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# The West Virginia Occupational Safety and Health Initiative

## Practicum Training for a New Marketplace

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**Context:** Occupational medicine practice has experienced a shift from larger corporate medical departments to organizations providing services for a variety of industries. Specific training needs will accompany this shift in practice patterns; these may differ from those developed in the traditional industrial or corporate medical department setting.

**Methods:** The West Virginia Occupational Health and Safety Initiative involves occupational medicine residents in consultation to a variety of small industries and businesses. It uses the expertise of occupational physicians, health and safety extension faculty, and faculty in engineering and industrial hygiene. Residents participate in multidisciplinary evaluations of worksites, and develop competencies in team-building, workplace health and safety evaluation, and occupational medical consulting.

**Outcome Measures:** Specific competencies that address requirements for practicum training are used to measure the trainee's acquisition of knowledge and skills. Particular attention is paid to the acquisition of group problem-solving expertise, skills relevant to the current market in practice opportunities, and the specific career interests of the resident physician. Preliminary evaluation indicates the usefulness of training in evaluation of diverse industries and worksites.

**Conclusions:** We offer this program as a training model that can prepare residents for the challenges of a changing marketplace for occupational health and safety services.

**Medical Subject Headings (MeSH):** occupational medicine (education), occupational health services, preventive medicine (education), clinical competence (Am J Prev Med 1999;16(4):347-350) © 1999 American Journal of Preventive Medicine

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### Introduction

Occupational medicine practice has shifted from in-house corporate departments to free-standing and multispecialty group-practice clinics providing medical services to workers and employers.<sup>1-9</sup> Many corporate entities have "downsized" or eliminated comprehensive occupational safety and health programs.<sup>1,3,5,9,10</sup> Urgent care centers offering medical management of worker injuries and, to a lesser extent, surveillance and government-mandated examinations, have flourished. These services may exclude or discount the preventive aspects of occupational medicine practice in their emphasis on injury care and

rehabilitation<sup>1,4,7</sup> and may have limited expertise in many areas of occupational health care.<sup>1,5,7</sup>

An interpretation of the transition to offsite sources is that the marketplace for occupational health services is merely responding to that of the broader marketplace where small and medium-sized businesses predominate. Small employers have difficulty maintaining occupational health services. Nearly three quarters of all workers in the United States work in plants without available medical or occupational health services.<sup>1,10-12</sup> Inability to fund occupational health and safety services causes employers to turn to outside providers, particularly if those providers achieve economies of scale through the provision of services to many businesses.

The shortage of qualified practitioners in occupational medicine is well-known.<sup>13,14</sup> More importantly, training of physicians to meet the needs of this evolving marketplace may not be appropriate. Current residency program requirements of the Accreditation Council on Graduate Medical Education (ACGME) specify that trainees obtain four months of their practicum training "in supervised practice within the real world of work"

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where suitable rotations “include heavy and light manufacturing; the utilities, services, and transportation sectors.” More recently, the shift in provision of services has been recognized by the ACGME, and “clinics that provide comprehensive services to workers and employers” have been added to the list of approved sites for practicum training.<sup>15</sup> In view of the shift in occupational medicine practice, it is uncertain whether the addition of these training sites will serve the dual purposes of preparation for practice in a new era and training in the principles of prevention in the worksite.

The West Virginia Occupational Health and Safety Initiative began as a collaborative partnership aimed at bringing the resources of the state’s university to bear on the problems of work-related injury and illness in the nation’s most work-disabled state.<sup>16</sup> The program has several unique features that we believe can serve as a model for training in occupational medicine. We propose that equivalent mechanisms could be developed by other residency training programs to equip physicians with the expertise needed for practice in the new market.

## Background

West Virginia is one of the most rural states in the union. Over 64% of residents live in places with fewer than 2500 inhabitants. The rural nature of the state underscores the importance of small industries to the economic health of West Virginia. A decline of 11.3% in urban manufacturing during the period between 1987 and 1995 was mirrored by a 14.1% increase in employment in this sector in rural areas.<sup>17</sup> Heavy manufacturing industries located in or near urban areas account for an ever-decreasing proportion of workers. Decreased access to health services for workers is mirrored and even magnified in the recent economic history of West Virginia.

The West Virginia University Extension Service historically has had a mandate for training in practical aspects of occupational safety and health in such traditional industries as construction and manufacturing. The College of Engineering and Mineral Resources provides training in industrial hygiene and has added a program in environmental and safety management. The Institute of Occupational and Environmental Health (IOEH) was established within the School of Medicine as a “center of excellence” aimed at improvement of the lives and health of the people of West Virginia. Under the aegis of the Institute, a collaborative group was established to provide consultative services to businesses in West Virginia. This multidisciplinary group, termed the Institute Partners, provides consultation to small businesses, industries (those with under 250 workers), and labor groups experiencing excessive injuries or claims, or those who have worksite health and safety concerns. As a result of the expertise

centered in the Institute Partners, the state university system can provide vertically-integrated consulting to industry and labor. Because intensive engineering or medical interventions are outside the mandate of a state-supported enterprise, services are limited to initial recommendations and initiation of programs. Funding for the program comes from premiums paid by employers into the state’s single-payer workers’ compensation insurance system. Employers are notified that consultation is provided as a state-funded service, to which they have already contributed. Access to the program is via a toll-free number.

## Structure

The Occupational Health and Safety Initiative is flexible in developing a plan for a requesting industry. Its consultative services encompass industrial hygiene, ergonomics, safety training, site safety and health surveys, regulatory compliance consultation, medically-oriented (e.g., injury) analysis and prevention services, and medical surveillance. A company is expected to initiate a request, after which a site team is formed to address the request. An initial site visit is performed, following which limited testing can be performed and recommendations made. Site visit teams are multidisciplinary, and include an occupational medicine resident, an industrial hygiene student, and safety/environmental management students. Team leaders are chosen from one of the Health and Safety Extension faculty. Faculty from the Institute Partners serve as consultants for planning subsequent recommendations, and issuance of a final report.

Resident training under the Health and Safety Initiative has as its goal the prevention of illness and injury. A secondary goal is the acquisition of interdisciplinary team-building and analytic skills. Primary and secondary prevention and consultative services provided by residents include:

- Health-oriented analyses of shop floor problems, including medical safety and hazards of certain types of exposures.
- Recommendations for medical surveillance (medical monitoring).
- Recommendations to providers for diagnostic/therapeutic follow-up.
- Reports to public health authorities concerning disease outbreaks of concern.
- Development of strategies by which health hazards in the workplace can be mitigated (as distinct from addressing individual worker care).
- Access to spirometry and other testing in the workplace.
- Recommendations for immunization, health education, and behavioral intervention.
- Trend analysis of reportable illness/injury.
- Recommendations to employers concerning health

and safety policy, industrial hygiene and safety measurements, and implementation.

Integration with the clinical services of the Institute provide a means for medical evaluation of workers and patients, and a setting for surveillance and screening examinations once recommendations have been made. The size of the state, along with its rural, mountainous road system, dictates that services be created in conjunction with locally available clinical resources. The initiative thus becomes a fully vertically integrated means of managing health hazards within the workplace, allowing the resident to follow through on medical aspects of recommended interventions. The mandate of the ACGME for work in organizations that provide comprehensive services to workers and employers is thereby met; clinical, health, hygiene, and safety resources all coexist under one umbrella organization.

### **Initial Implementation**

In the first six months of this program, industries and small businesses in 31 of 55 West Virginia counties (56%) participated in this program. A total of 60 clients had been served by the end of 1997. Two thirds (67%) of participants were in manufacturing, including industrial and commercial machinery manufacture; stone, clay, glass, and concrete products; printing and publishing; rubber and plastics; chemicals; and primary metal product manufacture. Service industries compose 22% of participants and include health care, engineering and research, business services, automotive repair, and recreational services. Mining, a traditional West Virginia industry, accounted for 4% of participants. Physician training is enhanced by the diversity of the client list, which represents a spectrum of the health and safety problems faced by physicians, industrial hygienists, and safety managers.

Services provided have included air sampling, noise surveys, ergonomic assessment, recurring injury assessment, personal protective equipment assessment and training, hazardous communication training, lock-out/tag-out program instruction and development, and safety program development. The largest percentage of site team efforts have been safety program development and safety training. The majority of client companies did not have a written safety and health program, and hence 25% of consultations involved program development. Twenty percent of clients received training in health and safety areas, including trenching and shoring, hazardous chemicals, and respiratory protection. Although some clients required only a simple walk-through, most needed more extensive intervention, and many requested at least three days of service, the maximum allowed under the pilot program. Many were also provided with follow-up recommendations.

Three occupational medicine residents per year ro-

tate through the program, and are assigned to the outreach program for three to four months during the practicum year. Two full days per week are allotted to participation in the program, in combination with two to three days spent in the clinical sites of the IOEH. The intent of this integration is to provide the resident with increasing expertise in the evaluation of worksites, clinical skills, and development and implementation of surveillance programs.

Residents have been directly involved in one third (20) of the scheduled site visits and evaluations. Industries serviced with direct resident assistance have included manufacturing, machining, timbering, and health care, in roughly the same proportions as are serviced by the overall program. Medical recommendations made by residents have been informed by results of air sampling, industrial hygiene measurements, and other information obtained by team members. Resident evaluations and recommendations are reviewed by precepting faculty before they are submitted. Additionally, the residents are integrated into teaching of ongoing training courses (e.g., Hazardous Waste Emergency Response training) as an added responsibility.

### **Program Evaluation**

Evaluation is used to modify program design and inform future directions for the program. Process evaluation is used to determine the effectiveness of the program's methods. The ability of the program to respond in an efficient manner is measured through data on the interval between contact and site visit, the duration of the visit, and the time required to provide reports and recommendations. Evaluation of resident participation in this facet of the program is based on competency measures that reflect professional attitudes toward the work, as well as ability to analyze worksite problems and develop a plan whereby they are addressed.

Outcome measures for industry are considered as short- and long-term. Short-term outcome measures reflect changes in occupational safety and health behavior and practices of small businesses. Questionnaires that assess knowledge and practices within small businesses are being developed and validated. Long-term outcomes will be assessed by measurement of claims submissions to the West Virginia Workers' Compensation system. An extensive database is available through this single-payer compensation agency, which can be used to examine trends in claim submission in specific industries, counties, and within individual companies. Additionally, claims from participating industries can be compared with those not using the services of the Initiative.

Outcome measures for residency training take several forms. Competencies specific to OM training, which address the requirements of the American Board

of Preventive Medicine and the ACGME for practicum training, are used to measure the trainee's acquisition of knowledge and skills.<sup>18</sup> Particular attention is paid to the acquisition of group problem-solving expertise, skills relevant to both the current marketplace and practice opportunities, and the specific career interests of the resident physician. Underlying the measurement of outcomes is the need for all occupational medicine trainees to become conversant with the role of safety and health professionals and others involved in decisions that affect worker health, such as plant managers and human resource personnel. As a measure of long-term outcome, residents will be surveyed several years after completion of training to determine which elements of this training they considered most valuable. Current resident assessments of the program are being collected.

## Conclusion

Employment for occupational physicians has shifted from the traditional industry-based occupational health service to settings that provide services to smaller industries without in-house services.<sup>1-10</sup> Several implications of this trend affect the training and practice of future physicians in the specialty. The first is that future occupational physicians will need expertise in handling health and safety problems within a variety of different industries. They will exercise this expertise from positions outside a business, rather than as employees. Awareness of work practices, industrial processes, and health and safety problems over different industries will be crucial for informed occupational medical practice. Guidotti<sup>9</sup> has pointed out that the future of occupational medicine practice may lie in *risk anticipation* stemming from knowledge of sources of risk, and expertise in control of workplace hazards. The teamwork among physicians and other occupational safety and health professionals inherent in the corporate model may not be surviving in the current marketplace, where preventive services are devalued.

Training occupational physicians for the current and future job market must anticipate these trends. In addition, training should enable smaller industries to benefit in the same way that larger corporations have

benefited from traditional occupational health programs. We offer the West Virginia University Health and Safety Initiative as one solution to the problem of training for this pattern of occupational medicine practice.

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