NIOSH Final Progress Report

Wayne State University
Division of Occupational Medicine
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Detroit, Michigan 48235

CDC/NIOSH Training Grant

Project Title: Occupational Safety and Health Training Grant

Program Director: James N. Skupski MD, MPH

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Abstract

The Wayne State University's Occupational and Environmental Medicine residency is competency-based training that uses "learning contracts" to provide clarity concerning the educational objectives of the various practicum rotations. This report highlights the changes to the Wayne State University's Occupational and Environmental Medicine (WSU/OEM) residency from July 2002 through June 2004. With regard to leadership, James N. Skupski, MD, MPH became the program director in January 2003. Also during this time period the Department of Family Medicine successfully recruited Bengt Arnetz MD, PhD, for the position of the OEM Division Director. Concerning programmatic structure, there have been important advancements in the development of "Guiding Plans" which complement the Learning Contracts used to assist the preceptors in their education of the residents. In addition, the practicum changes which had been instated previously have been enhanced. During this grant cycle five residents have graduated and successfully entered the practice of Occupational and Environmental Medicine. Wayne State University is proud of the progress that has been made in recent years, and remains committed to occupational health training.

Significant Findings

Leadership

- Dr. James Skupski became the Residency Director in January of 2003. Dr. Skupski has been an occupational health practitioner for over 8 years, and currently serves as the Medical Director of Sinai/Grace Hospital, a division of the Detroit Medical Center.
- During this grant period the Department of Family Medicine successfully recruited Bengt Arnetz, MD, PhD, for the position of the OEM Division Director. Dr. Arnetz has an MS in Public Health Science and Epidemiology from Harvard University. He will be arriving from Uppsala University where he was a professor in social medicine and the founder and CEO of the Center for Environmental and Occupational Stress (CEOS) at the Academic Hospital in Uppsala, Sweden. Dr. Arnetz's appointment will begin December 2004.
- Former Residency Director Dr. James Blessman is the OEM Division Director within the Department of Family Practice at WSU. While he will transition out of the Director position, he will remain an active faculty member in the Department of Family Medicine

Residency Advisory Committee

- Dr. Robert Rhodes, former Medical Director of General Motors, has become the chair of the Residency Advisory Committee. Former chair, Dr. Robert Morris, Medical Director for Chrysler Corporation, will remain on the committee.

Educational Design

- Significant enhancements were implemented to improve the database that generates learning contracts, and maintains information relevant to the training program such as rotation evaluations. The database is called "Resident Manager" and is locally developed.

- Peer review process was employed to develop the "Guiding Plans" to help standardize the learning experience of the various practicum rotations. This process expanded the guiding plans for all 165 of the ACOEM learning competencies used for evaluating resident education. **(Appendix 2 is the Level 1 Guiding Plan)**

Practicum Sites

- A practicum rotation at Delphi Corporation was added in 2003. This rotation added a valuable experience in preventive medicine at the corporate administrative level. This rotation was highly rated by the residents and the Delphi preceptors were voted "Teachers of the Year".

Didactics

- The weekly morning report case discussions by residents, along with the biweekly didactic lectures, occupational medicine board review and roundtable discussions on specific occupational and environmental health topics were continued and enhanced by the refinement of evaluation forms used to evaluate the residents performance and track the experience.

Graduates

- Six residents interacted with the program during this funding cycle. Five residents began and completed their training during this funding cycle. Three have been graduates of the combined Family Medicine / Occupational Medicine program.

Program Description

General Description

The Division of Occupational and Environmental Medicine (OEM) is housed within the Family Medicine Department at Wayne State University. From its inception, the OEM program was competency-based with training that was ensured by the use of learning contracts. The basis for the learning contracts used for the residency training are the 165 competencies developed by the American College of Occupational and Environmental Medicine (ACOEM). With these competencies as the educational basis, resident trainees are to be individually assessed for their strengths and weaknesses, and have a program designed to meet their specific needs.

This training program falls under the leadership of Dr. Maryjean Schenk, Chair of the Department of Family Medicine, who is boarded in both Family Medicine and Occupational and Environmental Medicine. Under her tenure, the mission of both the Department of Family Medicine and the Division of Occupational and Environmental Medicine have been clarified: *to remain committed to the advancing of the science of Family and Occupational Medicine and leading in research and medical education to improve the health and well-being of individuals, families, and communities.* To this end, Dr. Schenk has been very supportive of the OEM residency program by providing counsel, and helping to identify strategies and resources that would help to insure a successful training program.

The goal of the WSU/OEM program is to produce occupational health practitioners that are well versed in three areas that help to insure the health of others; 1) hazard recognition and control, 2) evidenced based disability management, and 3) effective communication. The WSU/OEM program is grateful to the many professionals and organizations (local and national) that have aided in our evolution of a process that seeks to produce such a practitioner.

Personnel

During this funding cycle, the leadership has changed. James N. Skupski, MD, MPH became program director in January 2003. Dr. Skupski, an Occupational & Environmental medicine graduate of the University of Michigan, has been in practice for over eight years. He is currently the Medical Director of Occupational Health Services for Sinai/Grace Hospital which is a division of the Detroit Medical Center. He was selected for this position for his ability to administrate by identifying and successfully implementing effective programmatic changes. He is also responsible for clinical supervision of residents in the occupational disease clinic.

Former program director Dr. Blessman remains actively involved in the residency program as Division Director of Occupational Medicine within the Department of Family Practice at Wayne State University. Serving also as the medical director for the City of Detroit adds additional clinical and administrative experiences to the residency program. Dr. Hikmet Jamil, who has been an occupational health practitioner and an administrator for better than 20 years, remains as the assistant residency director. Dr. Jamil's principle responsibilities are to oversee the practicum aspect of the training program and to manage a one-month rotation in occupational medicine offered by Wayne State

University to local area primary care residencies. His experience in administering an occupational medicine residency program has been invaluable for program. Additional faculty includes Dr. John Graff, an occupational epidemiologist, who coordinates the research related scholarly activity of the residents. Educational support is supplied by Roger Wabeke CIH, and David Basset PhD. Dr Bassett is the former chair of the Occupational and Environmental Health Sciences at Wayne State University and has been involved extensively in the field of pulmonary and inhalation toxicology. Drs. Graff and Bassett and Mr. Wabeke attend and participate in the weekly resident educational sessions providing a combined invaluable base of knowledge to the residents.

During this grant period it was announced that a new director for the Division of Occupational & Environmental Medicine, Bengt Arnetz, MD, PhD was recruited from the Karolinska Institute and Uppsala University in Sweden. Dr Arnetz has a MS in Public Health Science and Epidemiology from Harvard University. His major research focus includes occupational stress and developing an organization's well-being, efficiency, and productivity, using a system based on biological markers. Dr. Arnetz will bring a strong research presence to the OEM division.

In addition to the OEM core faculty, better than 20 other board-certified occupational health practitioners, who have either adjunct or voluntary faculty appointments, teach and supervise the practicum rotations for the residents.

The program also receives counsel from an 11 member Residency Advisory Committee (RAC) that meets twice per year. Members appointed to this committee have had significant experience in the field of occupational medicine, and collectively bring a very balanced perspective to the program The new chair of the RAC is **Dr. Robert Rhodes**, retired Medical Director for General Motors and Past President of ACOEM. The former chair, **Dr. Robert Morris**, serves as a medical director for the Chrysler Corporation and remains on the committee. The most recent addition to the RAC is **Dr. Thomas Weekley** who serves as the Assistant Director of the United Auto Workers. Other members include: **Dr. John Anderson**, VP of Operations for Concentra, **Dr. David Basset**, Past Chair of Environmental Health Sciences; **Dr. Patrick Beecher**, Group Director, General Motors; **Dr. Duane Block**, retired Medical Director for Ford Motor Company; **Dr. Raymond Demers**, Director of the Henry Ford Cancer Program; **Dr. Richard Gallagher**, Director of Division of Education in the Department of Family Medicine; **Dr. Walt Talamonti**, Medical Director for the Ford Motor Company; and **Dr. John Waller**, Chairman of Community Medicine, Wayne State University.

Practicum Training

As a pioneer in the use of educational competencies and learning contracts, it soon became apparent to the WSU/OEM program that there was a need for a hierarchical approach to training. As an example, the first competency listed in the ACOEM competencies is to "Design and implement integrated systems of disability prevention and management". While a practicum site might offer an experience to understand and achieve this competency, receiving the most from this experience would be difficult for a beginning resident who has not yet covered more fundamental issues. For this reason, the 165 ACOEM

competencies have been grouped **(Appendix 1)**. This new grouping is as follows:

Level 1: Fundamental knowledge and skill;

Level 2: Knowledge and skill directed at the individual patient;

Level 3: Knowledge and skill directed at populations;

Level 4: Knowledge of systems that aid in the management of populations.

This grouping provides a framework for how a resident should advance their training. This strategy is provided to the resident during orientation. In addition, the learning contract may be printed with this grouping, so that the resident has a clear idea as to what competencies and activities should be addressed first in a rotation.

Another observation was the ambiguity surrounding how to teach a specific competency. This is a particularly important issue for our program because of the significant support from volunteer faculty in real work settings. To address this issue, the program developed the concept of the "Guiding Plan". These are a series of questions and possible assignments for the resident and preceptor to review and discuss during the rotation to ensure that a competency was achieved.

In the previous grant cycle, the "Guiding Plans" had only been developed for approximately 25% of the 165 learning competencies. During this last funding cycle, a seminar was held for the faculty, preceptors and past graduates to develop the "Guiding Plans" for all the remaining learning competencies. This seminar was successful and the resulting material is currently being assembled and edited. This effort will result in a manuscript detailing the development and use of guiding plans that will be submitted for publication. **(Appendix 2 is the Level 1 Guiding Plan)**

In 2003, a practicum rotation at Delphi Corporation was added to the residency experience. This rotation offers an experience in corporate administration working hands-on with preceptor Drs. Joseph Fortuna and Sal Galante. Residents were able to become involved in the development and implementation of corporate health policies and procedures, along with designing, and evaluating quality management and improvement programs, along with other activities to enhance an organization's performance. The success of this new rotation was evident as Drs. Fortuna and Galante were both selected "Teacher of the Year" by the OEM residents.

To ensure a balanced training, the practicum rotations have been classified and grouped with the following scheduling strategy **(Appendix 3)**:

Specialty Clinics: This experience allows exposure to the specialty practice of occupational medicine. Here patients are evaluated regarding hazardous exposures concerns and issues regarding work relatedness and fitness for duty. Sites that serve this purpose include the WSU/OEM Occupational Disease Clinic and the Center for Occupational and Environmental Medicine.

Manufacturing Industry: This experience allows exposure to employers who have the responsibility for manufacturing a product. Often in these environments there are issues with machine-paced work, and matching the worker to the machine. Sites that serve this purpose include the Ford Motor Company, Visteon and the General Motors Corporation. These experiences also allow exposure to large employers with a full complement of occupational health professionals.

Service Industry: This experience allows for exposure to employers where employees don't make a product, but interact more with the public, providing a Service. The sites that currently serve this purpose are the Occupational Health Service rotation at Detroit Receiving Hospital.

Free Standing Occupational Health Clinic: This experience allows exposure to how most employees receive their occupational health care : the free-standing occupational health clinic. Sites that serve this purpose include the Michigan Occupational Medicine Clinic, and the Concentra Medical Centers.

Governmental Agency: This experience allows the resident to become familiar with the administrative laws relevant to occupational safety and health. During this rotation, the resident spends time with a MIOSHA compliance officer making site visits to a variety of work settings. In addition to the site visits, residents have assigned readings to review with the MIOSHA personnel and the residency faculty.

These experiences are tracked and monitored through an Access ™ Database computer program that has been developed locally. This program generates rotation specific learning contracts and evaluation forms. It can also print summary evaluations that can serve as feedback to the site preceptors **(Appendix 4).**

In addition to the clinical rotations there have also been continued improvements in the didactic practicum experiences:

Morning Report: Every Tuesday at 7:30am the residents completing their practicum and Division faculty assemble to discuss cases seen in any of their practicum rotations. There is in-depth discussion of 2-3 cases in a 90 minute session. These discussions center on hazard recognition and control, evidenced based disability management, and effective communication. This has been a very successful way for the department faculty to monitor the educational experiences that are occurring in the various rotations. Faculty disciplines present at these discussions include occupational physicians, an industrial

hygienist, and an occupational epidemiologist. Starting in 2003, Dr. David Bassett, the previous chair of the Environmental Health Science at WSU, began attending the morning report conferences. His expertise in the field of research and occupational lung diseases have greatly added to this educational experience. This has also given the residents greater contact with department faculty. Additionally, this activity has been enhanced by the development of an evaluation form that is used to track the resident's performance and document the types of cases discussed. This is a highly rated experience by the residents.

Journal Club: While Journal Club has always been a component of the program, the method of documentation has changed. We have included a means of improving this educational experience. Besides using the Journal Club as a means to discuss recent medical information, we have developed it into a formal way to analyze the research method. **Appendix 5** is the form used by the residents to describe the techniques used by the researchers to accomplish their study. This process allows the residents to develop a method of assessing the validity of medical publications.

Graduates

Twenty residents have graduated from the Occupational and Environmental Medicine program since it began in 1994. Residents have been able to gain and secure employment in a variety of job settings including governmental, corporate, and private and group practice positions. Residents have also sought positions in both urban and rural settings. During this funding cycle, five residents graduated from the program. They include the following:

Dr. Shahzad Jahromi (2003) is a graduate from the Combined Family Medicine/Occupational Medicine program. He has enlisted in the United States Air Force and is currently serving as a flight surgeon. He will be practicing occupational medicine for the USAF and plans to enroll in the Aerospace Medicine residency in the future.

Dr. Jayant Eldurkar (2003) is a graduate from the Combined Family Medicine/Occupational Medicine program. He is currently practicing occupational and environmental medicine for a hospital-based practice at St. John's Hospital in Detroit Michigan.

Dr. Ifeyinwa Ilechukwu (2004) was admitted to the WSU/OEM program after first completing a residency in Physical Medicine and Rehabilitation. She is currently practicing occupational and environmental medicine for the Oakwood Healthcare System, a hospital-based system in Dearborn, Michigan.

Dr. Stephen Shaya (2004) is currently involved in a corporate durable medical supply business.

Dr. Saima Siddiqui (2004) is a graduate of the combined WSU Family Medicine / Occupational Medicine program. She is currently practicing occupational and environmental medicine for the Detroit Medical Center.

Conclusions

We at Wayne State University are pleased with how the program is continuing to evolve over time. We have worked further to develop the "guiding plans" with input from our preceptors. This peer review process is currently being reviewed and edited and will result in a publication describing a method of competency based resident education. An additional project which is being undertaken by the department is the development of educational portfolios to help document the resident's educational experience. With the addition of Dr. Bengt Arnetz to the OEM faculty, we plan for a growth in practice based research in the areas of occupational stress and productivity.

List of Publications

Publications

Meliker, J.R., Nriagu, J.O., Hammad, A., Savoie, K., Jamil, H., Devries, Jeffrey. Spatial clustering of emergency department visits by asthmatic children in an urban area: southwestern Detroit, Michigan. Ambulatory Child Health Journal (2001) 7: 297-312. (Original Research).

Jamil, H., Hakim-Larson, J., Farrag, M., Jamil, L.H. A Retrospective Study of Arab American Mental Health Clients: Trauma and the Iraqi Refugees / American Journal of Orthopsychiatry 2002, Vol. 27, No. 3, 355-361

Jamil, H., Simpson, C.L., Upfal, M., Blessman, J.E., Hammad, A. Characteristics that Influence Occupational Health and Safety Knowledge Among Arab American Workers./ Yemeni Med. Sciences J. 2003 vol. 3 No. 1, 1-8

Scholarly Work

Jahromi S, Blessman J. Health Risk Appraisal in Law Enforcement Officers, Oral presentation, American College of Occupational and Environmental Medicine, Spring 2002

Ilechukwu I, Graff J, Return to Work Determinants of Work-related Musculoskeletal Disorders of Upper Extremities and Back in Automobile Manufacturing Workers, Research Presentation, Wayne State University, Department of Family Medicine, Spring 2004

Appendix 1

Wayne State University Division of Occupational Medicine

Competencies Worksheet

Site: _____

Please circle the ID# of the competencies that are experienced at the site

ID#	Competency	Type
Level: ***Fundamental Knowledge***		**Count: 17**
Hazard Recognition, Evaluation & Control		
15	Interpret and apply OSHA PELs, ACGIH TLVs and BEIs, EPA standards, and other criteria in the assessment of chemical and physical hazard exposures.	S
Clinical - General		
25	Obtain brief, as well as comprehensive patient histories, with an emphasis on occupation and exposure.	G
26	Perform complete or focused physical examinations as indicated	G
33	Report all findings to affected individuals and pertinent information to organization and employers as appropriate (considering medical confidentiality issues), advocating for the health and safety of patients and employees.	G
Clinical - Musculoskeletal		
64	Perform focused and comprehensive musculoskeletal evaluations of the spine and extremities, including the history, physical exam, laboratory studies, and the investigation of occupational risk factors.	G
65	Select and interpret appropriate diagnostic test in the equation of patients with musculoskeletal conditions involving the spine and extremities, with particular attention to low back conditions.	G
Regulations & Governmental Agencies		
114	Understand and protect patients' legal rights to confidentiality of medical records information.	G
115	Advise employees about the basic elements of workers compensation law, complete the necessary forms, and file WC claims.	G
116	Report cases of occupational injury, illness, and /or death according to existing regulations.	G
Environmental Health & Risk Assessment		
117	Identify sources and routes of environmental exposure, and recommend methods of reducing environmental health risks.	S
Management and Administration		
137	Comply with workers' compensation health care services rules, reimbursement and reporting requirements.	G
Research and Education		
148	Use occupational and environmental information resources to conduct a literature search or to research the health effects of a chemical substance.	S
Professionalism		
158	Recognize and address ethical dilemmas in the practice of OEM using relevant guidelines, such as the ACOEM, AOEC, ICOH, and AMA Codes of Ethics.	G

ID#	Competency	Type
161	Maintain current medical, scientific, and regulatory knowledge, recognizing one's limits and seeking additional resources as needed.	G
163	Document patient encounters accurately and completely.	G
164	Apply time management principles.	G
165	Develop and implement a personal life-long learning plan.	G

Level: *Knowledge to Manage Individuals* **Count: 79**

Disability Management & Work Fitness

3	In compliance with regulations, including the Americans with Disabilities Act, conduct clinical evaluations to assess level of impairment and fitness for duty.	G

Public Health & Surveillance

7	Recognize and investigate potential sentinel events	S

Hazard Recognition, Evaluation & Control

12	Characterize existing and potential occupational and environmental hazards within a defined population	S
13	Evaluate and interpret the results of industrial hygiene surveys	S
14	Evaluate the health effects of toxic chemical exposures, including mixtures	S
16	Apply ergonomic principles to optimize comfort and reduce risk at work, including evaluation and redesign of hazardous lifting jobs, repetitive motion work and jobs with special visual demands.	S
17	Recognize and reduce exposures to certain physical hazards.	S
18	Explain health-related information on a material safety data sheet (MSDS) to workers and patients.	S
19	Advise patients regarding industrial hygiene controls, such as work practices, respiratory use, and engineering controls.	S
22	Recommend appropriate environmental monitoring studies.	S
24	Assist employees and employers with the management of the effects of shift work, jet lag, and other chronobiologic stressors.	S

Clinical - General

27	Select appropriate diagnostic studies in the evaluation of patients.	G
28	Identify potential relationships between patient symptoms and occupational / environmental exposures.	G
29	Diagnose and manage occupational / environmental illnesses and injuries, with the use of consultants in related disciplines when indicated	G
30	Identify non-occupational / environmental factors which may contribute to occupational / environmental disease or injury.	G
31	Refer and follow up or manage patients with serious occupational or environmental injuries and illnesses.	G
32	Elicit patients' concerns about exposures, and establish a therapeutic alliance incorporating risk communication.	S
34	Evaluate and treat medical conditions commonly seen by a general medical practitioner.	G

ID#	Competency	Type
35	Apply clinical practice guidelines in one's practice of medicine.	G

Clinical - Cardiology

36	Recognize, evaluate and manage the cardiac effects of chemical asphyxiants such as carbon monoxide, methylene chloride, and cyanide.	S
37	Evaluate a person's ability to perform exertional work following a major cardiac event such as myocardial infarction or coronary artery bypass graft surgery.	S
38	Address employment concerns for patients with cardiac conditions such as hypertension, coronary artery disease heart failure, arrythmias, etc.	G
39	Perform or arrange for cardiovascular diagnostic tests when indicated to evaluate fitness for duty.	S
40	Identify abnormal electrocardiograms and refer for follow-up as appropriate.	G

Clinical - Dermatology

41	Differentiate occupational skin disorders by history, examination, and diagnostic evaluation.	S
42	Manage occupational and environmental skin injuries and dermatoses.	G
44	Use patch test to evaluate patients with contact dermatitis and other conditions.	S

Clinical - Emergency Medicine

47	Identify medical and surgical emergencies, and manage or refer as indicated.	G
48	Provide acute medical and surgical care in an emergency situation, including the treatment of traumatic injuries and lacerations, referring as indicated.	G
49	Diagnose and manage the work-related implications of surgical conditions.	G
50	Diagnose and manage injuries associated with physical hazards including: heat, cold, radiation, lasers, vibration.	G

Clinical - Ear, Nose and Throat

51	Diagnose and manage nasopharyngeal conditions caused or aggravated by occupational and environmental exposure, including allergies, rhinitis, pharyngitis, laryngeal polyps and granulomata.	G
52	Evaluate and manage a patient with hearing loss or other occupationally-related otologic conditions.	S
53	Perform and interpret an audiogram, and identify a standard threshold shift, and implement appropriate treatment and preventive interventions.	G
54	Interpret hematologic laboratory studies in the context of medical surveillance and post-exposure examinations.	S
55	Perform clinical evaluations to detect the health effects of exposure to hematological toxins such as benzene, lead and arsine.	S
56	Evaluate patients, clinical data, and exposure data to render opinions, regarding causation in cases of suspect occupational or environmental cancer.	S

Clinical - Infectious Disease

57	Identify, manage, and prevent bloodborne, airborne, waterborne, foodborne, and fomiteborne pathogen exposure and associated illnesses.	G

ID#	Competency	Type
58	Identify, manage, and prevent diseases of travelers.	S
59	Order appropriate immunizations for employees and travelers.	G
60	Identify, manage, and prevent infestations and zoonotic conditions.	S
61	Identify, manage and prevent health effects associated with poor sanitation, exposure to human waste, and or water contaminate by human pathogens.	S
62	Identify, manage, and prevent building-related infectious diseases.	S
63	Identify, manage, and prevent sexually transmitted infections and diseases.	G
Clinical - Musculoskeletal		
66	Identify, manage, and prevent acute and chronic musculoskeletal disorders and their associated disabilities, and determine when such conditions are work-related.	G
67	Prescribe rehabilitation services and ergonomic interventions for an injured worker.	G
68	Refer occupational musculoskeletal conditions for appropriate surgical intervention when indicated.	G
69	Assess and manage post-treatment, including operative, return-to-work for musculoskeletal injuries.	G
Clinical - Neurology		
71	Perform focused neurological and mental status examinations in the evaluation of occupational / environmental injuries or illnesses.	G
72	When indicated, select and utilize the results of neurological and mental status examination procedures or consultations in the evaluation of occupational or environmental injuries or illness. Such studies may include: MRI, CT, EEG, NCS, Neuropsych.	S
Clinical - Ophthalmology		
76	Recognize and treat occupational eye diseases and injuries, and refer to an ophthalmologist when appropriate.	G
77	Use a slit lamp to evaluate ophthalmologic conditions.	O
78	Evaluate intra-ocular pressures	O
Clinical - Psychiatry		
80	Take a psychiatric and psychosocial history, and perform a mental status examination.	G
81	Identify the troubled or psychologically impaired employee, and manage or refer appropriately to community resources, including Employee Assistance Programs.	G
83	Identify and manage the impact of psychological conditions ability to work, and on the natural history of occupational and environmental illnesses and injuries.	S
84	Diagnose and manage workers who may be under the influence of psychoactive chemicals at work (e.g. industrial exposure, medications, recreational drugs, alcohol).	G
Clinical - Pulmonary		
87	Prevent, identify, diagnose, treat and or refer occupational / environmental lung disorder, including: asthma, RADS, pneumoconiosis, irritant exposure, COPD, hypersensitivity.	S
88	Develop a differential diagnosis for occupational / environmental lung disorders.	S

ID#	Competency	Type
90	Perform and interpret a spirogram according toe American Thoracic Society Standards.	G
91	For the work-up of pulmonary conditions, order and interpret the appropriate diagnostic tests, including: PFT, imaging, peak flow, challenge testing, exercise testing, allergy testing, post-bronchodialator.	S
92	Interpret x-ray results reported by an ILO B-reader.	S
93	Perform ILO B-reading.	O
Clinical - Reproductive Medicine		
101	Identify and utilize up-to-date sources of reproductive toxicology information.	S
Clinical - Toxicology		
103	Determine the nature and extent of potential occupational and environmental chemical exposures, considering routes of exposure and absorption.	S
104	Detect, insofar as possible, pre-clinical or clinical effects arising from chemical exposure, and implement appropriate preventive measures.	S
105	Evaluate, treat, and or properly refer persons whose health may be affected by acute or chronic contact with occupational an environmental chemicals.	S
108	Determine if a person has a health condition that increases risk from the effects of exposure to chemical, physical or biological agents.	S
109	Distinguish health effects of exposure to chemicals from other etiologies.	S
110	Manage and effective therapeutic alliance with the patient whose health is affected by toxic exposure, or who fears that his or her health may be affected by toxic exposure.	G
Clinical Preventive Services		
123	Interpret abnormal laboratory findings in asymptomatic workers, and recommend further evaluation and/ or treatment as indicated.	G
124	Counsel employees about health risks and lifestyle.	G
Management and Administration		
139	Work effectively as a team member with administrators, occupational health nurses, nurse practitioners and physician assistants, demonstrating an understanding of their roles in an occupational health service.	G
Medical / Legal		
144	Perform independent medical evaluations.	S
146	Write medical-legal reports.	S
Research and Education		
149	Interpret and apply the medical, toxicological and environmental literature.	G
Social Sciences		
157	Provide clinical care and health counseling with an awareness of how cultural and social beliefs that influence patient knowledge, attitudes and behaviors.	G
Professionalism		

ID#	Competency	Type
159	Apply principles of risk management to the practice of occupational and environmental medicine.	G
160	Interact with patients, employees, employers, and other clients to achieve health-related goals.	G

Level: *Knowledge to Manage Populations* **Count: 54**

Disability Management & Work Fitness

2	Design protocols to evaluate employees for conditions creating an undue risk to self or others in the workplace, in compliance with the Americans with Disabilities Act	S

Public Health & Surveillance

4	Develop, implement, evaluate and refine screening programs for groups to identify risk for disease or injury and opportunities to promote wellness.	S
6	Design and conduct surveillance programs in workplace and or community settings.	S
8	Apply validated epidemiologic and biostatistical principles and techniques to analyze injury/illness data in a defined worker and community populations.	S
9	Design and or conduct an outbreak and or cluster investigation.	S
10	Apply individual or community-based interventions to prevent or mitigate exposure and or resultant effects.	S
11	Design and implement a medical response plan for mass casualty events in industry or in the general environment.	S

Hazard Recognition, Evaluation & Control

20	Recommend and implement policies and control measures to reduce or mitigate safety and health hazards.	S
21	Design and manage a hearing conservation program for workers exposed to loud noise.	S

Clinical - Dermatology

43	Identify and control occupational / environmental risk factors for the development of skin disorders.	S

Clinical - Emergency Medicine

45	Establish emergency procedures and protocols for the clinical management of individuals involved in hazardous materials incidents, including substance-specific first aid and medical management protocols.	S

Clinical - Musculoskeletal

70	Identify delayed recovery, and manage chronic musculoskeletal pain syndromes.	G

Clinical - Neurology

73	Manage the interface between medical care and the workplace for neurologic conditions such as seizure disorders, cerebrovascular accidents, neuromuscular disorders and mental impairments.	G

Clinical - Ophthalmology

74	Interpret routine visual screening results in establishing fitness for duty in various occupational settings.	G
75	Identify the need for specialized ophthalmologic services and surveillance (e.g. lasers, ethambutol use).	G

ID#	Competency	Type
79	Assess the workplace for potential hazards to the eye, and address issues of eye protection, including use of safety glasses and contact lenses.	G

Clinical - Psychiatry

82	Identify and interpret danger signs of violent, homicidal or suicidal employee, manage the situation, and refer appropriately. Participate in the design of violence prevention and response programs.	S
86	Identify and assist in the management of psychologic stressors in the workplace.	G

Clinical - Pulmonary

89	Manage work restrictions for both occupational and non-occupational lung diseases.	S
94	Perform respiratory certification exams tailored to the anticipated workplace exposures, to the exertion demands of the job, and to the type of respiratory protection used.	G
95	Design and oversee a medical surveillance program designed specifically to prevent occupational lung disease.	S
96	Review, interpret and explain the public health and clinical implications of epidemiological studies that address occupational lung hazards.	S

Clinical - Reproductive Medicine

97	Identify potential adverse reproductive outcome to both men and women from chemical, biological, physical, biomechanical and psychological exposures, and provide advice to employees and employers regarding the management of such exposures.	S
98	Advise individual and communities about the reproductive implications of environmental exposure.	S
99	Recommend appropriate accommodations and job placements for pregnant employees.	S
100	Advise on corporate policies and procedures relating to the protection of fertility for both men and women, and for the placement of pregnant or lactating workers.	S
102	Establish a working relationship with the employee's treating physician in the management or work-related reproductive concerns.	G

Clinical - Toxicology

106	Assess, clinical, worksite and environmental data, along with literature reviews in the performance of patient evaluations.	S
107	Understand, explain and be able to apply toxicokinetic data to clinical and employment-related decision-making.	S

Regulations & Governmental Agencies

111	Comply with and explain applicable regulations, as well as their interpretation and enforcement, to employers and employees.	G
112	Explain the rights of an employee or citizen in requesting assistance from a government agency or in filing a complaint.	S
113	Respond to the requirements of employee / community Right to Know regulations, and advise individuals about their rights to access information.	S

Environmental Health & Risk Assessment

ID#	Competency	Type
118	Perform a risk assessment: methodology, identification of health hazards, assess dose response, evaluate levels of exposure, characterize risk.	O
119	Communicate to target groups, including health professionals, the public, and the media, in a clear and effective manner, both orally and in writing, the levels of risk from real or potential hazards, and the rationale for selected interventions.	S
120	Interpret and explain the results of environmental monitoring studies.	S
Clinical Preventive Services		
121	Design, implement and evaluate worksite health promotion and disease prevention programs, incorporating Department of Health an Human Services and other authoritative guidelines as appropriate.	S
122	Describe the appropriate use and limitations of health risk assessment and screening for well population, and the applications of screening, assessment and early intervention for targeted high risk groups.	S
Management and Administration		
125	Analyze the impact of managed care and other delivery / reimbursement models on the health of employee and dependent populations, provider needs and behaviors, and organizational performance.	O
130	Communicate technical and clinical information to professional and lay audiences.	S
132	Manage data effectively.	S
133	Establish protocols to manage patient records and protect confidentiality.	G
141	Evaluate the effectiveness of occupational health services and risk reduction methods.	S
142	Participate in the development of emergency or disaster plans for the workplace and or the community.	S
143	Work effectively with both labor and management to jointly maximize workplace health, safety and productivity.	S
Medical / Legal		
145	Provide expert opinions and testimony on OEM issues.	S
147	Provide peer reviews.	S
Research and Education		
150	Design and conduct a scientific investigation.	S
151	Write a report suitable for publication.	S
152	Design a curriculum, conduct a course, and evaluate learning outcomes.	S
153	Interpret and present technical and clinical data for a variety of audiences.	S
Social Sciences		
154	Identify social, cultural and ethnic issues that relate to policies, risks, research, and interventions in occupational and environmental medicine.	S
155	Recognize the effects of cultural, ethnic, and social factors, including health beliefs and practices, on the health and safety of workers.	G
156	Accommodate cultural, ethnic, educational and language variations among workers when providing information on occupational hazard prevention, disease prevention, and health promotion.	S

ID#	Competency	Type
Professionalism		
162	Communicate current medical, environmental, and or other scientific knowledge effectively to target groups, including patients, employees, employers, unions, community groups, and the media.	S
Level:	***Systems/Processes to Manage Populations***	**Count: 15**
Disability Management & Work Fitness		
1	Design and implement integrated systems of disability prevention and management	S
Public Health & Surveillance		
5	Design and implement proactive systems of care which effectively reach all members of a population, including those at high risk and those who do not normally seek care.	S
Hazard Recognition, Evaluation & Control		
23	Describe the key elements of a good respirator program	S
Clinical - Emergency Medicine		
46	Define the basic procedures associated with disaster planning and the delivery of emergency medical services	S
Clinical - Psychiatry		
85	Design, implement, and evaluate substance abuse testing programs, performing MRO functions as appropriate.	O
Management and Administration		
126	Design, implement, and evaluate clinical practice guidelines quality management / quality improvement programs, utilization management, case management, and other activities to enhance an organization's performance.	S
127	Use appropriate management principles in conflict resolution, negotiation, consensus building, problem-solving, team building, and change management.	S
128	Use personnel management principles in selection, retention, promotion, motivation appraisal, and discipline of employees, and in managing workforce diversity.	S
129	Identify potential customers and develop a marketing plan for an occupational / environmental health program.	S
131	Determine management information needs, and apply medical informatics, electronic health and patient care data, management information systems, and other computer technologies to an OEM program.	S
134	Manage professional liability risk for a health care organization.	O
135	Implement the philosophy and concepts of continuous quality improvement and statistical process control.	O
136	Prepare a business plan for an occupational health service, program, or project.	S
138	Develop and implement corporate health policies, procedures, protocols and guidelines.	O
140	Design cost-containment strategies for workers' compensation, health benefits, and disability management programs to allocate and manage clinical financial resources.	S

Appendix 2

Wayne State University Division of Occupational Medicine

Level 1 Guideing Plan — Fundamental Knowledge — Count: 17

ID#	Competency	Questions	Assignment	Type
Hazard Recognition, Evaluation & Control				
15	Interpret and apply OSHA PELs, ACGIH TLVs and BEIs, EPA standards, and other criteria in the assessment of chemical and physical hazard exposures.	1) Define the following terms: TWA, REL, STEL, PEL, and TLV. 2) What is the fundamental difference between a TLV, and a PEL? 3) What is the fundamental difference between a TLV and REL? 4) How are hazards classified?	1) Identify an industrial hygiene survey that has been performed within the past 6 months. 2) What are the general categories to the report? 3) Try to find the published PEL for each of the substances that was mentioned in the IH report. 4) Review any standard OCC MED text industrial hygiene chapter (Rosenstock/Cullen)	S
Clinical - General				
25	Obtain brief, as well as comprehensive patient histories, with an emphasis on occupation and exposure.	1) What are the three principle goals to obtaining an occupational history? 2) What factors need to be considered in determining causality? What tests might confirm an exposure history to symptoms/findings?	1) Review reports of brief (clinic evaluation) and a comprehensive occupational history independent medical evaluation (IME)? 2) Evaluation patients with health concerns that relate to a particular environment (work, home, community) 1. Discuss latency-benzene/asbestos 2. Identify different occupations resulting in risks for lead exposure	G
26	Perform complete or focused physical examinations as indicated	Components of a pre-placement exam for a material handler? What should be described in an evaluation for specific work-related condition (e.g. carpal tunnel)? e.g. new onset of back pain? Elements of a RTW physical following back surgery	1) Evaluate patients in an occupational medicine clinic setting? 2) Review the a minimum of five Independent Medical Evaluations, and note whether you feel they are complete or focused evaluations. Note if the evaluations came with specific questions and whether those questions were addressed. Review criteria for a good IME. Describe components of an exam that would distinguish work-related vs. personal medical condition.	G

ID#	Competency	Questions	Assignment	Type
33	Report all findings to affected individuals and pertinent information to organization and employers as appropriate (considering medical confidentiality issues), advocating for the health and safety of patients and employees.	1) Identify the Roles of the following organizations: OSHA, NIOSH, ATSDR, EPA, AOEC. 2) What type of information could be exchanged with each one of these organizations? What constitutes reportable cases/illnesses/injuries for each of the following organizations? 1. OSHA 2. Public Health Dept. 3. EPA What would be the important information to provide to the patient for the following conditions? 1. Standard threshold shift 2. Asbestosis How would you discuss with an employer a hazard noted in evaluation of their population?	1) Identify contact numbers for each one of the organizations listed. Try to identify local numbers if they are available. 2) Ask that they send you some general information about the services offered, and to be placed on their mailing list if they have one.	G

Clinical - Musculoskeletal

64	Perform focused and comprehensive musculoskeletal evaluations of the spine and extremities, including the history, physical exam, laboratory studies, and the investigation of occupational risk factors.	1) Name three common musculoskeletal problems experienced in the work setting 2) For each name the principle risk factors for the develop of the condition. Try to list both occupational and non-occupational risk factors 3. Describe the red flags that denote possible serious pathology during examinations for low back pain.	1) Summarize the number of musculoskeletal complaints have been evaluated over the past week 2) Review the physical examination of the top three musculoskeletal complaints that presented for an evaluation. 3) Evaluation patients presenting with musculoskeletal complaints 4. Review the algorithm for evaluating red flag symptoms of LBP? What tests on labs to order.	G

ID#	Competency	Questions	Assignment	Type
65	Select and interpret appropriate diagnostic test in the equation of patients with musculoskeletal conditions involving the spine and extremities, with particular attention to low back conditions.	1) When should an plain x-ray film be ordered to evaluate a patient with Low Back Pain? When should an MRI be considered? CT scan vs. MRI? 2. Are there any differences betwn ACOEM and SHCPR (AHDR) guideline? If so, what are they? 3. When should eletrodianosis tests be ordered in the evaluation of patient's with chronic back pain? 4. When and how do you chose other specialist evaluation? (PMR vs. neurosurgery vs. ortho)	1) Review either the ACOEM or AHCPR clinical practice guidelines on the management of low back pain. 2) Identify 3 patients with low back pain that has been evaluated, and assess how well the guidelines have been followed? 3) If the guidelines have not been followed, try to identify reasons for not adhering to the guidelines.	G

Regulations & Governmental Agencies

114	Understand and protect patients' legal rights to confidentiality of medical records information.	1) Are employers entitle to review their employee medical records? 2) If not, are there conditions where this is allowed? 3. When might an outside party access medical files? 4. Who bears ultimate responsibility for release of records? 5. Discuss how HIPAA differs between personal medical files and occupational medical files.	1) Note a communication between the employer and a physician and determine what information is available. 2) Get a copy of a consent for release of medical information form for your personal files. Review the development of the form with the site preceptor. 3. Describe procedures for subpoenas of medical records.	G
115	Advise employees about the basic elements of workers compensation law, complete the necessary forms, and file WC claims.	1) What is workers compensation, and what is it to cover? When does it begin? 2) Why was there felt to be need for workers compensation legislation, and what were the concession made by both employers and employees? 3) How does an employee file a workers compensation claim in your current state? 4) Do the workers compensation laws vary by state?	1) Identify a workers compensation claim form. 2) Review the Publication "Analysis of Worker Compensation Laws by State" prepared by the US Department Chamber of Commerce 800-638-6582 3) Ask your preceptor if they have any experience with workers comp legislation in a state other than your current one, and get there observations on the differences and the significance of those differences.	G

ID#	Competency	Questions	Assignment	Type
116	Report cases of occupational injury, illness, and /or death according to existing regulations.	1) Who has the responsibility for reporting occupational injury and illness to the governing bodies? What is the physicians specific role?	1) Identify the forms necessary for the notification of an occupational injury/illness and make a copy of this form for your records. 2) Identify all of the individuals that interact with the form and mark this on a blank form.	G
Environmental Health & Risk Assessment				
117	Identify sources and routes of environmental exposure, and recommend methods of reducing environmental health risks.	1) What are common sources of hazards in ones home? Community? 2) Define the term abatement. 3. Identify less common sources for elevated lead.	1) Take an environmental history in patients presenting for evaluation. 2) Of the patient evaluated in you present site over the past month, what are the most common sources and routes of concern. You may discuss this directly with your preceptor, but attempt to do this through chart review. 3. Differentiate sources of exposure work vs. personal. 4. How do you clarify the source personal vs. work?	S
Management and Administration				
137	Comply with workers' compensation health care services rules, reimbursement and reporting requirements.	1. What are the most useful rules in OEM specialty clinics? 2. What rules do employers need to routinely follow?	1) Get a copy of the workers compensation rules for your current state for your files 2) Perform a brief review of this document, note when it was last updated.	G
Research and Education				
148	Use occupational and environmental information resources to conduct a literature search or to research the health effects of a chemical substance.	1) What are good sources of information with reference to occupational medicine concerns? 1. Where are key sources for occupational (organizations) NIOSH ATSDR 2. What website is good for assessing the toxicology of selected substances? A. Toxnet	1) Identify a clinical question with your preceptor and perform a literature search addressing the concern. 2) Perform a literature search, identifying a minimum of 5 articles on the subject, and prepare a one page summary of the finding. This report should be placed in your personal file. 3. Select an ATSDR case studies in environments medicine" and review this with your preceptor.	S
Professionalism				

ID#	Competency	Questions	Assignment	Type
158	Recognize and address ethical dilemmas in the practice of OEM using relevant guidelines, such as the ACOEM, AOEC, ICOH, and AMA Codes of Ethics.	1. How do you discuss personal medical conditions with an employer without compromising an employee privacy HIPPA? 2. How do you report a positive drug screen on a new employee? On a colleague? 3. How do you evaluate a job applicant for a school bus driver who is morbidly obese?	1) Obtain a copy of ethical guidelines produced by ACOEM, AOEC, and AMA for your personal files. 2) Review these documents and discuss with preceptor, whether they have had events that challenge the guidelines and how they have handled the circumstance. Try to journal these experiences for later reference.	G
161	Maintain current medical, scientific, and regulatory knowledge, recognizing one's limits and seeking additional resources as needed.	1. How many disability guideline systems exist and how do you access them? 2. How would you contact OSHA to question them about a possible exposure evaluation for a new substance?	1) Develop a personal learning plan for maintaining competence in Occupational Health. This should be written and placed in your personal file. Review this monthly or quarterly to see if you have kept pace with this effort. 2) Discuss with your preceptor how they keep pace with the information, and what resources they find the most helpful. This information should be recorded in your personal journal. Note in particular mailing list and internet list servers.	G
163	Document patient encounters accurately and completely.	1. What is patients major questions or concerns? 2. how do you identify key issues of causality? 3. How thorough is your history?	1) Identify a write up performed by yourself at least one month ago and note whether you have enough detail to identify all hazards, estimation of dose, included statements about causality or potential risk. 2) Ask your preceptor to give you feedback on 2-3 of your write-ups. Make a copy removing identifiers and mark the deficiencies on the report. A copy of this should be placed in your personal file.	G
164	Apply time management principles.	1. How much time do you delegate for a new injury or illness?	1) Do a 1-3 day time log of how you spend your time. At the end of this time period assess whether you have been spending your time in the most appropriate manner. This should be recorded in you journal. 2. Read 7 habits of highly effective people - discuss with preceptor how these may be incorporated into practice.	G

ID#	Competency	Questions	Assignment	Type
165	Develop and implement a personal life-long learning plan.	1) What doe you feel are the core competencies for the work you intend to perform? 2. How do you access information? 3. How do you contact professional?	1) Review the tape series "Accelerated Learning Techniques" by Brian Tracy 2) Identify a bound journal, as well as a loose leaf binder to hold desired information. 3) Discuss with your preceptor, strategies that they employ for life-long learning. Also explore with them the information that they feel helps them the most. 4. Develop a website catalog list, for certain topics.	G

Appendix 3

Appendix 3

Practicum Site	
G. M. / Clinic	One Month
Ford Motor / Clinic	2-3 Months
Visteon Corporation / Clinic	2-3 Months
UHC Clinic / DMC	1-3 Month
Delphi Corp. / Administrative Rotation	2-3 Months
Occup. Dis. Clinic / John Bernik	One Month
Michigan Occup.Med. Service (MOMS)	One Month
WSU / OEM Clinic	One day per week / All year
Concentra / Romulus	One Month
Concentra / Detroit E. Jefferson	One Month
Concentra / Fraser	One Month
Concentra / Pontiac	One Month
Concentra / Southfield	One Month
Concentra / Warren	One Month
Concentra / Sterling Heights	One Month
Subspecialty / Hand Surgery	One Month
Subspecialty / Audiology	Two weeks
Subspecialty / Dermatology	Two weeks
Subspecialty / Poison Center	Two weeks
Subspecialty / Ophthalmology	Two weeks
Subspecialty / Rehabilitation Center	2-4 weeks
Administrative Management /Dept. of Family Med.	Two weeks
MIOSHA	One Month

Appendix 4

Wayne State University
Practicum Evaluation Form: Preceptor Evaluation of Resident

Site:	MIOSHA 24155 Drake Road	Start date: End date Eval Due @:	Friday, October 01, 2004 Sunday, October 31, 2004 Wednesday, December 29, 2004
Preceptor	Sundari Murthy	Signature / Date	_____
Trainee:	Mada Jamil	Signature / Date	_____
Program Director:	James Skupski, MD	Signature / Date	_____

CONTRACTED COMPETENCIES

SCALE: 1=no evident competence, 2=need further skill, 3=skill competence, 4= exceeds competence, X= insufficient observation

Public Health & Surveillance

6	Design and conduct surveillance programs in workplace and or community settings.	1	2	3	4	X
7	Recognize and investigate potential sentinel events	1	2	3	4	X

Hazard Recognition, Evaluation & Contr

12	Characterize existing and potential occupational and environmental hazards within a defined population	1	2	3	4	X
13	Evaluate and interpret the results of industrial hygiene surveys	1	2	3	4	X
14	Evaluate the health effects of toxic chemical exposures, including mixtures	1	2	3	4	X
15	Interpret and apply OSHA PELs, ACGIH TLVs and BEIs, EPA standards, and other criteria in the assessment of chemical and physical hazard exposures.	1	2	3	4	X
18	Explain health-related information on a material safety data sheet (MSDS) to workers and patients.	1	2	3	4	X

THIS RESIDENT:	Strongly Disagree			Strongly Agree
-assumes progressive responsibility	1	2	3	4
-works as an active professional team member	1	2	3	4
-has a positive, professional attitude	1	2	3	4
-interacts well with patients and staff	1	2	3	4
-is dependable and demonstrates initiative	1	2	3	4

IDENTIFY RESIDENT'S STRENGTHS:

IDENTIFY ANY AREAS FOR FURTHER DEVELOPMENT:

ADDITIONAL RECOMMENDATIONS FOR PROFESSIONAL GROWTH OF THIS RESIDENT:

Wayne State University
Practicum Evaluation Form: Site Evaluation by Resident

Site:	MIOSHA 24155 Drake Road	Start date: End date Eval Due @:	Friday, October 01, 2004 Sunday, October 31, 2004 Wednesday, December 29, 2004
Preceptor	Sundari Murthy	Signature / Date	
Trainee:	Mada Jamil	Signature / Date	
Program Director:	James Skupski, MD	Signature / Date	

CONTRACTED COMPETENCIES

SCALE: 1= Insufficient, 2= Limited, 3= Adequate and/or reasonable quality, 4= Extensive and / or high quality

Public Health & Surveillance

6	Design and conduct surveillance programs in workplace and or community settings.	1	2	3	4	X
7	Recognize and investigate potential sentinel events	1	2	3	4	X

Hazard Recognition, Evaluation & Contr

12	Characterize existing and potential occupational and environmental hazards within a defined population	1	2	3	4	X
13	Evaluate and interpret the results of industrial hygiene surveys	1	2	3	4	X
14	Evaluate the health effects of toxic chemical exposures, including mixtures	1	2	3	4	X
15	Interpret and apply OSHA PELs, ACGIH TLVs and BEIs, EPA standards, and other criteria in the assessment of chemical and physical hazard exposures.	1	2	3	4	X
18	Explain health-related information on a material safety data sheet (MSDS) to workers and patients.	1	2	3	4	X

AT THIS PRACTICUM SITE:	Strongly Disagree			Strongly Agree
1. Timely feedback on my performance was provided.	1	2	3	4
2. My preceptor was readily available.	1	2	3	4
3. My responsibilities at this site grew over time.	1	2	3	4
4. I enhanced my professional skills.	1	2	3	4

Provide comments about the quality and effectiveness of the training you received from:

How useful do you think this practicum experience will be for your future career?

How would you improve this rotation?

Would you recommend this rotation to other residents? Why or why not?

Appendix 5

WAYNE STATE UNIVERSITY
Division of Occupational and Environmental Medicine
OEM Residency Program

Form - 3 -
Journal Club Report

Note: This form should be filled out by Resident who presents the article and submitted to chief resident. A copy of the article presented should be attached to this form

Date: _____

Date Chief Resident submitted to Ms. Susan Williams: _____

Name of Resident presenting the article: _____

Name of the faculty who supervises Journal Club: _____

Topic of the article presented: _____

_____

I. Reference

_____

II. Hypothesis

What is the purpose of this study? _____

_____

Is the hypothesis clearly specified? _____

_____

III. Methods

Study Design

[ ] Observational (check any below that apply)
- [ ] Case Report (series)
- [ ] Correlational
- [ ] Cross-sectional
- [ ] Case-control
- [ ] Retrospective follow-up (cohort)
- [ ] Prospective follow-up (cohort)

[ ] Interventional (check any below that apply)
- [ ] Randomized
- [ ] Non-randomized
- [ ] Non-blinded
- [ ] Single-blinded
- [ ] Double-blinded
- [ ] Clinical trial
  - [ ] Phase I
  - [ ] Phase II
  - [ ] Phase III

Study population: To what population do the authors intend the findings to apply?

Main determinants/predictor variables of interest (independent variables)

Main outcome(s) of interest (dependent variable)

Statistics presented

Variable types (discrete, continuous, nominal, ordinal, etc.)

Analytic procedures performed / Measures of association (Odds ratios, rate ratios, etc.)

IV. Results

V. Interpretation

Does the hypothesis hold?

[ ] Yes [ ] No

Are the authors' conclusions justified based on the results?

[ ] Yes [ ] No

Are the conclusions generalizable?

[ ] Yes [ ] No

VI. Limitations

Sample size (precision)

Bias

[ ] Selection

[ ] Information/Observation
- [ ] Misclassification
  - [ ] Exposure
    - [ ] Differential
    - [ ] Non-differential
  - [ ] Outcome
    - [ ] Differential
    - [ ] Non-differential

VII. Conclusions

What did you learn?

_____

_____

How could this study be improved?

_____

_____