retrospective every three to five years. The findings are included in each NIOSH competing continuation. All graduates seeking positions in occupational health after graduation have been successful in securing these roles. Those graduates who have not secured positions in occupational health have done so because of work commitments that must be fulfilled as a result of tuition support by an employer.

Once again, a student was able to take advantage of OSHA's 8 week internship in Washington D.C. The Director of the Office of Nursing not only evaluated her project as excellent but continued with high praise and "She is going to be somebody." Her experience at OSHA led her to receive AAOHN selection for the Nurse in Washington Internship (NIWI) and a scholarship from the National Federation of Specialty Nursing Organization (NFSNO) scholarship. This student has become the director of Legislative Affairs in the New Jersey State Nurses Association.

Although creative methods have been helpful, financial barriers to student education and practice remain a major issue for the program. Tuition support for students currently does not permit some students to decline employer sponsored tuition benefits available with full time employment. Tuition benefit programs usually require an indenture provision. Faculty advising has helped to reduce this postgraduate commitment. Again, this grant period, creative methods have been employed to release students from this barrier to accepting positions in occupational health. Full time students have had success in obtaining research assistant positions, which have been helpful with tuition assistance. We have continued to explore alternative tuition support options for our graduate students with corporations. This attempt has, thus far not yielded monies to relieve student's tuition burden but dialogue continues to be encouraging regarding the possibility of support as the economy improves/stabilizes. Difficulties encountered with paid internships for clinical experiences center around industries economic needs in volatile times, and more practically: part time students have full time positions that not only pay tuition but assist in the support of families, full time students are enrolled in several courses while in clinical course work and Penn's graduate school functions on a year

round calendar basis and not the usual fall/spring academic basis of many schools. Students have been unable to intern with a company for a block of time.

The School of Nursing is currently involved in a major community based practice initiative. OEH faculty has membership on the steering committee responsible for planning this venture and occupational health services are part of this project. The centers serve as student placements in Primary Care.

The Center for Professional Development at the School of Nursing is responsible for continuing education programs. During this grant period, numerous continuing education programs have been offered. In the previous grant period continuing education programs, "Workplace Violence: Recognition and Response", sponsored by the University of Pennsylvania School of Nursing and Sellin Center for Studies in Criminology and Criminal Law and "Addiction in the Workplace: Developing Proactive Intervention Strategies" sponsored by the School of Nursing were received well but with lower than desired attendance. Offerings this year addressed the needs of OEH and other nurse practitioners to comply with changes in prescriptive practice regulations in Pennsylvania, response to sexual assault and the needs of nurse administrators and executives. "Evidence Based Nurse Executive Practice," "Pharmacology and Pharmacotherapeutics for Advance Practice Nursing," "Pharmacology Update: Hot topics" and Sexual Assault Nurse Examiner Training Program" were all well received. In addition, Karen Buhler-Wilkerson and the Center for the Study of the History of Nursing in conjunction with the Center for Professional Development planned "Nurses and Nursing: Past, Present and Future" as part of the Nightingale Song Exhibition. Mailing lists and presentation timing will be evaluated for future OEH offerings.

The OEH program offers a number of interdisciplinary and unique opportunities in training occupational environmental health professionals. The continued relationship between Penn and Temple is a model for interdisciplinary collaboration among programs not part of an ERC. Students work on projects with environmental engineers, industrial hygienists, toxicologists, physicians, safety professionals and others in this collaborative venture. Although faculty time is contributed to this cooperative program, it is considered time well spent. We are extending the collaborative effort to Penn's School of Medicine and the new Occupational Environmental Residency Program. Originally, we anticipated this relationship would be with Thomas Jefferson University (TJU) where Kay Arendasky was a core member of the Clinical Center in Occupational Health. This clinical center is housed in the School of Medicine and Chaired by the Director of Environmental Toxicology. This multidisciplinary team is comprised of professionals from health care, business, government and labor. As a core member of this center, Kay Arendasky was instrumental in bringing occupational environmental professionals to the group and was a member of the search committee to appoint Edward Emmett M.D. an occupational health physician to the faculty at TJU School of Medicine and a second OEH physician. More recently, she contacted faculty at Penn's School of Medicine and was instrumental in successfully recruiting both of these occupational environmental physicians to Penn. The NIOSH approved occupational environmental residency program is now housed at Penn. OEH students and faculty have participated in residency

classes, plant walk throughs and interchanges with national leaders as part of Penn's OEH clinic membership with the Association of Occupational Environmental Clinics. The Institute of Environmental Studies at Penn is a multidisciplinary group with members from each of the University's 12 Schools. A current project, working with Sub-Saharan African OEH leaders, planning of an international congress on OEH issues is in progress. Penn nursing students have volunteered for this project. The establishment of the MSN/MPH, the current class work with Wharton students and the combined course work within the School of Nursing fosters interdisciplinary and intradisciplinary interactions.

The Administration/Consultation Option, as mentioned previously, has proven to be an excellent program for nurses wishing to practice in a leadership role in the managerial community. This option provides the student with the advantage of working with administration students from the School of Nursing who are interested in leadership positions in diverse health care settings, such as tertiary care facilities, home care agencies, government and other public health programs. In addition, students in the option work with other administration and management students at the Wharton School of Business. This interdisciplinary approach provides opportunities for sharing of philosophy, as well as building understanding and collegial bonds among future administrators. The University of Pennsylvania School of Nursing administration students have provided an additional dimension with the traditional business model and have earned much respect for their abilities and humanistic approach.

A dual degree with the Temple Industrial Hygiene program remains in the planning. The Environmental Health Program/Industrial Hygiene Program once housed in the Engineering School is moving to the Health Studies department. Penn faculty conversations with the Chair of this department have been encouraging for further interdisciplinary efforts. A dual degree would allow nursing students to earn an MSN and MS in Industrial Hygiene by taking an additional 18 semester hours (credits). Given the close relationship between the disciplines and this option's industrial marketability, we believe this will not only be an attractive option but also improve the quality of occupational health provided to small to mid sized companies.

The innovative and model internship and fellowship with the Philadelphia Area OSHA Offices in conjunction with the Office of Occupational Health Nursing, OSHA in Washington D.C. has been expanded to New Jersey area offices. This program offers a graduate clinical rotation option or post master's fellowship. Thus far, five OEH students have participated in this clinical program. The office of Occupational Health Nursing in Washington markets this interdisciplinary program as a model throughout the nation. Students choosing this opportunity profit greatly by improving their knowledge of OSHA, occupational policies and hazard control. Additionally, OSHA representatives gain knowledge of the range and depth of educational substance and experience of graduate prepared occupational health nurses. Because of the internship with Penn, the Philadelphia Area Office decided to open some positions to nurses, something that has not occurred previously.

OEH students have participated in a wide range of projects and interdisciplinary efforts. As part of our major nurse managed practice initiative, an OEH student worked with the Philadelphia Health department on an environmental exposure educational grant. Another OEH student interchanged with environmental scientists and managers of the Biosphere II experiment team in Arizona and its supporting group at Columbia University. This project was introduced after OEH faculty attended an invitation only conference at Columbia University where the annual Volvo Environmental Prize was awarded. Once again, as indicated earlier, an OEH student has competed successfully for the 8 week internship at OSHA in Washington D.C. Participation has not only offered this student professional and education opportunities but the sharing of experiences has provided the same for classmates.

A collaborative relationship has been developed between PHILAPOSH, a Philadelphia based labor group addressing occupational health and safety and OEH faculty. This relationship has spawned collaboration on health and safety issues in the Philadelphia area. OEH students and faculty continue to give lectures in the Industrial Hygiene program, participate in local and regional industrial hygiene association meetings, and provide presentations to multiple employee groups at the request of local employers. As seen in the table of OEH program personnel an interdisciplinary approach is brought to the classroom as well as to outreach experiences. We believe interdisciplinary outreach and visibility provides excellent educational opportunities for students and serves to promote occupational environmental health and the Penn program.

OEH faculty has devoted much time and resource to establishing and maintaining interdisciplinary and intradisciplinary interactions benefiting students, industry and labor in the region and fostering an occupational and environmental agenda. Interdisciplinary efforts support the goals of varied student experiences, grant submission and research. The amount of effort devoted to these experiences has proven to quite positive.

Distance learning has been offered at the School of Nursing in the Midwifery program with success. The Family Nurse Practitioner Program has also developed a plan for distance learning. The occupational health program with the Adult Nurse Practitioner Program is working to link the program with this technology. It is the plan of the School of Nursing to progress with distance learning in an efficient manner; adding programs as the system and the School can support them. Appendix R contains an overview of the distance learning program in midwifery.

OEH faculty and a major pharmaceutical company are developing an onsite educational plan for course credit that can be folded into an academic degree at the School of Nursing. The planning phase continues but there is much interest and enthusiasm for the project and collaboration. This innovative program would be the first at the School and would assist OEH nurses in advancing professionally.

The School of Nursing, faculty, Advisory Board, preceptors and students are committed to the Occupational Environmental Health Program. Evidence of this commitment can be seen in the numerous letters of support we receive, Dr. Buhler-Wilkerson's time, the

relationship the Program has with Temple, preceptors and affiliated faculty who receive no compensation for their participation in the program. Although the Program is small it is fully represented within the School in faculty Senate, Council and curriculum committees. The School has supported OEH and is committed to continuing this support. The Deans and faculty are committed to community based and primary care programming which is consistent with its long range plans.

Conclusions

The University of Pennsylvania School of Nursing Occupational Environmental Health program continues to provide high quality education and opportunities for its students. Graduates of the OEH program are rated highly by their employers. Graduates rate the program highly. There is continual effort to improve the OEH program for both student and School of Nursing. Recruitment remains a primary issue for the program and ultimately for the work force.

We are appreciative of the NIOSH support we have had. These monies have aided us in maintaining the OEH program at the School of Nursing. Given the cost of graduate education at the University of Pennsylvania, the tuition support available has been critical. Additional support would permit more students to attend full time and would greatly benefit our recruitment efforts. Given the volume of inquiries received regionally and nationally and the proportion of potential candidates who elect to seek graduate education elsewhere due to financial constraints and better funding opportunities offered outside of a training project, additional funding would clearly translate into increased enrollment within the program.



Memorandum

Date January 30, 2003
From Principal Engineer, OEP, NIOSH
Subject Final Progress Report for entry into NIOSHTIC2/NTIS for
NIOSH Training Grant No. T01 CCT 310445
To Vern P. Anderson, Chief, IRB, EID (C-18)

The enclosed report has been received from the Program Director to document work performed during the specified grant project period. The following information applies to the designated Training Project Grant (TPG):

Title: Masters Education in Occupational Environmental Health

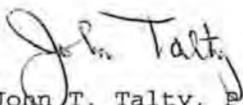
Project Director: Karen Buhler Wilkerson, Ph.D.
School of Nursing
University of Pennsylvania
Philadelphia, PA 19104-6096

Grant No.: T01 CCT 310445

Project Period: 7/1/97 - 6/30/2002

Please place the report in DIDS and I also recommend it for entry into NIOSHTIC2 and submission to NTIS.

Thanks for your assistance.


John T. Talty, P.E., DEE

Enclosure

fpr.penn.ohn