WHO Modules in Occupational Health

Economic Sector: Service

Instructor Manual

Contributors

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Safety and Health at Work

INTRODUCTION TO THE COURSE FOR THE TRAINER

The WHO Modules in occupational health, hygiene and safety are designed to provide education for professionals who are charged with the responsibility of protecting the health of workers: public health officers, physicians, nurses, policy makers, labor inspectors, and worker health and safety advocates. These materials were developed to implement the Forty-ninth World Health Assembly global strategy for occupational health (WHA49.12). Where relevant, the materials complement the effort of the International Programme on Chemical Safety (IPCS) Global Implementation Strategy on occupational risk management

The materials are organized into three 16-hour, case based modules for a multidisciplinary audience, by economic sector: agriculture, manufacturing, and service. Occupational health encompasses many disciplines-- toxicology, epidemiology, industrial hygiene, and safety. It employs the methods of hazard/risk identification, characterization, and evaluation and touches on issues related to policy and ethics. We have used the "economic sector" as an organizing format; classroom exercises are built around cases related to each sector and cover each of the occupational health disciplines in one classroom. The instructor may choose to re-organize the content to fit a different student group. For example, the hygiene-related exercises may be pulled out and re-assembled to educate a group of physicians in exposure assessment.

Each module has an instructor manual, a student manual, and a resources section that contains files with presentations and student exercises. The materials are in Microsoft Word (training manuals), PowerPoint (photos and lecture materials), Adobe Acrobat (pdf), and jpg files. They may be copied, altered, and re-arranged to fit the needs of the student audience. Instructors are encouraged to enhance the content by providing specific examples—readings and presentations—from the country in which they are taught.

The Aim
The aim of this course is to provide a basic but comprehensive introduction to hazards in the workplace and how to deal with them. The course is designed around the following principles:

- Workers are entitled to a healthy and safe work environment
- Risk evaluation requires a systematic approach that is essential for control and prevention of work related injuries and illnesses
- Sentinel health events have been traditionally used as an indicator of exposure to an occupational hazard. However, currently there is enough knowledge of workplace hazards to intervene prior to an adverse health outcome.

Using the Materials
This educational program is designed for implementation by experienced trainers (facilitators, tutors, and teachers) familiar with occupational health and safety, public health principles and the principles of participatory, student centered educational methods. The trainer should assess the needs of the participants and select those portions of the materials that best meet their needs. The Course Overview (section 1) introduces objectives, format and materials. The Introduction to Occupational Safety and Health (section 2) describes a framework for addressing occupational health and safety issues demonstrated throughout this curriculum. All trainers should read this material as the basis for the course. The material in section 2 may also be assigned to students; however, the curriculum is not dependent on students having read the material, only that the trainer is comfortable with the background information contained in this section. The rest of manual systematically addresses occupational health and safety issues.

Each manual contains about 16 hours worth of material. The three manuals offer about 48 hours of material which together offer a comprehensive introduction to occupational health and safety. The materials have been organized to cover recognition, assessment, and intervention in three economic sectors. For an introductory course, it is best to use all of the educational material in one of the manuals. Some of the exercises can stand alone, although it is intended as an integrated curriculum. In order to assist in the process, approximate time requirements are given for the exercises.

Educational Methods
The materials in this manual are designed to be delivered using a variety of teaching methods that will create an interactive learning environment tailored to the needs of a particular student group. The term "trainer" will be used to describe the facilitator, teacher, or tutor and "participant" to describe the people attending. Although some of the material is designed for a presentation-discussion format, much is designed so that the participants will become self-sufficient in learning more about Occupational Health. The goal is to give the participants knowledge, skills and tools to continue working in this area after the course has ended.

In almost every training situation, there will be a diverse group of people with different educational needs. The training materials should be chosen keeping in mind some basic facts about learning processes.

- Concrete experience- problem solving, discussing and researching real life problems
- Reflective observation – discussing problems and developing strategies for solutions
- Abstract conceptualization - applying principles to other situations

Constructing a Program
The exercises that appear in the manual will cover most of the basic training needs for the target audience. Educators should look for opportunities to supplement the material in the manual with other relevant information. Issues, such as legal protections, are covered generally and provide training on a process. Local information on standards and worker rights will need to be assembled and introduced by the instructor.

Films and videos are not used in this curriculum, but may be useful supplementary materials to introduce topics and provide for local relevance. However, care should be taken to select material that reflects the basic principles of the manual.

Skills Training
A major aim of this curriculum is to provide the participants with skills to address workplace health and safety problems in their communities. In addition to increasing their knowledge of the content material, participants will develop skills in using a framework for approaching workplace health and safety problems including hazard/risk identification and characterization, qualitative risk assessment, control strategies development, and risk communication.

Resources
The provision of information resources is an essential part of this program. Many of the exercises will be enhanced by the use of documents, texts, factsheets, and the world wide web. Each module has a resources section that contains these documents, as well as slide shows in MS Power Point to be used in the course.

Overall Course Outline

1. Course Overview:
   a. Introduction to Course Objectives, Format, and Materials
   b. Introduction to Occupational Safety and Health

2. Sentinel Health Event/Awareness of Exposure Hazard
   a. Section Overview
   b. Who is a Health Care Worker Discussion
   c. Hazards for health care workers: Presentation and Exercise
   d. Case Presentation: Nurse with Needlestick Injury
   e. Bloodborne Pathogens: Slide show/lecture or small group activity
   f. Triangle of occupational diseases: Discussion
   g. Generalizing individual risk: Discussion
   h. Considering surveillance
   i. Completing an Incident Report Exercise
   j. Reporting on Surveillance Data from One Year of Needlesticks Exercise
   k. Summary Points

3. Qualitative Exposure Assessment and Hazard Judgement
   a. Section Overview
   b. Preparation for Hospital Walk-through Discussion
   c. Hospital Walk-through (this must be pre-arranged; consider splitting into two groups of students—one to laundry, one to patient care area)
   d. Debriefing Discussion
   e. Hazard Prioritization
   f. Summary Points

4. Intervention
   a. Section Overview
   b. Forming a hospital health and safety committee Discussion
   c. Developing a needlestick policy for this hospital
   d. Summary Points

5. Course evaluation

1. Course Overview

a. Introduction to Course Objectives, Format, and Materials

Instructor should:

- *Introduce self*
- *Ask for student introductions*
- *Orient students to objectives, materials, sections of course, activities*

Materials

Index cards
Markers
Name cards
Course materials
Flipchart and tape

Things to do

Distribute student course materials, index cards and markers

Recommended method of delivery

15 minutes	Introductions Introduction of faculty and students, course organization and course materials.
30 minutes	Presentation on Framework and Extent of the Problem Instructor presents information in Presentation 1-Introduction to Occupational Safety and Health

Objectives

At the end of this course participants will be able to:

1) List the job titles and occupational hazards for various health care workers
2) Recognize a sentinel health event as an indicator of workplace risk
3) Describe the role of host, agent, and condition in occupational disease development
4) Complete an injury/incident report for needlestick injuries
5) Review surveillance data and compile a report for hospital administration
6) Plan a workplace health and safety walk-through
7) Prioritize workplace health hazards for remediation
8) Plan the development of an occupational health and safety committee

Specific Skills

- ✓ Fill in a chart describing health care workers and their health hazards
- ✓ List risk factors for development of HIV after a needlestick injury
- ✓ Complete an Incident Report for needlestick injuries
- ✓ Write a summary of surveillance data on bloodborne pathogen exposure
- ✓ Complete a hospital walkthrough checklist
- ✓ Rank occupational hazards in hospitals
- ✓ List personnel and prioritize focus of a hospital health and safety committee

Administration of Sections in this Module

Activities in this module include lectures, discussions, workplace walkthrough and debriefing, and small group planning. Summary points are given at the end of each section to clarify the essential

issues presented. The make-up of participants (i.e., job titles, experience) should guide the instructor in modifying these exercises appropriately.

Student Materials

- Agenda
- Course materials
- Handouts
- Student Satisfaction Critique

Recommended Resources

- Stellman JM, ed. ILO Encyclopaedia of Occupational Health, 4th Edition, Geneva, 1996
- Centers for Disease Control. Exposure to Blood: What Health Care Workers Need to Know. http://bookstore.phf.org
- CDC. Updated US Public Health Service Guidelines for the Management of Occupational Exposures to HBV, HCV, and HIV and Recommendations for Postexposure Prophylaxis. MMWR 50(RR-11) June 29, 2001.
- Handouts in student/instructor/resources manuals

1.b. Introduction to Occupational Safety and Health Presentation (Presentation #1)

INTRODUCTION TO THE WHO MODULES IN
OCCUPATIONAL SAFETY AND HEALTH

The health and safety of workers is generally given a low priority across economic sectors. Sustainability, human and material resources, and production are primary concerns in both large and small enterprises; in the informal sector, subsistence is critical. The trend toward "globalization" provides additional challenges to worker health and safety. This course is designed for public health personnel who are charged with the responsibility of protecting the health of workers. This may include public health officers, physicians, nurses, policymakers, plant managers, and union health and safety representatives.

This curriculum takes an interdisciplinary approach to addressing the injuries and illnesses related to work. It is based on the premise that primary prevention is the optimal approach to protecting the health of workers. Each section of this course helps to complete the puzzle of the people, methods, technology, and policy it takes to reduce worker illness and injury. By mastering the knowledge and skills presented, participants will be able to respond to a wide range of occupational health and safety problems across industries, in large and small enterprises.

A process-based framework has been developed for addressing health and safety in all size enterprises. Each section is based on actual cases that have come to light in different locations throughout the world. Whether it is an injured worker, an ill workforce, an unanticipated chemical release or a chronic, hazardous exposure, this framework offers a systematic approach to gathering and interpreting information and making decisions, even with limited resources. The ultimate objective is to characterize and reduce or eliminate workplace hazards.

A schematic diagram of the approach developed for this series is shown in Figure 1. It is an adaptation of the approach presented in Mulhausen and Damiano (1998). It shows a flow chart that moves linearly but loops back in several locations. The user may enter the problem-solving process at a number of locations in the diagram, depending on how s/he becomes aware of the workplace hazard. After completing individual sections (boxes), the user may move forward or go back and re-evaluate prior steps, filling in information, as needed. The ultimate goal is to reach the bottom of the chart—that is, to decide on an appropriate set of interventions with a strategy for implementing them.

It should be noted that while an approach to controlling workplace hazards may be applied internationally, a single course could not take into account all of the economic, political, social, and cultural circumstances that affect workplace health and safety around the world. There are local and international resources available that may help to inform specific solutions to specific problems. These may be brought into the framework of this WHO curriculum, or applied in other ways.

Scheme for Addressing Health and Safety in the Workplace
Basis for the Instructional Approach in this Module

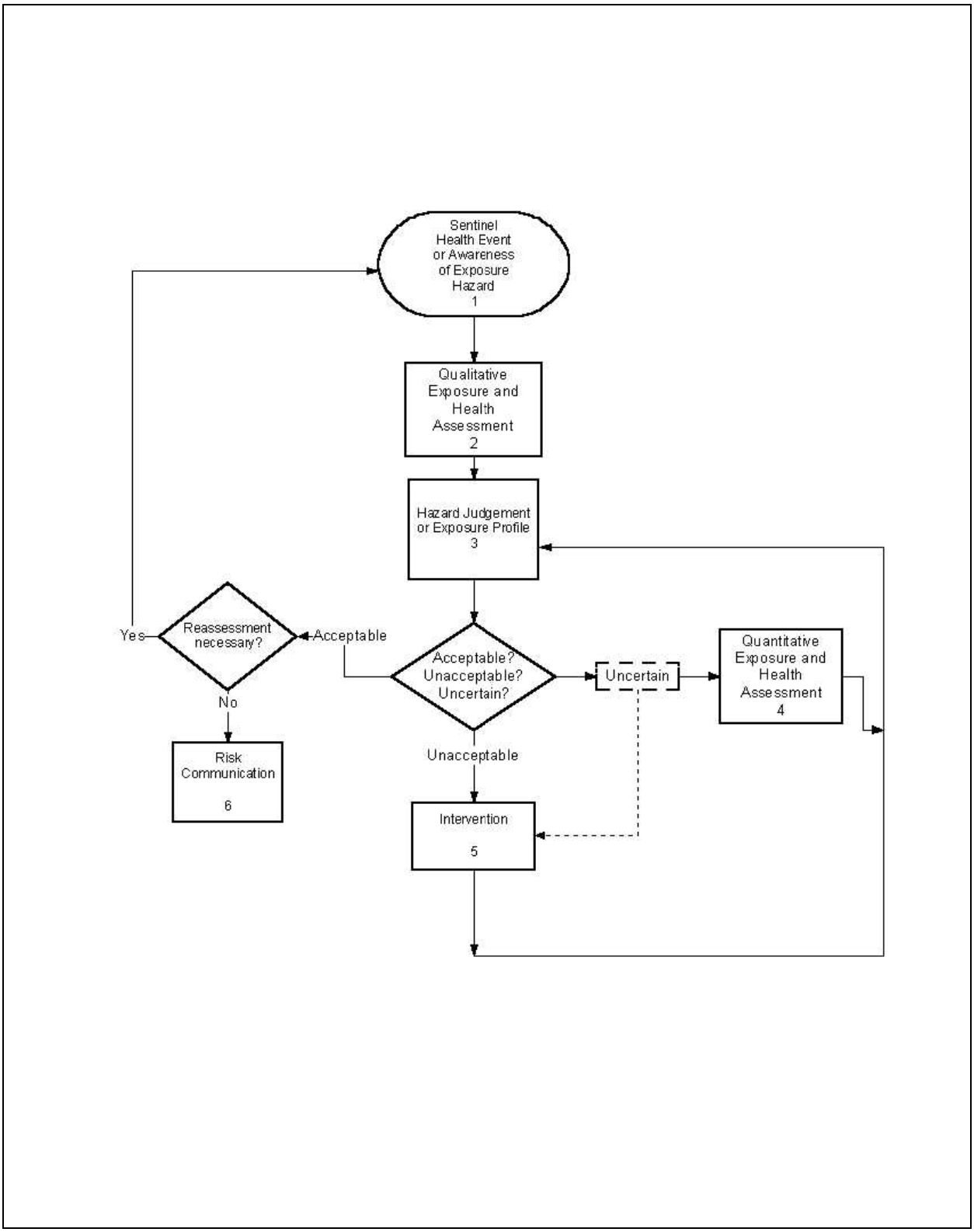


Diagram Box #1: Sentinel Health Event or Awareness of Exposure Hazard

The first step in the process is recognition that a workplace health hazard exists. This may come to light because of a worker who has been made ill, because workers or managers recognize a hazardous situation, because a change in process is planned or anticipated, because a major event, like a chemical release, has occurred, etc. A "sentinel health event" is a work-related injury or illness that alerts you to the fact that workers are at risk. It is also possible to recognize a hazardous situation before anyone becomes ill: if you know about the presence of a toxic chemical or dangerous machinery, it is possible to take action before a worker gets injured.

Once a sentinel event or exposure hazard is recognized and there is an understanding that workers are at risk, the next step is to define or characterize the problem through further investigation. It is important to determine the goal of the investigation prior to starting:

- Do you want to determine if the exposure(s) are high enough to cause disease?
- Do you want to ensure compliance with standards or guidelines?
- Do you want to evaluate the effectiveness of new controls?
- Do you want to begin building an exposure profile (database)?
  - For each worker?
  - For each process?

By taking time to define the problem, it is more manageable to implement the next steps--conducting an assessment and deciding on what additional information is needed. Characterization of the problem is also useful in developing a team vision for addressing the problem. A multidisciplinary approach, while ultimately the most effective, can also be a challenge because of differences among the experts as to the definition of the problem.

Other questions that should be answered include:

- Are you investigating the risk to one worker?
- Are you investigating one incident involving one or more workers?
- Are you investigating the risk to the workforce from one hazardous agent or one part of the work facility?
- Are you investigating the risk to the entire workforce at one facility?

Most often, it is an individual--e.g., a health care worker, a manager, a union official, a worker--who identifies a sentinel event or existing hazard. This individual will need to consider whom to include in an assessment of the problem. Those included could be workers or worker representatives, supervisors and managers, health care providers, safety and health professionals, epidemiologists, government, and/or non-governmental organizations. In some settings, team or multidisciplinary problem-solving may not be available and these roles may all need to be carried out by the same person. If an interdisciplinary team is assembled, it will need to discuss the purpose of the investigation and their point of reference. Is the purpose…

- Diagnosing and treating disease?
- Controlling exposure?
- Policy-making?
- Organizing workers?
- Other?

Answering these questions will provide important guidance for the comprehensive assessment, control and prevention of work related injuries and illnesses. The following sections provide concepts and tools for characterizing workplaces, assessing hazards (health and exposure), and making recommendations on the control and prevention of workplace injuries and illnesses.

Outcome of this stage of investigation: A list of goals for further investigation.

Diagram Box #2. Qualitative Assessment

Qualitative Exposure Assessment

The overall goal of the qualitative assessment is to characterize the workplace—that is, to provide a complete summary of all available essential information on workers, tasks, agents, potential exposures, and potential health effects.

The "qualitative assessment" step involves understanding the process leading to potential exposures; developing an inventory of chemical, physical, and biological agents; characterizing the workforce, including job descriptions, tasks, and number of workers; and characterizing the environmental agents by examining the available health effects data and current regulations and exposure limits. The investigation may concern one worker or one agent or a whole or part of a workplace or a workforce. Checklists are extremely useful tools for gathering comprehensive, organized material.

Background information is a building block to understanding and defining the problem. Collect and organize available information on:

- Manufacturing or work process(es)
- Job tasks
- Raw materials
- Products
- By-products
- Waste products
- Processing aids

Detailed literature is available on processes, activities, materials, job tasks, etc. Most economic sector processes are well known and described somewhere. Information is available through books, journals, internet sites, government documents, and trade and industry publications. Information is also available from newspapers and other public documents. In addition, in some countries companies are required to collect data on exposure and injuries and illnesses and maintain these records for up to 30 years. In other countries worker representatives have the ability to collect and maintain records. Compiling general and if possible specific information on a process or task is useful for defining the scope of the problem.

In focusing the problem, well-researched background information can also be helpful in:

- Targeting resources (time, staff, financial)
- Highlighting a particular problem or concern (imminent danger) or for justifying the implementation of a less aggressive intervention
- Guiding decisions based on the similarities of the existing situation with those found in the literature.

The goal is to collect as much information on the work process as is available.

Outcome of this stage of investigation: Complete summary of available essential information on workers, community members, tasks, agents, potential exposures, and potential health effects

Qualitative Health Assessment

The overall goal of the qualitative health assessment is to get a sense of the illnesses and/or injuries that may occur in a workplace, given a known set of exposures. Adverse health conditions may come to the attention of public health practitioners through presentation of individuals or groups of workers with an illness or injury. Alternatively, and optimally, knowledge and understanding of hazardous workplace conditions should lead to preventive measures prior to disease development.

While primary prevention is the goal, the next best alternative is recognition of an adverse health condition when it can still be reversed (secondary prevention). For an individual and a population of workers, death, disability, and chronic disease represent major failures of the public health system. We should not need to "count the bodies" before recognizing that the potential for injury exists.

Some workplaces conduct health monitoring of their employees because of the presence of known hazards. If available, examination of existing health records may enhance the understanding of the impact of a given industry on the health of its workers.

As in qualitative exposure assessment, gathering background information about health—in this case, toxicology and epidemiology—is critical to understanding how workplace conditions and chemical/physical/biological agents interface with the human organism to cause illness or injury. Through textbooks, scientific journals, internet sites, and government documents, the scope of occupational illness and injury can be defined. It is health data, and knowledge of mechanisms of disease development, that should drive control of workplace hazards.

Outcome of this stage of investigation: a summary of health effects of a possible exposure hazard; a list of resources that cover this information

Diagram Box #3. Hazard Judgment or Exposure Profile

Based on elucidation of exposure hazards and the consequent adverse health effects, a judgment about the hazard potential of a workplace may be made. The process of evaluating the health and safety of a workplace include developing an exposure profile, determining whether adverse health conditions exist, and reviewing background information on the relationship between exposure and disease. At this point, the public health practitioner must make a determination of whether:

- There is a health and safety problem in the workplace
- An imminent hazard exists
- A more in-depth assessment of exposure and disease is necessary

One way to approach these questions is to utilize the "criteria for causation" developed by Sir Bradford Hill.

- Temporal consistency: exposure to a given agent always precedes disease development. Workers' illness should follow exposure to a putative agent or condition.

- Strength of association: expresses the disparity between the frequency of a given cause if found in disease states versus non-disease states; i.e., how tight is the association between exposure and disease. An assessment of this should come from reviewing scientific literature.
- Biological gradient: dose-response relationship—the higher the dose of exposure the more likely disease will develop and the more severe the symptoms. If studies have shown this, then there is more likely to be a cause effect relationship between a putative exposure and development of disease.
- Biological plausibility: effect is predictable based on the effects known to be caused by the agent or by agents similar to it in actions. When studies are not conclusive, one needs to consider whether the health condition in question could possibly be related to the exposure of concern.
- Consistency: similar observations by multiple investigators in different populations under different circumstances. Again, if many different studies under different circumstances have linked a specific exposure and disease outcome, one would use that information to judge the connection between the current exposure of interest and disease.
- Specificity: a unique exposure-response linkage (i.e., if you see a disease, you can assume the exposure). Malignant mesothelioma, a cancer of the lining of the lung is very rare and has been shown to be related to asbestos exposure. In fact, this cancer is almost never seen without prior exposure to asbestos.
- Coherence: cause and effect interpretation for an association is not in conflict with other scientific data. A careful review of scientific data is important to assure that there is logic in assuming a causal connection between exposure and disease.
- Analogy: Do other similar agents have similar effects? When scientific data are sparse, one could consider studies that have looked at workplace conditions or chemicals that are similar to the current chemical agent of concern.

If you gather enough background information to allow rigorous consideration of each of Bradford-Hill's criteria, this should assist in making a judgment about whether a hazard exists that needs attention.

The current concept of "control banding" fits the qualitative assessment and hazard judgment boxes in this schematic diagram. It usually is possible to determine whether a workplace problem needs attention without actually monitoring and quantifying the hazard. Rather than using resources to get exact quantification of the amount of a chemical agent in the air, Control Banding focuses resources on exposure controls. Since it is not possible to assign a specific Occupational Exposure Limit to every chemical in use, a chemical is assigned to a "band" for control measures, based on its hazard classification according to international criteria, the amount of chemical in use, and its volatility/dustiness.

Outcome of this stage of investigation: a decision about whether a hazardous condition exists that requires attention

Diagram Box #4. Quantitative Assessment

Quantitative Exposure Assessment

Quantitative Exposure Assessment is conducted when more information is needed to determine a baseline or routine exposure; to assess compliance with existing regulations; or for diagnostic purposes. If the information is not needed for any of these reasons, then quantitative assessment may not be necessary--again, Control Banding would be the proper approach. Prior to beginning a quantitative assessment, it is essential to define the monitoring objectives and outline an exposure assessment strategy. Quantitative exposure assessment requires an understanding of:

- Routes of exposure (inhalation, ingestion, dermal absorption)

- Principles of industrial hygiene (it is best to control the hazard at the source, rather than at the worker (i.e., alter the machinery or work process before requiring personal protective equipment)
- Specialized equipment and operator skills
- Skills in data analysis and interpretation.

In some cases, observations and limited measurement information can be used to estimate exposure level. These include an estimation of average exposure from point measurements, and estimating changes based on observation of process and tasks.

Quantitative exposure assessment can be important, useful or essential if the information is needed for compliance, determining baselines or for diagnostic purposes. However, if the monitoring objectives and assessment strategy are not well thought out and available equipment and resources are scarce a more complete qualitative assessment may provide the necessary information for making decisions.

Outcome of this stage of investigation: a decision about whether to conduct an exposure assessment; a plan for the assessment

Quantitative Health Assessment

A further, quantitative health assessment may be conducted if:

- It is determined that a potential for illness or injury exists
- There are reasons to believe a workplace exposure is related to disease, but not enough research has been conducted or published in this area
- Justification for instituting environmental controls is required

The health assessment may consist of:

- A survey of workers (e.g., questionnaire, interviews) regarding exposure and health
- Physical and laboratory examination of workers
- Research on a cohort of workers to evaluate the relationship of an agent and consequent disease

Outcome of this stage of investigation: a decision about whether a quantitative assessment is needed; a design for further investigation

Diagram Box #5. Interventions

Exposure Control

There is an order or priority when it comes to evaluating controls. The best controls are those that work at the source of the problem; the least desirable are those that control the exposure when it gets to the worker. The further from the source, the less desirable or effective is the control. Again, the hierarchy is a follows:

Best: At the source
Second Best: Along the path
Least Desirable: At the worker

Every particular process must be evaluated individually to determine the optimal method of control. In some cases it will be necessary to combine a number of different methods to control, successfully and completely, a particular hazard or dangerous process.

Engineering Controls- the optimal way to prevent illness and injury

- Substitution: substitute a less hazardous alternative
- Redesign the process
- Mechanize the process
- Use local exhaust ventilation
- Improve general ventilation
- Create barrier or "dike" the process

Administrative Controls

- Isolate the process
- Improve housekeeping
- Conduct routine and Preventive Maintenance
- Implement special work methods (e.g., wetting down dusty processes)
- Incentives/disciplinary measures
- Posting of warning signs
- Proper supervision

Personal Protective Equipment

- Match the equipment to the hazard
- Fit the worker
- Train in use of the equipment
- Maintain or replace equipment
- Implement record keeping

General Cleanliness

- Sweep dirty floors and surfaces
- Frequent weeding
- Proper arrangement of working tools
- Proper disposal of waste and waste collection

Medical Interventions and/or Surveillance

Occupational health services are designed to provide prevention, diagnosis and treatment for occupational injuries and illnesses. Primary prevention is aimed at the individual who has the potential for exposure, but has not yet developed the disease. In this case, the goal is to change exposure conditions. This is addressed, above, in the hygiene interventions sections. In secondary prevention, the focus is on the individual in whom the disease has started, but the symptoms have not yet appeared or are reversible. The goal here is to reverse the process before disease develops. Tertiary prevention is aimed at individuals with symptomatic disease. The goal here is to cure or control the disease. The need for secondary and tertiary prevention is evidence of failure of the system to control exposure.

An occupational example of primary prevention is eliminating a hazardous substance, substituting a hazardous substance with a less hazardous substance. An occupational example of secondary prevention is the withdrawal of lead-intoxicated workers from the workplace. In this case, damage may be stopped or reversed. Obviously, the workplace must be cleaned up to prevent re-exposure to lead. Treatment of a

back injury is an example of tertiary prevention. The worker undergoes clinical treatment (e.g., medication and physical therapy) to treat his back disease. When he is cured or significantly improved, he may return to the workplace. Again, intervention strategies designed to prevent re-injury of the back are important for this worker and his co-workers. Interventions may also be necessary for the continued care of workers with permanent disabilities.

Surveillance is the monitoring of health events and hazardous exposures in working populations to prevent and control hazards and their associated diseases and injuries. There are four components to a surveillance system:

- Gathering information on exposure and health outcomes
- Distilling and analyzing the data
- Disseminating data in an organized form
- Using data to target or evaluate interventions

A surveillance system is an intervention strategy that can be used to monitor and intervene in workplace health and safety.

Policy Interventions

In addition to the workplace based interventions there can be political and legal interventions that would control exposure. These interventions include regulations, policies, and programs that are implemented on a regional or national level. The policies may be developed and promoted by the government, trade or professional associations, or by employer and employee groups.

Policy recommendations for the prevention of work related disease have been set forth by the World Health Organization (WHO). In 1981 the WHO Occupational Safety and Health Conventions stated that for all branches of economic activity: " Each member shall, in the light of national conditions and practice, and in consultation with the most representative organizations of employers and workers, formulate, implement and periodically review a coherent national policy on occupational safety, occupational heath and the working environment. The aim of the policy shall be to prevent accidents and injury to health arising out of, linked with or occurring in the course of work, by minimizing, so far as is reasonably practicable, the causes of hazards inherent in the working environment." This principle provides a direction for the development of national, regional and local policies designed to reduce injury, illness and death to workers.

Outcome of this stage of investigation: to decide on and implement an appropriate health and/or exposure-related intervention; to design a plan for evaluating that intervention

Diagram Box #6. Risk Communication

Workers and their families have an obvious concern about the impact of work on health. Is the worker safe in the short run and in the long run? Will the worker be able to contribute economic support to his/her families as long as necessary? Will the worker stay healthy into old age, even after he stops working? Are family members at risk from one member's job? Communicating findings from evaluations, plans for interventions, and effects of ongoing intervention programs is an important way to allay fears and gain cooperation of workers in health and safety programs.

Outcome of this stage of investigation: a strategy for communicating risk to interested parties

2. Sentinel Health Event or Awareness of an Exposure Hazard

a. Section Overview

Objectives

1. Recognize the job titles and tasks attributed to health care workers
2. Determine the risk factors for bloodborne pathogens
3. Define a workplace injury or illness as a sentinel event

Materials needed

Chalkboard/whiteboard or flipchart
Markers
Student materials
Overhead projector and transparencies
Possibly a computer and LCD machine

Things to do before the lesson

Make slides or overheads or obtain a laptop computer and LCD projector for two slide shows within this module (slides may be printed from electronic version of this module)
Copy student materials to distribute
Make overhead transparency with Worksheet #1 copied onto it.

Recommended methods for Delivery

10 minutes	Discussion on "Who is a Health Care Worker"
30 minutes	Slide Show on "Who is a Health Care Worker;" students fill out form during talk. Keep form for later exercises.
10 minutes	Presentation of case. One student reads the case aloud. Ask the participants if they have questions about the case.
45 minutes	Small group activity. Risk Factors for Blood borne Pathogens: Students break into groups of four; review reading materials; complete table. Then the instructor puts up overhead and leads discussion, filling in the same table based on student input.
20 minutes	Instructor-led discussion. Triangle of Occupational Disease Development. Instructor puts up overhead of triangle; discusses concepts. Refers students to the case study they just read and leads them in a discussion about the risk factors for the Host, the Agent, and the Condition in this case. Has an overhead of the table and fills it in.
10 minutes	Instructor-led discussion: Generalizing Individual Risk
10 minutes	Case continuation and instructor-led discussion: Considering Surveillance
30 minutes	Completing an Needlestick Incident Report and Discussion.. Each student completes this; ask one student to read his aloud, one point at a time, and have other students say whether they agree or disagree.
45 minutes	Reporting on surveillance from one year of needlesticks. Students divided into small groups, review one year of data, write a letter to hospital administrator. Come back into group. Present letter or tables.
5 minutes	Summary points

b. Who is a Health Care Worker?

Instructor –led discussion

Instructor asks students, Who is a Health Care Worker? Lists student responses on the blackboard. If students have trouble with this, remind them of possible health care settings: hospital, clinic, dentist office, ambulance, home care…ask them for other possible settings. Responses should include: doctor, nurse, nurse's aide, orderly, pharmacist, pharmacy technician, laundry worker, hospital maintenance staff, dietary/kitchen, dentist, dental hygienist, laboratory worker—talk about different types of labs (infectious disease, radioisotope, etc)--radiology technician, physical therapist, transporter, paramedic.

c. Occupational Hazards for Health Care Workers Presentation

Instructor gives a lecture with slides. Before starting, refer students to worksheet #1 in their packet, Occupational Hazards for Health Care Workers. Ask them to fill in the table during the talk. Ask one student to fill in his/her table on an overhead transparency. At the end of the talk, put the filled in table on the projector. Let other students comment on their list and add in other hazards. Engage students in a discussion about prevention for each of these hazards (preventive techniques are shown in the slide show)

Microsoft power point slide show in separate file in "Service Sector" folder (presentation #2)

Worksheet #1: Occupational Hazards for Health Care Workers

Occupation	Infectious Agents	Chemical Agents (cleaning agents, latex, sterilizers--list)	Physical Agents (electrical, noise, radiation—list)	Ergonomic Hazards (strains, slips/trips /falls, violence--list)	Psychosocial Factors (stress)
Clinician—nurse, doctor, dentist, aide, etc.					
Laboratory worker (biological, research)					
Housekeeper					
Laundry Worker					
Dietary/kitchen staff					
Radiology Technician					
Physical Therapist					
Pharmacist, tech					
Central Supply					

d. Case Presentation: Nurse with Needlestick Injury

One student reads aloud the Case Presentation in the HCW module.

CASE PRESENTATION

MJ, a nurse in a community hospital comes to employee health service because she was stuck with a needle while caring for a patient on a general medical-surgical floor. The healthcare provider asks her about the circumstances of the incident, including what type of needle she got stuck with, what the needle had been used for just prior to her getting stuck, exactly when it happened, and what she knows about the health status of the patient.

MJ reports that she was drawing blood from a young man with a fever. He was moving around and hit her hand, just as she withdrew the needle from his vein; she got stuck in the left hand. She was using a 16- gauge needle. She doesn't know anything about the social history or health status of the patient. It happened 30 minutes ago.

The healthcare provider looks at the site of the needlestick on the nurse's hand and notes a puncture wound and a few drops of blood.

Ask if there are questions about the case.

e.1 Bloodborne Pathogens Slide Show/ Lecture

May give slideshow at this point: Bloodborne Pathogens: What Hospital Health and Safety Personnel Should Know. Slide show handouts in Presentation #3. Bloodborne Pathogens slide show in separate file in "Service Sector."

OR

e.2 Risk Factors for Bloodborne Pathogens Small Group Activity

May give this information in print materials for students to use on their own: Exposure to Blood: What Health Care Workers Need to Know (CDC). Students are also given a copy of the CDC guidelines for Post-Exposure Prophylaxis after needlestick injuries and a fact sheet. Instructor has a table on an overhead and students have copy in their materials. Students are asked to fill in the table. If this is difficult, the instructor may skip the individual/solitary exercise, put the overhead on the projector, and lead the students through a discussion, filling in the table.

FactSheet #1: Exposure to Blood: What Health Care Workers Need to Know (in resources section, at back)
FactSheet #2: CDC guidelines for Post-Exposure Prophylaxis (in resources section, at back)
Fact Sheet #3: Needlestick Injury Risks (this follows, in the manual)

Fact Sheet #3:

Infection Risk for Health Care Workers Developing HIV Infection after a Needlestick Injury (based on U.S. data)

Average risk for HIV infection in HCWS from all reported percutaneous injuries involving HIV infected blood is 0.3%

Risk from mucous membrane exposure is 1.0%

Risk from skin exposure is <0.1%

Risk is highest in exposures with:

- visibly bloody devices
- phlebotomy devices
- deep puncture wounds
- the source patient dying within two months after the exposure
- hollow bore needle
- large diameter needle (≤17 gauge)

Risk increases with:

Extent of exposure

- Amount of blood
- Length of time exposed

Infectivity of the virus

- Viral titer in the patient (actual load of HIV in the blood)
- Low CD4 count in the patient (sign of damaged immune system)
- Virus serotype (some more infective than others)
- Virus resistant to HIV drugs (sign of more virulent organism)

References

Tokars JI, Marcu R, Culver DH et al. Surveillance of HIV infection and zidovudine use among health care workers after occupational exposure to HIV-infected blood. Annals of Internal Medicine 1993; 118:913-9

Centers for Disease Control and Prevention. Case-control study of HIV seroconversion in health care workers after percutaneous exposure to HIV-infected blood—France, United Kingdom, and U.S., January 1988-August 1994. MMWR 1995;44:929-33

Gerberding JL. Management of occupational exposures to blood-borne viruses. New Engl J Medicine 1995;38:35-7

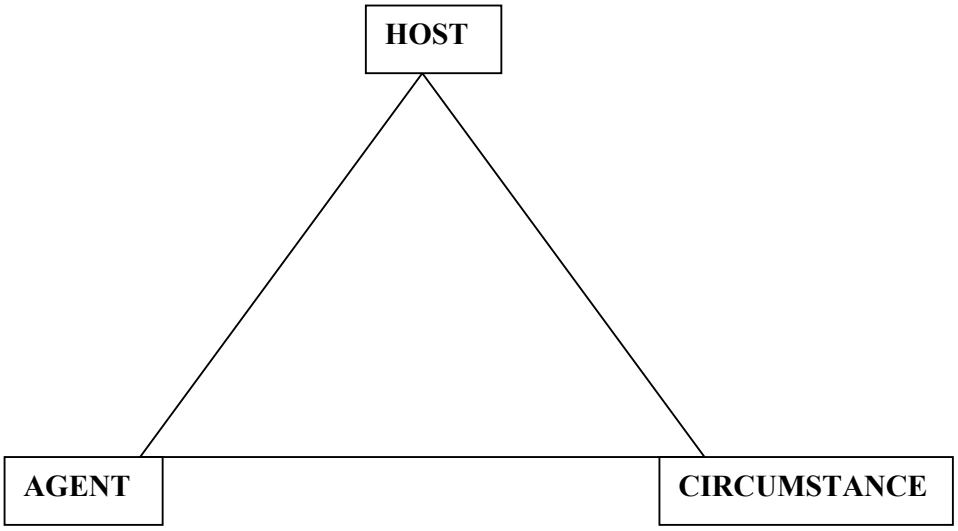
Table for students to fill in, either alone, or in large group discussion.

Worksheet # 2

Risk Factors for Infection	Worst Case/Highest Risk	Risk for this Nurse (M.J.)
Type of needle *Hollow vs. solid* *Large bore vs. small bore*	*Hollow needle* *Large bore needle*	*Hollow, large bore needle* *Risk is highest in this category*
Needle placement in patient *Vein* *Soft tissue* *New needle, not stuck in pt*	*In vein of patient*	*In vein—highest risk*
Depth of needlestick *Can see the wound, bruise* *Cannot see wound, no pain*	*Deep wound*	*Can see wound--high*
Body fluid *Blood, cerebrospinal, thoracic—highest risk* *Urine, feces, saliva—low risk*	*Blood*	*Blood--high*
Preventive/control measures *Safety needle* *Personal protective equipment—gloves, face shield, apron*	*None*	*None used*
Patient health status *Has known HIV, Hepatitis* *Status unknown* *Unlikely to have HIV, Hep*	*Has known HIV, hepatitis*	*Status unknown--?risk?*
Patient health risk behavior (for status unknown)	*IV drug user, multiple sex partners, history of exposure, history of blood transfusion*	*Status unknown--?risk?*
Host (nurse's) health status *Immune compromised—has cancer, transplant, on steroids*	*Immunocompromised*	*Healthy—low risk*

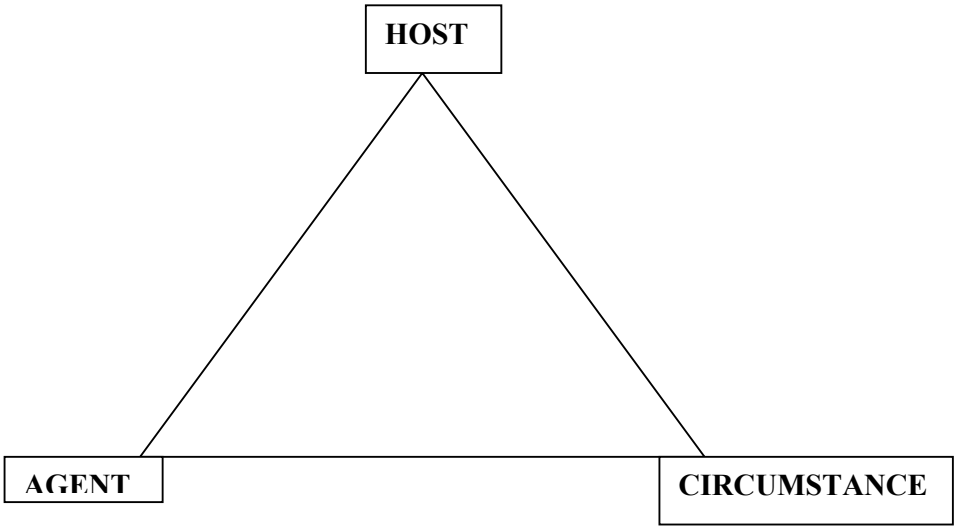
f. Triangle of Occupational Diseases

After the table is filled in, put up the triangle of risk factors for infectious diseases—overhead or draw on board:



Triangle of Infectious Diseases

Host	Infectious Agent	Circumstance
Nurse's health status	*Infectivity of Hepatitis B*	*Type of needle*
Prior vaccination	*Infectivity of HIV*	*Where needle used in patient*
	Infectivity of Hepatitis C	*Depth of needlestick*
		Preventive/control measures



Triangle of Infectious Diseases

Host	Infectious Agent	Circumstance

g. Generalizing Individual Risk Discussion

Lead a discussion of the following questions:

Is this nurse/health care worker at risk for contracting a bloodborne disease?

Yes. She has been exposed to body fluids through a needlestick injury. As a nurse, she may have similar exposures all the time.

What further information do you need regarding the degree of risk (i.e., what is missing in the table)?

You need to know more about the health status of the patient.

What is the course of action you should take for this patient?

This injured worker needs to be seen immediately by someone with training in post-exposure prophylaxis. That could be the health care provider who is seeing her or she must be referred to a provider who can treat her, if necessary.

You should also investigate the incident to determine why this worker got stuck: are there protocols in place to prevent this? Are there work practices, protective equipment (e.g., retractable needles) that could be used?

What should you, as the employee health service administrator, do with information like this about needlestick (or other) injuries?

Record the information to keep track of needlestick injrueis in the hospital. This gives you a way to determine whether an intervention strategy is needed; you can also evaluate the success of an existing prevention program.

h. Considering Surveillance Discussion

The purpose of this activity is to give students experience in completing an incident report—i.e., to become familiar with the content and variables that might be included in such a report. It should also guide thinking about risk to other workers and how information on this report might be used. Have a student read this aloud:

Case Information

You find out that the "source" patient is an intravenous drug user with a fever. You are unable to determine his HIV status. MJ, the nurse, is referred to an infectious disease specialist to determine the best course of treatment.

Discussion

Could this happen to other workers at the facility? Who else?

Yes. This could happen to anyone who handles needles—nurses, doctors, lab techs, housekeepers, laundry workers.

Could this have been prevented? How?

Train the nurse in procedures for handling needles—don't cap, don't shear needle off syringe. Use retractable needles or non-needle syringes. Train a team of specialized IV nurses and remove the responsibility from the floor nurses.

What role does the nurse have in prevention?

The nurse should follow guidelines to prevent injury to herself. She should use appropriate procedures, get help for a combative patient…

What should the employer have done?

Offer training, purchase protective equipment, develop protocols for prevention.

How could you get a bigger view of this problem; that is, how could you keep track of needlestick injuries so that you could figure out the circumstances and places that they occur*?*

You could keep a surveillance database for all needlestick injuries in your institution. Each time a health care worker gets injured, he/she should be required to fill out a form with information that you could enter into a database. You could look at aggregate data on a regular basis (every 3-6 months?) to determine where the problems are in your institution.

What information do you want to collect in your surveillance form? Note that you will want information that helps you address the individual worker's acute injury, as well as information that can give you an overview of your institution.

Name, identification number, years of work at the medical center, department, contact number for injured employee and supervisor, job title/category, incident information (date, time, day of week), building where incident occurred, area, work activity at time of injury, suggested reasons for causation, nature of injury code, body part injured, use of protective wear, what type of needle was used, whether sharp was contaminated or not, who was holding it, was it a safety design, severity code, root causes, source patient information.

i. Completing an Incident Report Exercise

Using the information gathered and discussed so far, complete Worksheet #3: Health Care Worker Bloodborne Pathogen Report and Evaluation using the Case Report.

Point out template form, Health Care Worker Bloodborne Pathogen Report and Evaluation. Each student completes form on his own. Instructor asks one student to read off his/her form. Dissent is allowed, discussion facilitated.

Worksheet #3

HEALTH CARE WORKER BLOOD-BORNE PATHOGEN REPORT AND EVALUATION

PERSONAL INFORMATION (*To be completed by the employee. Please print.*)

Name _____ ID# _____Years with this medical center _____

Department _____Work Telephone _____ Pager # _____

JOB CATEGORY (*Please check the line that best describes your job category, and specify as requested by circling the appropriate word inside the parenthesis and/or filling in the blanks.)*

__ MD (attending/staff), specialty _____

__ MD (intern-resident/fellow); specialty _____

__ Medical Student

__ Nurse ----------*specify*--------→ __ RN

_____

__ Nursing student _____

__ LPN

__ Other _____

__ Dentist

__ Phlebotomist

__ IV Team

__Other Technologist; specify _____

__ Other Student; specify_____

__ Other _____

INCIDENT INFORMATION *(Please check one line per category, below and specify "other."*

Date _____ Time _____ AM/PM Day _____

BUILDING where injury occurred	AREA where injury occurred	WORK ACTIVITY: Procedure	Reasons or causes: Did injury occur?
___Hospital	___Intensive Care Unit	___Injection	___During use of device
___Clinical Sci Bldg	___Labor &Delivery	___IV related	___Between steps
___Dental Clinic	___Emergency Room	___Blood Draw	___Because patient moved
___Eye Infirmary	___Operating Room	___Suturing	___From device discarded inappropriately
___Outpatient Clinic	___Patient Room #	___Cutting/scalpal use	___From sharp in trash
___Animal Laboratory	___Procedure Room	___Cleaning instruments	___Sharp box not available
Other	___Laboratory	___Sharps disposal	___Device malfunction
	___Blood Bank	___Uncapping/recapping	Other
	Other	Other	

NATURE OF INJURY CODES	PART OF BODY INJURED	PROTECTIVE WEAR	SHARP ITEM
___Puncture	___Face	__Gloves (1 pair)	Solid needle, Gauge:____
___Cut	___Eye __L __R	___Gloves (2 pr)	Hollow needle, Gauge:___
___Laceration	___Mouth	___Goggles	___Dental Instrument
___Scratch	___Hand __L __R	___Gown	___Scalpal blade
___Splash	Fingers __1 __ 2 __3 __4 __5	___Mask	___Glass
___Spill	___Leg ___L ___R	___None	___Other
Other	Other	Other	

The sharp device was:	**The sharp device was**	**Was it a safety design?**	**Severity: was the injury**
___Contaminated	___Held by another person	___Yes	**___superficial (little or no blood)**
___Unknown	___Held by me	___No	**___moderate (skin puncture)**
	___Not held by anyone	___Unknown	**___severe (deep, profuse bleeding)**

ROOT CAUSES: Circumstances leading to this injury (*please check all that apply)*

___Overcrowded situation	___Lack of training	___Poor communication	___Lack of appropriate device
___Emergency developed	___Not aware of hazard	___Device passed improperly	___Lack of required assistance

Other, explain:_____

Was the source patient identifiable _____Yes _____No

If identifiable, Name: _____ Medical Record # _____ Diagnosis _____

EVALUATION INFORMATION (To be completed by health services professional)

Date _____ Seen by: _____

Explanation: _____

INITIAL EVALUATION STUDIES

Employee Initial Prophylaxis	**Employee Tests Ordered Results**	**Source patient Anonymous Ordered Results**	**Source Blood Results**
____Drug prophylaxis declined	__HBSAg _____	__HBSAb _____	Lab received blood on _____ (date)
___Drug prophylaxis initiated	__Anti HBC _____	__Anti HIV _____	__Anonymous requisition sent
	__Anti HBS _____	___Hep C Ab _____	Brought to Employee Health Service on _____
	__Anti HIV _____	___SUDS HIV	Bo source blood available _____
	__HC AB _____		
	__ALT _____		
	__AST _____		

j. Reporting on Surveillance Data from One Year of Needlesticks

You have become a member of your institution's occupational health and safety committee. You review the data you have collected for one year of needlesticks in your 400-bed, city hospital. As a health and safety advocate, you now want to convince the head of your hospital to give you support for an epidemiologist group that will track, analyze and present this data. You understand that even though such a group might start out focusing on bloodborne pathogens, there is the potential to address other health and safety problems for health care workers. Take the data in FactSheet #4 and use them to write a report. The template for the report is in Worksheet #4.

Give students written data on needlestick—FactSheet #4. Break into small groups. Have them make tables, bar charts, pie charts to display data. Tell them they are the new occupational health and safety committee and that they need to present this data to infection control committee and the CEO of the hospital to try to get policy in place and more money for preventive activities. You may either include the template letter, below, or you may have them generate this report themselves. You could make the report in the form of a letter, or you could have them make a poster presentation (or some other format).

FactSheet #4: Data from One Year of Surveillance

Total Number of Needlesticks: 162

Department
- Surgery-34
- Medicine-29
- Dentistry-30
- Pediatrics-26
- Anesthesia-18
- Emergency-16
- Housekeeping-5
- Other-4

Personnel
- Nurse-88
- Doctor-31
- Medical student-5
- Phlebotomist-15
- Technician-22
- Other-6

Work Area
- Surgery-43
- Med-surg floor-39
- Outpatient Clinic-23
- Emergency Room-16
- Dental Clinic-30
- Other-11

Work Activity
- Injection-8
- Blood draw-58
- IV related-32
- Suturing-40
- Disposal/cleaning-7
- Scalpal/cutting-13
- Other-4

Reasons
- Sharp box not available-12
- During use of device-139
- Pt moved/combative-6
- Inappropriate discard-14
- From item in sharps box-4
- Device malfunction-1

Nature of injury
- Puncture-102
- Cut-16
- Laceration-2
- Scratch-8
- Splash-31
- Spill-3

Part of Body injured
- Face-4
- Eyes-5
- Hand-152
- Legs-1

Protective Wear
- Gloves- 94
- Goggles-15
- Gown-34
- Mask-31
- None-68

Sharp Item
- Solid needle-49
- Hollow needle-107
- Scalpal-6
- Glass-2

Root causes:
- Overcrowded-1
- Emergency-26
- Lack of training-55
- Not aware of hazard-0
- Device passes improperly-3
- Lack of appropriate device-1
- Lack required assistance-13

Worksheet #4: Presentation of Surveillance Data to Head of Hospital

To: Chief Executive Officer
XXX Medical Center

From: Occupational Health and Safety Committee

Re: Surveillance of Bloodborne Pathogen Exposure

As you know, the Occupational Health and Safety Committee at our medical center has begun keeping track of data related to needlestick injuries and body fluid exposure to health care personnel over the past year. This is a summary of the data we have collected.

In the past year there were _____ injuries reported. Figure 1 shows a breakdown by job category. Please note that _____(%) was the most frequently injured group, followed by _____ (%) and _____ (%). The _____(building), as expected, was the most frequent location where injury occurred; _____ (%) and _____ (%) were the two most frequent areas.

Figure 2 shows the "nature of injury" breakdown.

The _____(body part) was the most common site of injury. It is alarming to note that protective wear was not used in ____% of these cases, and that employees most often cited _____ and _____as the root causes of the injury.

Based on these data, it is our recommendation that the medical center improve training of hospital personnel on ways to prevent these injuries. Further, the development, maintenance and evaluation of this database was taken on as a voluntary activity of the Occupational Health and Safety Committee. Given the importance of this information in monitoring and addressing the problem of exposure to bloodborne pathogens, we feel that it is critical that the hospital allocate funds to support an epidemiology team to collect and enter data, to print regular reports, and to meet with hospital units to reduce these injuries. Such a team could function to track other medical center hazards, like infectious diseases and chemical exposures. We look forward to your timely response to this request.

k. Summary Points

List the following summary points on the board. Have a student read them aloud. Ask if students want to add any summary points.

1. Health care workers are at risk for exposure to bloodborne pathogens.
2. Guidelines exist to determine risk in the health care setting.
3. This type of injury serves as a warning, or a sentinel event, to trigger an evaluation of preventive practices.

3. Qualitative Exposure and Health Assessment and Hazard Judgement

a. Section Overview

A variety of teaching tools and background information are available through libraries, the Internet, governmental and non-governmental organizations, and other resource centers. Aside from reviewing print materials, an excellent way to identify the hazards in a workplace is to take a tour. It may take some preparation to gain enough background to understand what you are seeing. However, it is possible to speak with workers and management and to get a guided tour that will orient you to job tasks and hazardous agents to which workers are exposed. Once you are familiar with workplace risks, you will be able to consider how they should be ranked in terms of severity and the possibility of remediation.

Objectives

1. Describe the mechanics of preparing for and completing a workplace walkthrough
2. Complete a checklist of health and safety hazards in a workplace
3. Prioritize risks in terms of need for remediation

Materials Needed

Checklists for walkthrough
Overhead projector
Transparencies
Marker to write on transparency

Things to do before the lesson

Contact local hospital and make arrangements to conduct a health and safety walkthrough of a patient care area and the laundry; it will be best if you are led by someone familiar with the workplace; also, it will be optimal to be able to speak with workers and with management during the walkthrough.
Make an overhead transparency of the checklist
Make an overhead transparency of the table to rank and discuss hazards

Recommended Methods for Delivery

60 minutes	Preparation for Walkthrough Instructor leads a discussion to orient students to the reason for a walk-through. Instructor orients students to the checklist(s) to be completed. Questions may be added.
3 hours	Conduct Walk-through Group travels to site of walk through. Has meeting with workers and management, and has tour of workplace; each student completes the checklist. Group returns to the classroom to debrief.
60 minutes	Risk Prioritization Exercise Instructor puts transparency up and explains this exercise. Students list hazards and have a discussion about risk severity, based on the table.

b. Preparation for Hospital Walk-Through

A field visit of the class to a local clinic or hospital must be arranged prior to convening the class. Allow one hour in the classroom prior to going on the filed trip to prepared students. Allow 2 hours for the walk-through, itself. Allow 1 hour following the trip to discuss the findings.

Discussion

What are possible reasons to conduct a health and safety walk-through?

- *To identify health and safety hazards.*
- *To investigate a particular area of interest—because many injuries come from there or because you know it is hazardous.*
- *To evaluate safety interventions that have been implemented.*

How will you decide which areas to visit?

Depends on the purpose. Also, you can choose a specific department, or target a hazard and look at all the departments where it may be present.

What are the components of a walk-through?

- *Talking to administrators*
- *Talking to supervisors*
- *Talking to workers or worker representatives*
- *Inspecting hospital records*
- *Direct observations*

We will be visiting a direct patient care area/laundry in the hospital. Based on the slide show presentation given at the beginning, list the hazards your expect to be present. *(students may look at their list)*

- *Chemical*
- *Biological*
- *Physical*
- *Ergonomic*
- *Stress*

c. Hospital Walkthrough

Review the checklist(s) that follow, below—Worksheet #5 and Worksheet #6. Talk about how you will obtain each piece of information.

Worksheet #5: Checklist for Direct Patient Care Areas

Note: Issues covered in this checklist may also apply to other hospital departments. When conducting a walkthrough inspection in other departments, it would be useful to use this checklist as well as the checklist for the specific department you are inspecting.

Check all that apply or write your answer in the space provided. Write any additional questions you have in the blank items at the end of the checklist.

Back and Other Musculoskeletal Injuries

How many direct patient care workers have had back or other musculoskeletal injuries in the past year? _____

___ Injured workers are given light duty or part-time work.

___ When workers lift patients, they use either mechanical patient lifts or the assistance of co-workers.

___ There are mechanical patient lift, in good repair, on each unit.

___There are overhead trapezes available to help with lifting.

Chemical Hazards

___Direct patient care staff has received training about chemical hazards.

___Material Safety Data Sheets are available.

Chemotherapeutic Agents

Which workers may be exposed to chemotherapeutic agents? _____
_____

___Chemotherapeutic agents are mixed in a central place in the hospital, in a biological safety cabinet (hood).

___Chemotherapy drugs are administered only by trained workers.

___Workers wear gloves of the proper type when they handle chemotherapy drugs. (Different glove material is needed for different drugs.)

___Gloves and gowns are disposed of as toxic waste.

___Puncture-proof needle disposal boxes are conveniently placed near any area when cytotoxic drugs are prepared or administered.

___Workers who are considering parenting children are informed of the reproductive toxicity of chemotherapy drugs, and offered alternative job assignments with no loss or pay or seniority.

Formaldehyde and Glutaraldehyde

Which workers may be exposed to formaldehyde and glutaraldehyde?

_____

___Exposure to either of these agents has led to eye, nose, or throat irritation or other symptoms.

___The employer has conducted monitoring to evaluate the levels of formaldehyde in the employees' breathing zones.

___The employer has considered replacing formaldehyde with safer substances.

___Glutaraldehyde is used only in well-ventilated area.

___Gluteraldehyde containers are kept covered at all times.

Anesthetic gases

Which workers may be exposed to anesthetic gases?

_____
_____
_____
_____

___Ventilation is adequate in areas where anesthetic gases are used.

___A scavenging system is in place to recover waste anesthetic gases.

___Air monitoring of anesthetic gas levels is conducted regularly.

___The scavenging system and the anesthetic system are checked routinely for leaks.

___Warning signs are posted in area where anesthetic gases are used.

___Employees exposed to anesthetic gases receive free medical exams.

___Ribavirin Aerosol

Which workers may be exposed to ribavirin aerosol?

_____
_____
_____

___Ribavirin is administered via oxygen tent.

What engineering controls (such as intubation tube administration) have been implemented to reduce employees' exposure levels?

_____
_____
_____

___Workers who are considering parenting children are informed of the reproductive toxicity of ribavirin, and offered alternative job assignments with no loss of pay or seniority.

Radiation Hazards

Ionizing Radiation

Which workers may be exposed to ionizing radiation?

_____
_____
_____

___Restricted areas have been established near radiation sources when required.

___Warning signs have been posted near radiation sources when required.

___Radiation therapy equipment is inspected regularly.

___Protective barriers such as aprons and screens are provided.

___Workers wear radiation badges.

___Patients with radioactive implants, dyes, or drugs are clearly identified to all workers.

What precautions are taken when portable X-ray equipment is used on nursing units? _____
_____

___Radioactive materials are stored and disposed of properly.

___Workers exposed to radiation receive medical exams and copies of their exposure records.

___Training is provided to workers who may be exposed to ionizing radiation.

Lasers

Which workers may be exposed to lasers?

_____

___Workers are given protective goggles.

___Care is taken to avoid focusing the beam on reflective surfaces.

Infection Control

HIV and the Hepatitis B Virus

Which workers may be exposed to HIV or the hepatitis B virus? _____
_____

___The direct patient care staff has received training in the prevention of blood-borne infectious diseases, specifically HIV/AIDS and hepatitis B.

___The training was adequate.

___The hospital has implemented a written infection control program.

___The hospital provides the hepatitis B vaccine at no cost to the worker.

___Disposable, puncture-proof needle boxes are conveniently places in all patient rooms and procedure areas to as the facilitate the proper disposal of used needles.

How often are direct patient care staff stuck by used needles or other sharp objects?
_____

___When a worker is stuck by a needle, there is a clear follow-up procedure (for counseling, testing, vaccination, etc.)

___Gowns, gloves, eye protectors, and other protective equipment are supplies to employees who *may* be exposed to blood and bodily fluids.

___There is enough protective equipment, in a selection of sizes.

___Workers avoid recapping needles.

If they do recap needles, why? _____

___When performing CPR, workers use mouthpieces or resuscitation bags.

___All other previsions of the CDC Universal Precautions are followed.

Cytomegalovirus (CMV)

Which workers may be exposed to CMV? _____
_____

___Hygienic practices are encouraged, and personal protective equipment is provided to protect workers from exposure to body fluids that may contain CMV.

Tuberculosis (TB)

Which workers may be exposed to TB? _____
_____

___TB tests are given to the employees yearly at the employees expense.

___Patients are regularly tested for TB

___When patients who may have TB are coughing, workers are given masks.

Herpes (herpes zoster, herpes whitlow, and herpes simplex)

Which workers may be exposed to herpes? _____

_____

___Employees are given gloves and encouraged to avoid direct contact with fever blisters and secretions of infected patiens.

Scabies

Which workers may be exposed to scabies? _____
_____

___Employees are given gloves and encouraged to follow hygienic practices when caring for scabies patients.

Stress

___Direct patient care staff rotates shifts.

How often do they rotate? _____

How long are their shifts? _____

___There is adequate staffing on each unit.

___The unit has a problem with high turnover.

How many workers have quit or transferred in the past year? _____

___Workers are pressured to work overtime.

If yes, how often do they work extra hours or extra shifts? _____

How many workers have left the unit due to stress or mental health problems in the past year? _____

___Workers have filed workers' compensation stress claims.

___There are other sources of stress, such as harassment or lack of enough authority to do the job.

If yes, describe: _____
_____

Other Hazards

___*There are procedures to control violent or aggressive patients.*

___There are any other *safety* hazards for direct patient care staff, such as electrical, fire, earthquake, or tripping hazards.

If yes, describe:
_____
_____

Your Additional Questions

_____
_____
_____
_____
_____
_____
_____

Worksheet #6: Checklist for Laundry Areas

Check all that apply, or write your answer in the space provided. Write any additional questions you have in the blank items at the end of the checklist.

Infection Control

___Employees handle laundry which is contaminated with blood or other bodily fluids.

___Contaminated linen is sent to the laundry in water-soluble bags.

___Washing machines seals are checked regularly.

___All laundry is handled as if needles, glass, and other sharp objects might be hidden in it.

How often are needles and other sharp objects found in the laundry?
_____
_____
_____

How often are employees stuck by needles?
_____

What kind of protective clothing is used by the employees who handle laundry?
_____

___Workers change clothing when going from dirty laundry to clean laundry.

___Separate, labeled carts are provided for clean and dirty laundry.

___They are washed regularly with a germicide.

___Care is taken not to overstuff dirty laundry bags.

___The laundry staff has received training about infectious diseases.

Work Environment

___Employees are given frequent breaks in cool areas to combat heat stress.

___They have enough water.

___They know first aid procedures for victims of heat stroke.

___There is good ventilation.

___The machines are so noisy that you have to raise your voice to be heard.

___The noise level is monitered.

___If the noise level is high, workers receive hearing tests, free ear protectors, and training.

Safety Hazard

___The floors are wet or cluttered.

___The workers have received burns.

___The linen carts have a spring system that lifts up the load as linen is removed.

How many laundry workers have had back injuries or other musculoskeletal injuries in the past year? _____

___Workers have received electrical shock.

___Electrical apparatus and wiring are well-maintained and protected against water spillage.

___Washers, dryers, wringers, and other machines have instant stop switches.

___Washers and dryers shut off automatically when doors are opened.

___There are other *safety* hazards, such as fire or earthquake hazards.

If yes, describe:

_____
_____
_____
_____
_____
_____

Chemical Hazards

___There is asbestos in either the ironing boards or the dryers.

___Detergents and bleaches cause skin irritation.

___There are splashes.

___Employees receive training about chemical hazards.

___Material Safety Data Sheets are available.

Other Hazards

____Are there are any obvious sources of stress? (Production pressures, excessive workload, harassment, etc.)

If yes, describe:

_____
_____
_____
_____
_____
_____
_____
_____

Your Additional Questions:

_____
_____
_____
_____
_____
_____
_____

d. Debriefing: What did you see?

Have one student from each site report on what he or she saw for the benefit of the group that went to the other site. Let other students add comments. Record the comments on flip charts or blackboard.

e. Hazard Prioritization

Fill in the following table, Worksheet #7, based on your walk-through. Start by listing the five major hazards. Then consider the following questions

- What is the likelihood of exposure?
- How dangerous is the hazard?
- How many people are at risk?
- How easy would it be to remediate?

Look at the key on the bottom to help with your responses.

Hazard A	**Likelihood of exposure** B	**Severity of consequence if exposed** C	**Number of people affected** D	**Degree of Hazard** AxBxCxD	**How easy to fix?**	**Rank**

Hazard: list the five major hazards
Likelihood of exposure (A): highly likely =2, not likely=1
Severity of consequence if exposed (B): Very severe=2, not severe=1
Number of people potentially affected (C): >10 people=3, 3-9 people =2, ≤2 people=1

Students will have differences of opinion, and the reasons for their opinions should be discussed. Also, the two groups that went to different sites (laundry and patient care area) may have completely different lists. Make several blank table overheads; let one student report and then ask for agreement or disagreement.

f. Summary Points

Write these summary points up on the board, flipchart, or pre-make an overhead.

1. A walk-through of a workplace greatly enhances understanding of workplace hazards and how workers may contact them.
2. A prepared checklist is useful in guiding and providing a way to document workplace hazards.
3. Direct experience with the work environment, managers, and workers provides information that is useful for prioritizing hazards that need remediation.

4. Intervention

a. Section Overview

Objectives

1. Describe the role of a Hospital Safety and Health (HOSH) Committee
2. Describe the components of a HOSH Committee
3. Develop a bloodborne pathogen prevention program

Materials Needed

Handouts
Chalkboard or flipchart

Recommended Methods for Delivery

45 minutes	Group discussion: What is the role of a Hospital Safety and Health Committee ?
60 minutes	Write a bloodborne pathogen prevention policy (in groups of 4)
30 minutes	Have students present the highlights of their policies

b. Forming a Hospital Safety and Health (HOSH) Committee

Now that you have developed and evaluated a surveillance system for bloodborne pathogens in the hospital and have walked around one or two areas of the hospital to note hazards, you are ready to take on additional health and safety activities. It would be best to establish a Committee on Occupational Safety and Health (COSH) that could identify, investigate, and address health and safety problems in the workplace. Work with your small group to answer the following questions:

1. What is the role of the health and safety committee?

2. How big should the committee be?

3. Who should be on the committee?

4. How often should meetings occur?

5. What are the responsibilities of this committee?

6. What should be addressed at the meetings?

7. What sorts of reports should be generated? How often? For whom?

8. What are the power issues that might arise? How might these be addressed? (Who authorizes its function? Who must it report to?)

c. Developing a Needlestick Policy for the Hospital

Consider your small groups a HOSH Committee (4 in each group). Develop a needlestick policy for your hospital, using the following headings. You may want to use the materials you used in previous exercises to help you fill in these sections.

Who is on your committee?

Who is at risk?

How does risk occur?

What are potential preventive measures? Refer to previous notes and materials as well as FactSheet # 5: Exposure Reduction Interventions.

Clarify what to do if prevention fails, i.e., in the event of a needlestick. Consider:

- First Aid
- Medical intervention
- Reporting

How will you conduct surveillance of cases? You will need to

- Determine whether incidence and circumstances are changing (increasing or decreasing)
- Evaluate effectiveness of program
- Decide on intervention or change in current policy

d. Summary Points

1. A HOSH Committee is an effective tool for preventing work-related illnesses and injuries.
2. Writing policy statements and protocols for the employer is an important activity for a HOSH group.

4. Course Evaluation

Instructor should allow 30 minutes to evaluate the course.