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ASSISTANCE AWARD CLOSEOUT

**University of Massachusetts Medical Center
Department of Family and Community Medicine
Occupational Health Program
55 Lake Avenue North
Worcester, MA 01655**

Project Period: 7/1/91 - 6/30/94

**The Occupational Safety and Health Training Grant
Principal Investigator: Glenn Pransky, M.D., M.Occ.H.
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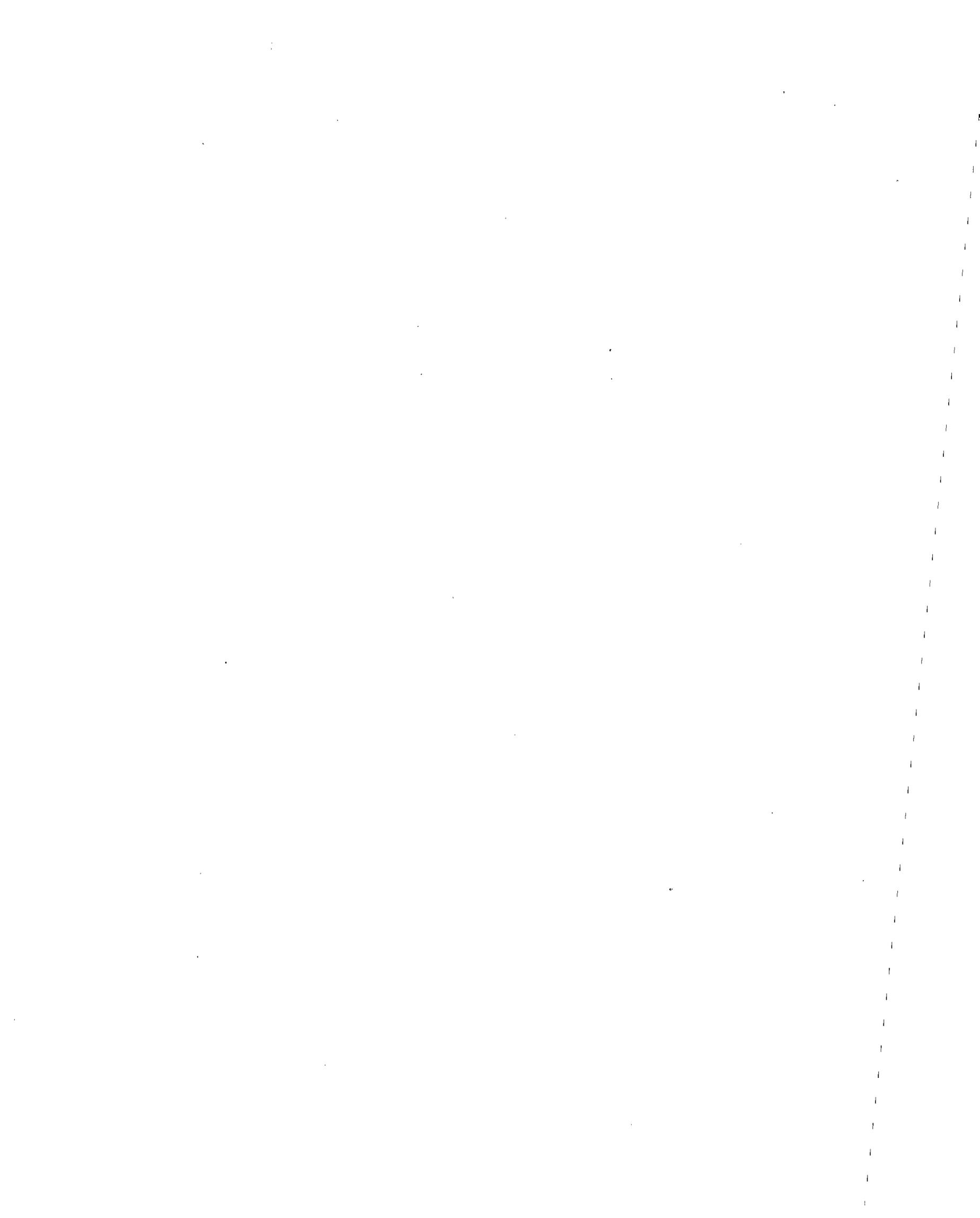


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I. PROGRAM HISTORY AND DEVELOPMENT

Occupational Medicine training first began at the University of Massachusetts Medical Center in 1985, as part of the Harvard School of Public Health Educational Resource Center. This training program consisted of a full time, one-year occupational medicine residency practicum training site. Because this joint training program was so successful, the UMMC faculty began to explore development of a freestanding, two-year residency program. This became possible after a Masters in Public Health Program sponsored by the University of Massachusetts School of Public Health was established at the UMass Medical Center. An additional occupational health faculty physician was hired to enhance the program's teaching capabilities. The Medical Center's Office of Graduate Medical Education agreed to match NIOSH funds to assist with resident stipends. As a result, the UMMC Occupational Medicine Residency Program began independent operation in July 1991, with two full-time residents.

The Occupational Medicine Residency Program is supported by a broad base of institutional resources and committed faculty who have collaborated successfully in service, teaching, and research activities. The Department of Family and Community Medicine has a long tradition of supporting E/O health-related education, service, and research. It provides direct faculty and administrative support to the OHP. Three major divisions of the Department include the Occupational Health Program (OHP), the Division of Environmental Health Sciences (EHS), and the Division of Preventive Medicine. The Kellogg Foundation supported the initial development of the programs educational and service programs. The OHP now has ample office space, library and computer resources, administrative and secretarial support, and faculty funding to carry out its mission. Joint appointments, teaching responsibilities, and collaborative research projects have created close links between the OHP and faculty in other departments and institutions, including the Departments of Medicine, Behavioral Medicine, Pharmacology, Infectious Diseases, Orthopedics, Rheumatology, Obstetrics/Gynecology, and the School of Public Health at Amherst, the College of Engineering at Lowell, and Clark University. The OHP has access to a large and varied patient population. Client company consultations provide clinical training sites, research opportunities, and significant, stable faculty income.

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The Accreditation Council for Graduate Medical Education (ACGME) conducted a site visit in June 1991, and granted full accreditation status for the program in November 1991. The accreditation site visit report contained very positive feedback, suggesting only minimal modifications in the proposed program. The program's strength and reputation resulted in over twenty qualified applicants for the two available positions in 1992. As a result, by September 1992, the program had enrolled three full-time, highly qualified occupational medicine residents, who had all completed full training in internal medicine or family practice. An additional resident joined the program in June 1993, and two highly qualified residents joined the program in the summer of 1994. As a result, by September 1994, three full-time residents were enrolled in the program. Recruitment has been challenging (as in other occupational medicine residency programs), but we have continued to attract a number of highly-qualified applicants who are board-eligible in a primary care specialty, or have extensive clinical experience. See appendix A for a list of occupational medical residents during this reporting period. Both NIOSH and ACGME (second accreditable visit) conducted site visits of the residency in the spring of 1994. Reports from both visits were very encouraging and supportive of the program's current focus and direction. Site visit reports included several suggestions for enhancing our program, which have been addressed, as described below.

II. PROGRAM HIGHLIGHTS AND ACHIEVEMENTS

Tom Hicks, M.D., M.P.H., a recent graduate of our residency program, joined the Occupational Health Program as a full-time faculty member in the Department of Family and Community Medicine in September 1994. Dr. Hicks is board-certified in Family Practice and completed MPH and occupational medicine residency training at UMMC in August 1994. In his new role, Dr. Hicks precepts at three client companies which are core rotations for the residency, at two insurance company's consultation sites, and precepts residents in the weekly Occupational Medicine Clinic, required for each resident. He also organizes the Occupational Medicine Clinical Conference, a weekly, required meeting for all residents and faculty. He is also active in teaching at an undergraduate/graduate level, throughout the Medical School.

During the report period, Drs. Pransky and Rest began the second year of teaching "Introduction to Occupational and Environmental Health", a graduate-level MPH course which is required for occupational medicine residents. This first-semester course has been enhanced since it was last offered in 1992, and includes expanded sections on industrial hygiene, occupational medicine, occupational disability, ethics, and physical hazards. This course has received extremely favorable reviews, and has a dozen participants, a significant increase since first offered two years ago.

In response to resident requests and recommendations of NIOSH program evaluators, a

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monthly Toxicology Seminar Series has been initiated. This seminar series has been approved as a MPH-level course. Beginning in September 1994, this series will include basic and advanced toxicology, carcinogenesis, liver toxicology, toxicokinetics, pulmonary toxicology, toxicology of environmental contaminants, acute toxicology in emergency practice, methods of toxics detection and analysis, and basic information on hydrogeology and air pollution. This monthly seminar provides residents with important background information, relevant to occupational medicine practice.

In addition to these new and enhanced efforts, faculty have continued to maintain a high level of teaching through weekly Occupational Medicine Clinical Case Conferences, monthly Occupational Health Journal Clubs, bi-weekly Occupational Health Seminar Series, and weekly meetings with residents.

There has been considerable growth in resident rotations precepted by core faculty. New rotations include regular consultations to two area hospitals which are developing clinical occupational health programs, new consultations to local insurers in the area of disability prevention, industrial hygiene and safety experience through workplace walk-throughs, and increasing resident responsibility for coordination and analysis of industrial hygiene data at each practicum site location. The industrial hygiene segment of the Occupational Health MPH course included expanded hands-on experience with sampling equipment. We have begun to upgrade the computer facilities available to residents. This has included upgrading computing capability to enable residents to access Medline and Toxline from home or office.

Residents have assumed an increased role in the Occupational and Environmental Reproductive Hazards Clinic. Each resident is responsible for answering clinical phone calls, evaluating patients with reproductive hazard concerns, and performing associated literature searches, and reviewing cases in detail during weekly meetings with Dr. Paul. These meetings have greatly contributed to residents' understanding of toxicology, how to search the medical literature for occupational health information, and risk assessment.

We have recently completed arrangements to allow residents to work closely with OSHA field investigators on an on-call basis. This program, which has been established in only one other occupational medicine residency in the U.S., will enable our residents to become active participants in OSHA field investigations, providing essential medical and toxicologic information. OSHA investigators will call to arrange for residents to accompany them when performing site visits in the Worcester area, and Occupational Health Program faculty will assist residents in reviewing background information, data analysis, and preparation of reports.

After graduation, our highly-qualified residents will likely serve as role models for

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medical students and other residents who may be considering entering occupational medicine. To enhance their skills in teaching and recruitment, over the past year we have significantly increased resident participation in a variety of teaching activities sponsored by the Occupational Health Program. For example, several of our residents have been involved in monthly Family Practice clinical case conferences, grand rounds, internal medicine and orthopedic courses, and occupational/environmental health clinical correlations in basic science courses. These activities have been significantly enhanced by a NIEHS Academic Award, which supports Drs. Pransky and Rest in these activities.

During the reporting period, a rotation at Massachusetts Respiratory Hospital was instituted in order to provide residents with greater exposure to occupational health physicians from other programs, as well as a wider variety of occupational disease cases. Residents attend at this location for one night each week during a one month rotation.

NIOSH funding for training-related expenses has been an essential cornerstone of our program's success. The University of Massachusetts Medical Center (UMMC) Office of Graduate Medical Education has provided matching support for NIOSH funds since 1992, thus doubling the effect of the NIOSH funding for residency stipends. NIOSH faculty support has allowed release time for OHP faculty to participate in essential occupational health-related MPH courses, significantly enhancing the didactic educational experience of our residents. Travel funds have enabled residents to attend rotations at various sites throughout central Massachusetts, attend scientific meetings, and have enabled the residency director to participate actively in the Occupational and Environmental Medicine Residency Directors Association.

PROGRAM FACULTY

OHP program faculty include four physicians and a PhD educator and policy analyst. All faculty members are involved in the educational, clinical, and research activities of the OHP. Three of the physicians are Board-certified in internal medicine and occupational medicine, and one, Dr. Maureen Paul, is certified in Ob\Gyn and occupational medicine. Dr. Jay Himmelstein joined the program in 1984 and became Director in 1986. In 1992, after a one year sabbatical as a Robert Wood Johnson Fellow, Dr. Himmelstein was appointed as Assistant Chancellor for Health Policy at UMMC. He has considerable experience in undergraduate and graduate medical education and in providing clinical and policy consultation to a variety of organizations. He is principal and co-principal investigator for two large federally-funded projects. Dr. Don Beavers precepts residents and students at client company sites and conducts research in environmental exposure assessment. Dr. Maureen Paul is one of the few physicians in the nation board-certified in both occupational medicine and obstetrics\gynecology. She directs the Occupational and Environmental Reproductive

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Hazards Center (RHC), which was established in 1933 as a joint effort of the Department of Obstetrics and Gynecology and the OHP. Dr. Kathleen Rest joined the program in 1990, with extensive experience in E/O curriculum and faculty development, teaching, and health policy analysis. She is nationally recognized as an educator in OEM, especially in primary care disciplines.

All Core faculty are full-time faculty members at the University of Massachusetts Medical Center, in the Department of Family and Community Medicine, where they maintain primary offices and teaching appointments. The Core faculty are described in greater detail below:

Glenn Pransky, M.D., M.Occ.H. is the Director of the Occupational Medicine Residency Program. He has overall programmatic responsibility for the program, directs resident recruitment, selection, and evaluation activities, and supervises residents in rotation at several industrial sites and in the Occupational Medicine Clinic. He also participates in most clinical and educational conferences at an undergraduate, graduate, and postgraduate level, and is a core faculty member with Dr. Kathleen Rest in the MPH-level introductory occupational medicine course, and in the new Toxicology seminar course. His current research projects include clinical approaches to upper extremity cumulative trauma disorders, methods of disability assessment, and educational goals in occupational medicine training. Dr. Pransky participates on the Board of Directors of the Association of Occupational and Environmental Clinics, and is the chairperson of the Occupational/Environmental Medicine Residency Directors Association. He is board-certified in both occupational and internal medicine and is a co-principal investigator on several Occupational Health Program grants. He also directs the medical section of the American College of Occupational and Environmental Medicine's course "The Americans with Disabilities Act and the Occupational Physician," which has trained over 1,500 occupational physicians throughout the United States.

Jay Himmelstein, M.D., M.P.H., Director of the Occupational Health Program, is Associate Professor of Family and Community Medicine at UMMC. Dr. Himmelstein completed his sabbatical at the Institute of Medicine in Washington, DC, sponsored by the Robert Wood Johnson Foundation, in September 1992. Since returning, he has received support to develop a multidisciplinary center at UMMC, addressing various issues in health policy, including those areas related to occupational health. In addition, to supervising residents in a variety of clinical, consultative, and teaching activities, Dr. Himmelstein also has a major role in the didactic portion of the training program. He provides additional supervision to residents in research projects. Dr. Himmelstein is the principal investigator for the New England Center for Occupational Musculoskeletal Disorders and is co-investigator on the National Cancer Institute Wellworks grant. Dr. Himmelstein is board-certified in internal medicine and occupational medicine and is an

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active member of the American College for Occupational and Environmental Medicine. His research interests include disability and rehabilitation assessment, health care delivery and workers' compensation, treatment and rehabilitation of chronic upper extremity trauma disorders, prevention of needlestick injuries in the workplace, effectiveness of right-to-know legislation, and worker fitness and risk. Dr. Himmelstein has recently been appointed as Assistant Chancellor for Health Policy for UMMC.

J. Don Beavers, M.D., M.P.H. is an Assistant Professor in the Occupational Health Program. He is board-certified in internal medicine and occupational medicine. Dr. Beavers is primarily responsible for resident activities in the industrial sites. He chairs the monthly Journal Club and co-chairs the weekly clinical conference. His research interests include drinking water contamination, worker rehabilitation, and providing occupational health clinical and consultative services to small-to-medium-sized industry. Dr. Beavers has recently been named as Corporate Medical Director for Digital Equipment Corporation; this appointment provides diverse educational opportunities for our residents.

Maureen Paul, M.D., M.P.H. is a board-certified in occupational medicine and obstetrics/gynecology; she directs the Reproductive Hazards Center. Established as a joint effort of the Department of Obstetrics and Gynecology and the OHP in 1988, the Environmental and Occupational Reproductive Hazards Center focuses on enhancing recognition and prevention of E/O reproductive risks among workers, employers, patients, and clinicians through research, education, and service. She teaches residents and students how to search and retrieve information, and she also coordinates and conducts all community education activities. In November 1991, the Center hosted a national conference on Occupational and Environmental Reproductive Health, which brought together an internationally recognized group of leaders in research and policy to share information, identify problems, and propose joint programs; the proceedings were published in the fall of 1992 issue of Journal of Reproductive Toxicology. Last year, Dr. Paul published a book, "Occupational and Environmental Reproductive Hazards: A Guide for Clinicians".

Kathleen M. Rest, Ph.D., M.P.A. joined the program in 1990, with extensive in E/O curriculum and faculty development, teaching, and health policy analysis. She is nationally recognized as an educator in OEM. She directed the first large, federally-funded OEM curriculum development project at the University of Arizona, which resulted in the production of over 20 written modules and four audiovisual programs. She worked with the Institute of Medicine Committees that reviewed the role of the primary care physician in occupational medicine and addressed the physician shortage in this area. Over the past 13 years, she has taught at all levels of medical education and has consulted with several primary care programs in curriculum design, development and

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implementation. Dr. Rest presently directs the EPOCH-Envi Project at UMMC and is responsible for developing a joint training program in family medicine and occupational medicine. She directs the only MPH course in occupational medicine on the UMMC campus, and she coordinates the OHP's educational programs. Dr. Rest is also involved in several occupational health policy research projects and in developing and teaching occupational health policy courses in Central and Eastern Europe.

Guy Fragala, Ph.D., C.S.P. is Director of Environmental Health Services at the University of Massachusetts Medical Center and is the occupational health safety specialist for the OHP. Dr. Fragala actively participates with the physician faculty and residents in ongoing and episodic workplace consultation in the areas of occupational safety, ergonomics, OSHA compliance, and workers' compensation. Dr. Fragala also participates in the educational conference series for the residents, and is able to offer a variety of safety-oriented research projects for residents.

Associate faculty provide significant teaching support and coordination during the two-year program. These include Dr. Bill Morgan of the UMMC Department of Orthopedics, Dr. David Clive of the UMMC Department of Medicine, Drs. David Wegman and Laura Punnett of the University of Massachusetts at Lowell Department of Work Environment; Dr. Charles Lutton, Medical Director of New England Electric Company, Dr. Alan Storm, Medical Director of the Holyoke Hospital Occupational Health Program. Drs. Chris Linden and Susan Arons of UMMC provide applied toxicology and poison control experience to our residents and Dr. Ed Calabrese, of the UMass Amherst School of Public Health, also provides basic toxicology training to our residents.

PROGRAM DESCRIPTION

Academic Phase

Since 1988, the School of Public Health at the University of Massachusetts in Amherst has offered courses leading to the MPH degree on the Medical Center campus in Worcester. This inter-campus collaboration combines the strengths of the Medical School and Public Health School faculties and allows completion of an MPH degree entirely on the Worcester campus. The Medical Center MPH offerings are specifically tailored for students with clinical training. This MPH Program at the University of Massachusetts Medical Center provides the academic component of the Preventive Medicine Residency Program at UMMC, which was re-certified in 1990 by the RRC.

Through these MPH courses, residents learn theory and application of biostatistical and epidemiologic principles and methods; key aspects of health program planning,

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administration, and evaluation; principles of program development and evaluation to effect health behavior and medical care; principles of recognition, assessment, and control of occupational and environmental health hazards; awareness of the social, cultural, and behavioral factors in occupational medicine; differential application of population and individual health needs. In all cases, residents must complete required coursework, including biostatistics, epidemiology, health services organization and administration, environmental health, and social and behavioral aspects of health (via the community health education course).

An additional course in occupational health, taught by Drs. Rest and Pransky, is required. This course includes many of the didactic components outlined in the Special Requirements for Occupational Medicine. Structured lectures and discussions focus on several required areas of resident education, including environmental physiology, occupational diseases, occupational toxicology, industrial hygiene, and management and administrative aspects of occupational health programs. Through completion of additional elective courses, every resident meets all requirements for the MPH degree.

A description of the five required MPH core courses is as follows:

PH630W Principles of Epidemiology

An epidemiologic perspective of health is introduced which includes methods for describing the patterns of illness in human populations and research designs for investigating disease etiology. Class examples illustrate a wide range of contemporary health problems. Students develop skills in reading health-related literature and insights into the analysis and interpretation of data pertaining to current issues in public health.

PH540W Introductory Biostatistics

Principles of statistics applied to analysis of biological and health data, evaluation of public health and clinical programs, and estimation of the impact of environmental exposures. Students will gain a better understanding of the theory and application of statistical procedures commonly used in medical research.

PH620W Principles of Public Health

Students will gain knowledge and understanding of major issues and problems facing public health and recognize opposing forces or views on current trends, developments or proposals. They will increase knowledge of public health and medical care delivery systems. Students will develop competence in health system problem analysis and be able to propose strategies which promote, resist, or redirect identified trends. The

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course places emphasis on principles of social, economic, political, and administrative interaction which are determinants of public health and medical care policies and procedures.

PH601W Principles of Community Health Education

This course will analyze methods and approaches used in community health development, health education and health promotion. Community and family dimensions of health education will be reviewed. Types of research methods leading to community action will be explored.

PH565W Environmental Health Practices

This course will introduce students to some of the types of environmental problems which have been found to affect the health of the public. The course will examine the strengths and weaknesses of epidemiology in examining the possible health consequences of environmental pollution.

Typical elective courses taken by residents are described as follows:

PH--W* Occupational Health

This course introduces students to fundamental concepts and important areas of knowledge in occupational health. The course covers a range of topics in four key areas: toxicology, occupational disease, industrial hygiene, and the regulator, legal, ethical, and political aspects of workplace and safety. Students are expected to participate actively in class and prepare one or more short papers on a relevant topic. Students may be asked to make brief presentations on assigned topics in class. (Occupational Medicine residents are required to take this elective).

PH--W* Design of Clinical Research

Students will become familiar with basic and advanced design principles for conducting biomedical research involving human subjects and will apply these principles in developing research proposals to address specific scientific questions. Students will also improve their ability to critically appraise the scientific literature.

PH--W* Cardiovascular Epidemiology

This course provides an overview of the preventive and therapeutic management of coronary heart disease, cerebrovascular disease, hypertension and diabetes and of factors

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associated with the occurrence and prognosis of these diseases of major public health importance. Students will acquire an understanding of recent trends in the incidence and mortality rates of these diseases and of clinical trials in the primary and secondary prevention of these diseases. Prerequisite: PH630 or permission of instructor.

PH--W* Nutritional Epidemiology

Analysis of major issues affecting nutritional epidemiologic research and the interpretation of published studies. This course will focus on important methodological issues in the study of nutrition and health status. The course will provide an overview of the state of the art concerning the association of specific dietary risk factors and specific chronic diseases. Current dietary recommendations for the management of chronic disease will also be discussed. Prerequisite: PH630 or permission of instructor.

PH635W Psychosocial Epidemiology

This course provides an overview of the epidemiology of psychiatric disorders and the service system used in their treatment. The course includes a survey of methodological issues in psychiatric epidemiology, the incidence and prevalence of psychiatric disorders and their socio-demographic correlates. The course provides an overview of mental health services, the contemporary service system, and policy issues which shape the system. The implications of demographic trends in psychiatric disorders for the delivery of mental health services, as well as the role of epidemiologic data in the planning of services, will be discussed. Prerequisite: PH630W or permission of instructor.

PH--W* Introduction to Maternal and Child Health

This is a broad survey course whose purposes are to:

- 1) Introduce students to the major health problems and issues related to infancy and childhood;
- 2) consider the impact of social, economic and political forces on the health of children;
- 3) examine critically the public health programs which serve this segment of the population.

PH--W* How to Write and Publish a Scientific Paper

This course is designed to help participants write a research project in a form suitable for publication in a scientific journal. The course will cover each section of a scientific paper from title to discussion with focus on scientific style and precision. Participants will write up portions of their own research and edit each others' copy in class. All applicants must be currently involved in an ongoing or completed research project. A

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brief description of the project must be submitted prior to course enrollment; after review, students will be contacted concerning course enrollment.

PH-W* Community and Clinical Interventions for Health Promotion

This course offers an introduction to the theoretical and empirical foundations for health behavior change and the practical implementation of selected intervention strategies. Both clinical and community public health interventions will be examined. Specific intervention strategies will be studied to identify means to maximize the effectiveness of their implementation in targeted populations. Methods for measuring compliance and behavior change will also be examined.

*Elective course numbers are subject to change.

Practicum Phase

This phase occurs concurrently with the academic phase, throughout the entire two-year residency. The primary components of the practicum phase include the industrial site placements, occupational medicine clinics, episodic consultations, teaching activities, and participation in occupational medicine rounds and conferences, as well as completion of a required research project. Month-long elective rotations in occupational pulmonary disease (focusing on laboratory assessment of pulmonary function and radiologic work-related dermatologic problems) and out-patient orthopedic medicine as well as rotations with NIOSH and OSHA are available to further broaden resident's skills in occupational medicine. (See Appendix B for an illustration of resident activities by month including assignments, locations and time spent on each assignment).

Industrial Site Rotations: Each of the industrial sites is staffed by a core faculty member from the UMass Occupational Health Program, who serves as the Medical Director and provides direct resident supervision. At each site, other resources include a plant safety director, occupational health nurse, active human resources and/or employee assistance programs, and available industrial hygiene and safety consultants, as well as appropriate facilities for clinical occupational medicine evaluations. Residents quickly become familiar with the worksite, management, local union, and health and safety personnel, as well as with the important occupational health and safety concerns and appropriate preventive interventions particular to that site. A longitudinal format enables residents to achieve a high level of responsibility commensurate with the position of occupational medicine consultant.

Resident activities include performance and supervision of periodic and pre-placement medical evaluations; worker health risk assessment; injury and illness evaluations;

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development and implementation of screening and surveillance programs; health maintenance and promotion programs; collaboration with other health professionals; implementation of employee assistance programs; development of injury prevention programs; and hazard identification and remediation through application of industrial hygiene. Through these site activities, residents become familiar with planning, health promotion activities, and environmental control programs. Residents are able to apply the principles of primary, secondary, and tertiary prevention; develop strategies to use existing and acquired data to evaluate population and individual health needs; and become familiar with the local cultural and behavioral factors that relate to occupational health and safety and to medical care. Residents are directly involved in evaluations of fitness to work and accommodation and rehabilitation of injured workers.

At each site, residents participate in managing health data to facilitate recognition of hazards and appropriate dissemination of health-relevant information to workers, regulatory agencies, and others. Each site maintains a system of medical records to ensure protection from inappropriate release of confidential medical information. Frequent interactions with workers, union representatives, line supervisors, human resource personnel, and members of the surrounding medical community provide the resident for ample opportunity to deal with clinical, scientific, social, legal and administrative issues. As the resident interacts with a wide variety of plant personnel, there is ample opportunity to gain experience in working with a team that includes diverse backgrounds and perspectives. Through these interactions, the residents gain ample experience in clinical and administrative aspects of direct worker care and job assignment, medical screening and surveillance, health conservation and promotion, environmental assessment, employee assistance, and regulatory compliance. At each site, residents are involved in the counselling and education of workers with respect to environmental and occupational hazards, health-related habits of living, and health-related aspects of work organization, and they interact with the site employee assistance program personnel, if available. At no site is there an extensive time commitment to care of minor, non-occupational complaints, or to residents performing highly repetitive or standardized procedures.

Each of the industrial facilities has been selected for inclusion because of their suitability for residency training, including the breadth of medical, safety and industrial hygiene experience available to resident and willingness of local management and workers to participate in a comprehensive program of health services for employees. At each site, a member of the core program faculty (Drs. Himmelstein, Pransky, Beavers, or Paul) serves as Medical Director, providing close supervision and direction of an occupational medical clinic operation. An occupational health nurse staffs most clinics and is present at least 20 hours per week. Secretarial support is also available. Each company also has a full-time on-site Safety Director, with specific safety engineering training. Most of these

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safety directors also possess industrial hygiene training and experience and perform on-site industrial hygiene measurements. When more complex measurements are required or special equipment is needed, the industrial hygiene staff of the workers' compensation insurance company may provide consultation. Residents are required to become involved with any sampling, data analysis and reporting activities that occur at their sites.

The industrial experience during the practicum portion of the combined academic/practicum residency is structured in a **longitudinal**, rather than block format. This provides the resident with in-depth experience at each of two sites over a two-year period. Over the two years, the amount of time spent on-site and in site-related activities is equivalent to a five month, full-time, on-site elective. This includes 2/3 day per week related to one site over the entire two years and 2/3 day per week related to a second site for one year. The advantages of the longitudinal arrangement include more opportunity for integration of the resident into the site operations and management, greater resident familiarity with the work site, and much greater opportunity for the resident to observe the effects of industrial hygiene interventions, safety changes, and medical interventions over time. In our experience, residents assume a much greater level of responsibility under this arrangement, compared with a four-month, full-time block. Because of the close supervision and support provided by core faculty at each of these sites, residents quickly begin to assume the role of Acting Medical Consultant. As more skills and knowledge are acquired through academic and practicum experiences, residents assume greater responsibilities and leadership, eventually functioning as Medical Consultants with the core faculty preceptor in a supportive role.

At each industrial placement site, residents are directly and closely supervised by a faculty member of the Occupational Health Program.

Occupational Medicine Clinic: The Occupational Medicine Clinic at the University of Massachusetts Medical Center provides an important longitudinal experience for residents during both residency years. A wide variety of patients are referred to the clinic, including those with acute and chronic musculoskeletal disorders, diseases resulting from occupational or environmental toxic exposures, or questions regarding fitness to work. Referrals come from other physicians, employers, insurers, unions, and public health agencies. Occasionally, clinical faculty and residents are requested to provide consultation for inpatients at UMMC. The clinic is also involved in several programs of industry-based screening evaluations, as well as a variety of contractual agreements to provide periodic and replacement evaluation of fitness to work. A monthly Reproductive Hazards Clinic and a monthly Occupational Upper Extremity Disorders Clinical (in collaboration with Dr. William Morgan, Chief of Hand Surgery, UMMC) provide additional educational opportunities.

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These clinical programs provide each resident with ample opportunity to evaluate patients with a wide variety of occupational diagnoses, including lead and other heavy metal poisonings, occupational neurological disorders, work-related dermatoses, work-related low back and upper extremity disorders, pneumoconioses, and work-related asthma. Residents take a primary role in the initial evaluation, treatment, and follow-up as well as work-site walk-through and follow-up with employers, lawyers, and public health officials, as needed. Residents also have a primary role in the development and administration of clinic protocols for specific industrial screening programs. This component provides residents with ample, well-precepted opportunities to develop expertise in clinical occupational medicine by performing detailed, consultative evaluations of individuals with work or environment-related disorders, evaluations of fitness to work, diagnosis and treatment of important occupational diseases, and directing rehabilitation in the occupational health setting, all under close faculty supervision.

Each clinic session is staffed by a physician member of our full-time faculty who is board-certified in occupational medicine. The faculty physician encourages residents to visit worksites, interact with rehabilitation facilities, and prepare legal documentation as needed. Residents have access to consultants with occupational expertise in the Medical Center's Orthopedics, Neurology, Pulmonary, Dermatology, and Pain Clinics, as well as to specialized testing available in pulmonary, neurodiagnostic, and neuropsychiatric laboratories. Through their involvement in the group screenings conduction by the Clinic, residents have an opportunity to collect, analyze, and report aggregate health data to employers, as required by law. The Clinic also provides opportunity for resident involvement in the administration of a free-standing Occupational Health Clinic Program designed to promote the health and well-being of workers. Each resident develops administrative skills through a rotation as Chief Clinic Resident.

Each resident attends the clinic, directly supervised by one of the core physician faculty, one-half day per week. A rotation schedule is instituted to insure that all residents will have an opportunity to work with each attending. Educational objectives of the clinic experience include methods for prevention, diagnosis, treatment, and rehabilitation of work related disorders; evaluation of fitness of workers for normal or modified job assignments; assessment of impairment and disability, and counseling and education of workers and supervisors with respect to work or environmental hazards. Evaluation of resident performance in the Occupational Medicine Clinic is reported semi-annually by clinic attendings to the Residency Director. However, if problems arise, the clinic attending will have an opportunity to discuss concerns with the resident and the Residency Director as needed.

For those residents without specific subspecialty training or who wish an in-depth subspecialty educational experience, electives in Occupational Orthopedics,

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Dermatology, and Pulmonary Medicine are available at UMMC.

Conferences and Seminars: Attendance at weekly occupational medicine conferences is required for each resident and faculty member. These conferences provide an excellent opportunity for residents and faculty to share interesting cases, challenging questions, and other items that may be of educational value to the residents. Each resident presents at least one case during each weekly clinical case conference. Occupational health seminars are held at least twice a month immediately after the clinical case conference. These seminars address topics of interest, as well as some of the RRC specialty requirements, including occupational disease, safety, ergonomics, worker fitness determination, design and implementation of employee assistance programs, occupational health data management and analysis, and critical analysis of clinical preventive activities. At least once per year, each resident has an opportunity to present his/her research project as one of these seminars. A monthly occupational health journal club ensures that residents and faculty are up-to-date on the latest developments reflected in the literature of this field. (See Appendix C for a 1993 schedule of seminars and conferences.

Educational and Teaching Activities: Residents are also given the opportunity to participate in a variety of the undergraduate and graduate teaching programs conducted by Occupational Health Program faculty members. Additional programs target workers and supervisors and develop resident skills in design and delivery of educational programs with respect to work or environmental hazards, health-related habits of living and ergonomics.

Research Projects: Although residents are encouraged to engage in occupational health-related research, in collaboration with faculty during the practicum phase, these activities are closely supervised so that they will not impair resident achievement of the fundamental objectives of the practicum portion. Each research project is intended to provide residents with essential skills in data acquisition, organization, and analysis, formulation and execution of a coherent research plan, and preparation of clear and concise reports.

Consultations: Each resident participates in at least one consultation in collaboration with a key faculty member of the Occupational Health Program. These consultations provide an excellent opportunity for the resident to deal with clinical, scientific, social, legal, and administrative issues from the perspective of workers, employers, and regulatory authorities in providing comprehensive solutions and recommendations for addressing significant industrial occupational health problems. Each consultation requires in-depth background investigation, analysis of health and environmental data, application of administrative and scientific principles in designing a plan for compliance

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with regulatory requirements, addressing the needs of site workers' compensation plans, and providing recommendations for planning and administration of site health-related programs. In each instance, faculty works closely with the resident to maximize the level of resident's responsibility and participation, frequently supporting residents in preparing a final report and making presentations to workers and management. This provides an excellent opportunity for residents to work as part of a team.

Program Evaluation

Written evaluation of the education program by residents is encouraged at all levels. Every six months, each resident completes a "Rotation Evaluation Form," providing feedback on the adequacy, quality, and appropriateness of each required component of the training program. On an annual basis, residents are given the opportunity to provide a written, detailed evaluation of the entire educational program, using the annual program evaluation form by resident. Every six months, residents meet with the Residency Director and the Residency Coordinator to review their written feedback and to discuss issues or concerns. Residents' comments are summarized and reported to members of the Residency Advisory Committee at their meetings and the Chair of the Residency Advisory Committee also has an opportunity to review the actual forms completed by each resident. This evaluation information is extremely important for the program; it facilitates rapid identification of any problems or concerns and allows program faculty to tailor the program to best meet residents' needs. (See appendix D for sample evaluation and competency form).

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**PROGRAM GRADUATES
(1991 - 1994)**

NAME	mo/yr admitted	mo/yr graduated	Present Position	Year ABPM certified
Thomas Hicks	9/92	9/94	Occupational Physician Assistant Professor UMASS Medical Center Worcester, MA	N/A
Susan Upham	9/91	9/93	Occupational Physician Holyoke Hospital Holyoke, MA	N/A
Kim Koyamatsu	7/92	7/93	Assistant Professor of Occupational Medicine Yale University School of Medicine Boston, MA	N/A
Jay Burstein	7/91	7/92	Occupational Physician Goddard Hospital Occupational Health Program Stoughton, MA	1993
Charles Sweet	9/90	9/91	Medical Director MedWorks Program Marlborough Hospital Marlborough, MA	N/A

Appendix A

Second year resident

University of Massachusetts Medical Center
 Occupational Medicine Residency Program
INDIVIDUAL RESIDENT'S SCHEDULE
 September 1992 - August 1994

1992

1993

SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG
Industrial Site Placement Industrial Site Placement Weekly Occ. Med. Clinic	Cranston Print Works Digital Equipment Company (UIMMC) (Includes monthly Occup. Upper Extremity Disorder Clinic, monthly Reproductive Hazards Clinic)				Research: Review of carpal tunnel syndrome outcome and occupational injuries in working children				Educational activities for workers via Dept. of Industrial Accidents		

Two Industrial site placements: 2/3 day per week
 (Cranston, Digital Equipment)
 Occupational Medicine Clinic: 1/2-day/wk

Occupational Health Program Staff Conference: 2nd Thursday every other month
 Occupational Health Journal Club: 3rd Thursday of every month
 Occupational Health Clinical Conference: every Thursday
 Occupational Health Research Conference: occasionally
 Occupational Health Seminar: Thursdays, twice each month

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1993

1994

SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG
Industrial Site Placement	Cranston Print Works Webster, Ma										
Industrial Site Placement	CVS Woonsocket, RI										
Weekly Occ. Med. Clinic	(UMMC) (includes monthly Occup. Upper Extremity Disorder Clinic, monthly Reproductive Hazards Clinic)										
Research: Review of carpal tunnel syndrome outcome and occupational injuries in working children											

Two industrial site placements: 2/3 day per week
(Cranston, Digital Equipment)
Occupational Medicine Clinic: 1/2-day/wk

Occupational Health Program Staff Conference: 2nd Thursday every other month
Occupational Health Journal Club: 3rd Thursday of every month
Occupational Health Clinical Conference: every Thursday
Occupational Health Research Conference: occasionally
Occupational Health Seminar: Thursdays, twice each month

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First year resident

University of Massachusetts Medical Center
Occupational Medicine Residency Program

INDIVIDUAL RESIDENT'S SCHEDULE
September 1993 - August 1995

1993	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG
	Industrial Site Placement 2/3 day every week	General Electric								Industrial Site 2/3 day per week Avery/Dennison Weekly Occ Med Clinic Research Project		

Two Industrial site placements: 2/3 day per week
(General Electric, Avery/Dennison)
Occupational Medicine Clinic: 1/2-day/wk start 6/94

Occupational Health Program Staff Conference: 2nd Thursday every other month, starting 6/94
Occupational Health Journal Club: 3rd Thursday of every month, starting 6/94
Occupational Health Clinical Conference: every Thursday, starting 6/94
Occupational Health Research Conference: Occasionally
Occupational Health Seminar: Thursdays, twice each month, starting 6/94

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1994

1995

SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG
Industrial Site Placements	Avery/Dennison General Electro Weekly Occ Med Clinic 1/2 day/wk (includes monthly Occup. Upper Extremity Disorder Clinic, monthly Reproductive Hazards Clinic)										
Research Project											

Two Industrial site placements: 2/3 day per week
 (General Electric, Avery/Dennison)
 Occupational Medicine Clinic: 1/2-day/wk start 6/94

Occupational Health Program Staff Conference: 2nd Thursday every other month
 Occupational Health Journal Club: 3rd Thursday of every month
 Occupational Health Clinical Conference: every Thursday
 Occupational Health Research Conference: Occasionally
 Occupational Health Seminar: Thursday, twice each month

SUMMARY RESIDENT EVALUATION BY PROGRAM DIRECTOR

Name of Resident:

1. Summary evaluation of performance in academic phase:

2. Summary evaluation of performance in research project:

3. Summary evaluation of performance in clinical rotations:

4. Comments on knowledge and ability, strengths and weaknesses, professional growth, and how the performance compares to that of practicing professionals in this field.

5. Comments on attitude, initiative, ethical standards, interactions, attendance, productivity, etc:

6. Other observations:

Appendix D

**OCCUPATIONAL MEDICINE
 LIST OF SEMINARS AND CONFERENCES**

TITLE	DATE	INSTRUCTOR
An Outbreak of Occupational Disease in Connecticut	January 6, 1993	William Beckett, MD, MPH Yale University
Ergonomics and Biomechanics	January 27, 1993	Guy Fragala, PhD UMASS Medical Center
Behavioral Emergencies in the Workplace	February 3, 1993	Bruce Davidson Digital
Pulmonary Function Testing	February 10, 1993	William Becket, MD, MPH Yale University
Heat Stress	February 24, 1993	Don Beavers, MD, MPH UMASS Medical Center
Hearing Conservation Program Evaluation	March 3, 1993	Kim Koyamatsu, MD, MSPH UMASS Medical Center
Reproductive & Developmental Toxicology	April 1, 1993	Gregory Moore, MD Uniformed Services University
Epidemiologic Study of Reproductive Effects in the Semiconductor Industry	April 28, 1993	Katharine Hammond, PhD UMASS Medical Center
Social Security Disability	May 5, 1993	Glenn Pransky, MD, MOccH UMASS Medical Center
Mass. Workers' Compensation Reform Act of 1991: Medical Provisions	May 26, 1993	Christine Oliver, MD, MPH, Mass General Hospital
A System for Injury Prevention	June 2, 1993	Guy Fragala, PhD UMASS Medical Center
Health Hazards of Investment Casting	June 23, 1993	Don Beavers, MD, MPH UMASS Medical Center
Case Studies in Occupational Medicine	August 11, 1993	Kathleen Rest, PhD UMASS Medical Center

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Workers' Compensation and Health Care in Canada	August 18, 1993	Elizabeth VanDeCarr UMASS Medical Center
Physician Involvement in Tobacco Use	August 25, 1993	Joseph Karpiez, MD UMASS Medical Center
Workers' Compensation and the Clinton Health Plan	September 15, 1993	Jay Himmelstein, MD, MPH UMASS Medical Center
The Relationship of Inguinal Hernia and Development of Potential Work and Non-work Related Risk Factors: Report of a Pilot Study	October 13, 1993	Susan Upham, MD UMASS Medical Center
Adult Lead Toxicity	November 4, 1995	Robert Dowsett, MD UMASS Medical Center
Work and Work-Related Injuries in High School Students: A Research Proposal	December 2, 1993	Thomas Hicks, MD UMASS Medical Center
Carpal Tunnel Syndrome: Research Opportunities	December 9, 1993	Glenn Pransky, MD, MOccH, UMass Medical Center
Green Tobacco Disease	December 23, 1993	Kathleen Rest, PhD UMASS Medical Center

Appendix C

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UNIVERSITY OF MASSACHUSETTS MEDICAL CENTER

OCCUPATIONAL HEALTH PROGRAM

OCCUPATIONAL MEDICINE RESIDENT COMPETENCY REVIEW - SPECIFIC PERFORMANCE MEASURES

RESIDENT: _____

REVIEW DATE: _____

Below is a list of various skills, knowledge and attitudes that Occupational Medicine Residents should master prior to completing their training.

	<u>Competence Level</u>				
	<u>Poor</u>	<u>Marginal</u>	<u>Progressing</u>	<u>Competent</u>	<u>Exceeds Expectation</u>
1. Ability to communicate effectively with patients.	1	2	3	4	5
2. Ability to communicate effectively with employers.	1	2	3	4	5
3. Knowledge of AOMA Code of Ethics in relationship to patient and employer health concerns.	1	2	3	4	5
4. Ability to take a complete and accurate occupational history.	1	2	3	4	5
5. Ability to perform a complete and accurate physical exam.	1	2	3	4	5
6. Ability to establish and maintain accurate patient records.	1	2	3	4	5
7. Ability to correctly recognize occupational illnesses.	1	2	3	4	5
8. Ability to identify contributing non-occupational factors to occupational disease and evaluate their importance in performing specific job tasks.	1	2	3	4	5
9. Ability to synthesize clinical data and literature review in patient evaluation.	1	2	3	4	5
10. Recognizes the limits of own knowledge and where to go for further information on patient evaluation.	1	2	3	4	5
11. Ability to treat occupational poisonings.	1	2	3	4	5
12. Ability to differentiate occupational skin disorders by history and examination.	1	2	3	4	5
13. Ability to choose appropriate diagnostic tests in work-up of patients with low back pain.	1	2	3	4	5
14. Ability to manage acute and chronic low back pain.	1	2	3	4	5

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		<u>Poor</u>	<u>Marginal</u>	<u>Progressing</u>	<u>Competent</u>	<u>Exceeds Expectation</u>
15.	Ability to identify and manage repetitive trauma disorders.	1	2	3	4	5
16.	Ability to perform basic joint examination.	1	2	3	4	5
17.	Ability to prescribe a physical therapy program for an injured worker.	1	2	3	4	5
18.	Ability to obtain and interpret a spirogram.	1	2	3	4	5
19.	Knowledge of the appropriate tests for further work-up of restrictive lung disease detected on screening exam.	1	2	3	4	5
20.	Knowledge of the differential diagnosis of interstitial lung disease.	1	2	3	4	5
21.	Ability to recognize occupational eye disorders and when to refer ophthalmologist.	1	2	3	4	5
22.	Ability to suture a minor wound.	1	2	3	4	5
23.	Knowledge of and ability to find OSHA PELs of common exposures like lead, silica, etc.	1	2	3	4	5
24.	Knows how to arrange an appropriate lead monitoring program based on OSHA Lead Standard.	1	2	3	4	5
25.	Ability to discuss the basic elements and controversies of the PEL standards.	1	2	3	4	5
26.	Ability to design a hearing conservation program for workers exposed to loud noise.	1	2	3	4	5
27.	Ability to perform and accurately interpret an audiogram.	1	2	3	4	5
28.	Ability to design an appropriate screening program for workers exposed to silica, asbestos or lead.	1	2	3	4	5
29.	Ability to identify practical problems of sensitivity and specificity in designing a screening program.	1	2	3	4	5
30.	Knowledge of the rights of an employee filing an OSHA complaint.	1	2	3	4	5
31.	Understands the meaning of the OSHA general duty clause.	1	2	3	4	5
32.	Ability to advise patients about the Federal Hazard Communication Standard.	1	2	3	4	5
33.	Ability to design appropriate response to the requirements of the Hazard Communication Standard.	1	2	3	4	5

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	<u>Poor</u>	<u>Marginal</u>	<u>Progressing</u>	<u>Competent</u>	<u>Exceeds Expectation</u>
34. Ability to design appropriate on-site services for a specific workplace.	1	2	3	4	5
35. Ability to design a health promotion for a specific worksite, such as hypertension control.	1	2	3	4	5
36. Ability to prepare an operational budget for an occupational health program.	1	2	3	4	5
37. Ability to supervise a mid-level practitioner (e.g., physician's assistant) in the workplace.	1	2	3	4	5
38. Ability to design a surveillance system exposure and accident experience.	1	2	3	4	5
39. Ability to determine employee's rights to confidentiality in employer requests for medical record information.	1	2	3	4	5
40. Ability to identify the troubled employee and refer to an appropriate employee assistance.	1	2	3	4	5
41. Ability to establish a drug screening program, interpret results and refer to EAPs as necessary.	1	2	3	4	5
42. Ability to advise patients about the basic elements of workers compensation laws.	1	2	3	4	5
43. Ability to advise a pregnant employee whether to continue working in a particular workplace.	1	2	3	4	5
44. Knowledge of the legislation protecting the handicapped in worker selection by pre-placement exams.	1	2	3	4	5
45. Ability to evaluate disability by Social Security Administration, AMA or other criteria.	1	2	3	4	5
46. Ability to perform a disability and impairment rating exam.	1	2	3	4	5
47. Ability to write a legal opinion letter on the work-relatedness of disease and understanding of expert witness and deposition skills.	1	2	3	4	5
48. Ability to identify most likely significant exposure in mixed chemical exposures.	1	2	3	4	5
49. Ability to perform a workplace walk-through and to identify major hazards.	1	2	3	4	5
50. Ability to interpret the results of basic industrial hygiene surveys.	1	2	3	4	5
51. Ability to obtain information on a compound using a	1	2	3	4	5

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computerized database.

	<u>Poor</u>	<u>Marginal</u>	<u>Progressing</u>	<u>Competent</u>	<u>Exceeds Expectation</u>
	1	2	3	4	5
52. Ability to advise patients regarding proper respirator fit and use.	1	2	3	4	5
53. Knowledge of the key elements of a good respirator program.	1	2	3	4	5
54. Ability to apply ergonomic principles to redesign a hazardous lifting job.	1	2	3	4	5
55. Ability to choose the appropriate protective gear for a particular solvent exposure.	1	2	3	4	5
56. Ability to conduct an epidemiologic study to identify the etiologic agent of a cluster of illnesses in the workplace.	1	2	3	4	5
57. Ability to clinically evaluate the health effects of a new compound introduced into the workplace.	1	2	3	4	5
58. Knowledge of the proper response to non-occupational public health problems, such as an outbreak of food-borne illness.	1	2	3	4	5
59. Knowledge of personnel management (use of IH, RN, PT, etc.), public relations, media, marketing programs.	1	2	3	4	5
60. Knowledge of emergency procedures, protocols, etc. Use of EMS system and disaster planning. Completion of at least one course in BLS, ACLS and ATLS.	1	2	3	4	5
61. Knowledge of rehabilitation resources and referrals to work hardening and work capacity evaluation programs.	1	2	3	4	5

Signature of faculty advisor: _____

Date: _____

Signature of program director: _____

Date: _____

RETURN FORM TO RESIDENCY COORDINATOR FOLLOWING SIGNATURE

GP/dmt
8/26/92

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REPORT DOCUMENTATION PAGE		1. REPORT NO.	2.
4. Title and Subtitle Occupational Safety and Health Grant, University of Massachusetts Medical Center, Assistance Award Closeout		5. Report Date 1995/12/00	
7. Author(s) Pransky, G.		6.	
9. Performing Organization Name and Address Occupational Health Program, Department of Family and Community Medicine, University of Massachusetts Medical Center, Worcester, Massachusetts		8. Performing Organization Rept. No.	
		10. Project/Task/Work Unit No.	
		11. Contract (C) or Grant(G) No. (C) (G) T01-OH-07263	
12. Sponsoring Organization Name and Address		13. Type of Report & Period Covered	
		14.	
15. Supplementary Notes			
16. Abstract (Limit: 200 words) The Occupational Medicine training program at the University of Massachusetts Medical Center was described, and the accomplishments of the program were summarized. The program started in 1985 as part of the Harvard School of Public Health Educational Resource Center. A freestanding, 2 year residency program was developed. The program provided direct faculty and administrative support. The Department had three major divisions including the Occupational Health Program, the Division of Environmental Health Sciences, and the Division of Preventive Medicine. Joint appointments, teaching responsibilities, and collaborative research projects have created close links between the Occupational Health Program and faculty in other departments and institutions. Client company consultation provides clinical training sites and research opportunities.			
17. Document Analysis a. Descriptors			
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