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3.1  Blood exposures/AES


BACKGROUND: Although previous studies have examined the cost effectiveness of emergency department thoracotomy (EDT), provider risk has not been included in these analyses. This study examined the costs associated with provider exposure to human immunodeficiency virus (HIV) and hepatitis from percutaneous injury during EDT. METHODS: A decision tree describing the occupational risks and costs associated with EDT was created. Exposed providers undergo initial counseling, evaluation, and HIV postexposure prophylaxis and treatment as recommended by the Centers for Disease Control. Costs are reported from a health care system perspective in year-2000 dollars. The following prevalences were assumed: HIV (7.1%), hepatitis C (18%), and provider percutaneous injury rate (10%). Sensitivity analyses were performed by varying the prevalence of disease and the probability of seroconversion. RESULTS: According to the authors' model assumptions, the probability is 0.00004 for HIV and 0.0027 for chronic hepatitis C seroconversion. The total additional cost per thoracotomy associated with an exposure is dollars 1,377. CONCLUSIONS: Emergency department thoracotomy is associated with important provider medical risks. Future analyses of EDT should include these factors in reports on the value of this procedure.


Preventing the transmission of bloodborne pathogens to healthcare workers has been a mission and a challenge of the healthcare industry for over 20 years. The development of the Occupational Safety and Health Administration Bloodborne Pathogens Standard in 1991 and the passing of the Needlestick Safety Act in 2000 mandated hospitals to develop an Exposure Control Plan to protect workers from these pathogens. Children's Hospital Boston began implementation of a needleless system in 1993. Employees readily accepted these systems into practice, because they were convenient and easy to use. A marked decrease in exposures to bloodborne pathogens naturally followed, which is consistent with the national data. The transition to intravenous (i.v.) safety devices at Children's Hospital began in 2000 and proved to be more of a challenge. First, the clinicians must choose a safety product, which requires developing and implementing a trial plan with potential catheters. This selection process is especially difficult in pediatrics where successful placement of the smallest-gauge catheter, no. 24, is imperative. After choosing an i.v. safety product, successful transition is dependent upon
the thoroughness of i.v. safety device training and a commitment by the clinicians to the use of these products. Although the number of needlestick injuries and subsequent transmission of bloodborne pathogens have been further reduced with the use of i.v. safety devices, needlestick injuries still occur. This results from a lack of familiarity with the engineering of the device and therefore poor technique or a failure to activate the safety mechanism. Staff resistance due to loss of expertise with the new device and patient care concerns are additional barriers to the use of these new products. Addressing these obstacles and providing adequate training for all clinicians were required for successful implementation of these i.v. safety devices.


BACKGROUND: Universal precautions are a set of guidelines which aim to protect health care workers from blood-borne infections. Community nurses often have to deliver care to people in less than ideal home conditions, their ability to comply with all universal precautions may therefore be compromised. AIMS AND OBJECTIVES: This paper presents the findings of a questionnaire survey which aimed to explore community nurses' experience and practices of using universal precautions. DESIGN AND METHODS: A questionnaire survey was used for this study. All community learning disability nurses, community mental health nurses and generic community nurses from one Welsh Health Authority were surveyed (n = 543) with a response rate of 70%. RESULTS: The majority of community nurses reported compliance with universal precautions, although a small number of nurses stated that they re-sheathed needles, inappropriately stored sharps containers, inadequately wore gloves and experienced difficulties in handwashing. CONCLUSIONS AND RELEVANCE TO CLINICAL PRACTICE: Community nurses work in a unique and unpredictable environment, which may result in nurses being unable to comply with existing universal precautions guidelines. The production of new infection control guidelines for the community by the National Institute of Clinical Excellence in June 2003, has addressed some of the difficulties faced by community nurses.


BACKGROUND: Large variations in staff injury rates across intermediate care facilities suggest that injuries may be driven by facility-specific work environment factors. OBJECTIVES: To identify work organization, psychosocial, and biomechanical factors associated with staff injuries in intermediate care facilities, to pinpoint management practices that may contribute to lower staff injuries, and to generate a provisional conceptual framework of work organization characteristics. METHODS: Four representative intermediate care facilities with high staff injury rates and four facilities with comparable low staff injury rates were selected from Workers' Compensation Board (WCB) databases. Methods included on-site injury data collection and review of associated WCB data, ergonomic study of workloads, a telephone survey of resident care staff, manager-staff interviews, and focus groups. Pearson product-moment correlation coefficients identified associations between variables. Analysis of variance and t tests were used to determine differences between low and high staff injury rate facilities. Content analysis guided the qualitative analysis. RESULTS: There were no significant differences between low and high staff injury rate facilities in terms of workers' characteristics, residents' characteristics, and per capita public funding. The ergonomic study supported the survey data in demonstrating a relation among low staffing levels, greater muscle loading, and greater risk of injury. As compared with facilities that had high staff injury rates, facilities with low staff injury rates had significantly more favorable staffing levels and supportive work environments. Perceived quality of care was strongly correlated with burnout, health, and satisfaction. CONCLUSIONS: Safer work environments are promoted by favorable staffing
levels, convenient access to mechanical lifts, workers' perceptions of employer fairness, and management practices that support the caregiving role.


In the United States, transmission of viral hepatitis from health care related exposures is uncommon and primarily recognized in the context of outbreaks. Transmission is typically associated with unsafe injection practices, as exemplified by several recent outbreaks that occurred in ambulatory health care settings. To prevent transmission of bloodborne pathogens, health care workers must adhere to standard precautions and follow fundamental infection-control principles, including safe injection practices and appropriate aseptic techniques. These principles and practices need to be made explicit in institutional policies and reinforced through in-service education for all personnel involved in direct patient care, including those in ambulatory care settings. The effectiveness of these measures should be monitored as part of the oversight process. In addition, prompt reporting of suspected health care related cases coupled with appropriate investigation and improved monitoring of surveillance data are needed to accurately characterize and prevent health care related transmission of viral hepatitis.


Home health care nurses are at risk of needlesticks and blood exposures, yet few studies have been conducted related to such exposures in the home health care setting. This article describes a cross sectional prevalence pilot study of needlesticks and blood exposures conducted among three home health care agencies in the San Francisco Bay area. Needlestick and blood exposure reports from 1993 to 1996 were submitted from three home health care agencies. The exposures were categorized using an existing categorization system and compiled into a composite report. A total of 52 exposures occurred; nurses sustained 92% of exposures. Twenty-three percent occurred before, during, or after needle disposal; 17% from manipulating intravenous/access ports; 15% from improper disposal; and 13.5% during or after blood draw. Needle safety devices need to be specifically designed for the unique home health care setting and for a standardized rate of calculating needlestick injuries in this setting.


## 3.2 Immunization/Vaccination

### 3.2.1 Smallpox/Variole


BACKGROUND: In January 2003, smallpox vaccinations were offered to health care workers to create hospital-based teams prepared to care for patients with smallpox as part of national bioterrorism preparedness activities. METHODS: An anonymous survey of pediatric emergency health care workers was conducted in November and December 2002. Two mailings
were sent to physicians, nurses and ancillary staff at five academic pediatric emergency departments in major US cities. We assessed the willingness to receive preevent smallpox vaccine. In addition we measured the prevalence of vaccine contraindications, perceived likelihoods of a local smallpox outbreak or a vaccine-related adverse event and reasons for or against wanting to receive the vaccine. RESULTS: Overall 72% of respondents were willing to receive the smallpox vaccine. Individuals who were willing to receive the smallpox vaccine, compared with those not willing, believed a local outbreak was more likely to occur (odds ratio, 1.29; 95% confidence interval, 1.16 to 1.44). One-fifth of respondents reported a contraindication to smallpox vaccine; however, more than half indicated they would still be willing to receive vaccine. Individuals who perceived themselves at high risk for vaccine-related adverse events were less willing to receive the preevent smallpox vaccine. Self-protection was the most common reason cited for wanting to receive the vaccine. CONCLUSIONS: A majority of pediatric healthcare workers were willing to receive preevent smallpox vaccine before the onset of Phase I of the CDC Smallpox Vaccination Program. A greater understanding of the knowledge, attitudes and beliefs of pediatric health care workers toward preevent smallpox vaccination will assist in the development of future bioterrorism preparedness programs.


Smallpox is a devastating viral illness that was eradicated after an aggressive, widespread vaccination campaign. Routine U.S. childhood vaccinations ended in 1972, and routine military vaccinations ended in 1990. Recently, the threat of bioterrorist use of smallpox has revived the need for vaccination. Over 450,000 U.S. military personnel received the vaccination between December 2002 and June 2003, with rates of non-cardiac complications at or below historical levels. The rate of cardiac complications, however, has been higher than expected, with two confirmed cases and over 50 probable cases of myopericarditis after vaccination reported to the Department of Defense Smallpox Vaccination Program. The practicing physician should use the history and physical, electrocardiogram, and cardiac biomarkers in the initial evaluation of a post-vaccination patient with chest pain. Echocardiogram, cardiac catheterization, magnetic resonance imaging, nuclear imaging, and cardiac biopsy may be of use in further workup. Treatment is with non-steroidal anti-inflammatory agents, four to six weeks of limited exertion, and conventional heart failure treatment as necessary. Immune suppressant therapy with steroids may be uniquely beneficial in myopericarditis related to smallpox vaccination, compared with other types of myopericarditis. If a widespread vaccination program is undertaken in the future, many more cases of post-vaccinial myopericarditis could be seen. Practicing physicians should be aware that smallpox vaccine-associated myopericarditis is a real entity, and symptoms after vaccination should be appropriately evaluated, treated if necessary, and reported to the Vaccine Adverse Events Reporting System.

3.2.2 Influenza/Grippe


Because measles-specific antibody titer after vaccination is lower than after natural infection, there is concern that vaccinated persons may gradually lose protection from measles. To examine the persistence of vaccine-induced antibody, participants of a vaccine study in 1971, with documentation of antibody 1-7 years after vaccination, were followed up in 1997-1999 to
determine the presence and titer of measles antibody. Of the 56 participants (77% were 2-dose recipients), all had antibodies detected by the plaque reduction neutralization (PRN) antibody assay an average of 26-33 years after the first or second dose of measles vaccine; 92% had a PRN titer considered protective (>1 : 120). Baseline hemagglutination inhibition antibody titer in 1971 strongly predicted follow-up PRN antibody titer (P<.001). Persistence of antibody in these primarily 2-dose recipients supports the current elimination strategy to achieve and sustain high population immunity with a 2-dose schedule.

3.2.3 Hepatitis B/Hépatite B

3.2.4 Hepatitis A/Hépatite A

3.2.5 Meningococcal/meningocoque


Prevention of secondary cases of invasive meningococcal disease is based on the rapid administration of chemoprophylaxis and depending on circumstances, conjugate vaccine against group C meningococci. The targeted group is close contacts of the patient, mainly household members. When two or more cases take place in schools, chemoprophylaxis and vaccination are offered to classmates and teachers. First-line antimicrobials are quinolones for adults, rifampin for children and ceftriaxone for pregnant and lactating women. Three highly efficacious (> 90%) conjugate vaccines that provide long-lasting protection have been recently made available in Switzerland.


Neisseria meningitidis is a leading cause of bacterial meningitis and sepsis in the US, Europe and in many other parts of the world, including parts of sub-Saharan Africa (known as the African 'meningitis belt'). There are > 500000 cases of meningococcal disease annually with an estimated death toll of 135000 worldwide. Approximately 10 - 15 % of survivors experience significant morbidity in the form of neurological sequelae, including hearing loss, speech disorders, loss of limbs, mental retardation and paralysis. Disease is usually caused by N. meningitidis serogroups A, B, C, Y or W-135. Prevention of meningococcal disease includes isolation, chemoprophylaxis and vaccination with available polysaccharide vaccines. However, the polysaccharide meningococcal vaccines (i.e., A and C; A, C and W-135; or A, C, Y and W-135) initially developed in the 1970s are generally poorly immunogenic in children or require repeated doses and do not produce long-lasting immunity. Conjugate vaccine technology has been very successfully used in childhood vaccines for the prevention of other bacterial meningitis pathogens, including vaccines against Haemophilus influenzae serotype b (Hib) and more recently, the seven- and nine-valent conjugate pneumococcal vaccines. Newly released meningococcal conjugate vaccines against N. meningitidis serogroup C have been highly efficacious in young children and adolescents, with minimal side effects. Conjugate vaccines targeting other important meningococcal serogroups (e.g., N. meningitidis serogroup A, responsible for the large pandemic outbreaks and the majority of disease in sub-Saharan Africa and serogroups Y and W-135) are under development and together with the serogroup C conjugates, have the potential to significantly impact worldwide sporadic and epidemic meningococcal disease. The search for an effective serogroup B meningococcal vaccine remains
elusive. This manuscript reviews the conjugate meningococcal vaccines and their potential for meningococcal disease prevention.

3.2.6 Chickenpox/Varicelle

3.2.7 Immunization - Other/Vaccination – autre


Pertussis is increasingly recognized as a source of infection in adults who then commonly infect young children. Immunity to illness caused by Bordetella pertussis is not long-lived, so optimal control of pertussis may require booster immunizations. In a cost-benefit analysis, we evaluated the benefits of 7 independent strategies for administering a pertussis booster, in the form of a diphtheria-tetanus-acellular pertussis vaccine, to adolescents and adults. Break-even vaccine costs for each strategy were calculated by dividing costs preventable by vaccine by the number of persons eligible for vaccination. Of these strategies, the most economical would be to immunize adolescents 10-19 years of age, which would prevent 0.7-1.8 million pertussis cases and save $0.6-1.6 billion over a decade. Although justified by our analysis, routine adult booster vaccinations every decade would be more expensive and more difficult to implement. A recommendation for booster vaccinations every 10 years requires more information about duration of immunity, program costs, compliance, and nonmedical costs associated with pertussis.


In the context of the decrease of tuberculosis incidence, a re-assessment of the French BCG vaccination policy has been undertaken. The synthesis of the data available, done by the National Institute for Public Health Surveillance (InVS) has led to the conclusion of the absence of justification of the current policy of re-vaccinating children with a negative tuberculin skin test. Data from studies and from the results of the experiences from several countries having discontinued primovaccination confirm the effectiveness of BCG vaccination on childhood tuberculosis, mainly on extra-pulmonary cases. Base on these data and on the estimation carried out by InVS of the impact of the discontinuation in France of BCG re-vaccination and primovaccination, it was decided to discontinue the policy of re-vaccination and of routine tuberculin testing. A multidisciplinary expertise aimed at studying the relevancy, the feasibility and the acceptability of various options of reducing the target-population of primovaccination is on-going.


3.3 Airborne transmission/Transmission aérienne

Severe acute respiratory syndrome (SARS) is thought to be caused by a novel coronavirus, SARS-associated coronavirus. We studied viral shedding of SARS coronavirus to improve diagnosis and infection control. Reverse-transcriptase PCR was done on 2134 specimens of different types. 355 (45%) specimens of nasopharyngeal aspirates and 150 (28%) of faeces were positive for SARS coronavirus RNA. Positive rates peaked at 6-11 days after onset of illness for nasopharyngeal aspirates (87 of 149 [58%], to 37 of 62 [60%]), and 9-14 days for faeces (15 of 22 [68%], to 26 of 37 [70%]). Overall, peak viral loads were reached at 12-14 days of illness when patients were probably in hospital care, which would explain why hospital workers were prone to infection. Low rate of viral shedding in the first few days of illness meant that early isolation measures would probably be effective.


BACKGROUND: Singapore reported its first case of Severe Acute Respiratory Syndrome (SARS) in early March 2003 and was placed on the World Health Organization's list of SARS-affected countries on March 15, 2003. During the outbreak, Tan Tock Seng Hospital was designated as the national SARS hospital in Singapore to manage all known SARS patients. Stringent infection control measures were introduced to protect healthcare workers and control intrahospital transmission of SARS. Work-flow processes for surgery were extensively modified.

METHODS: The authors describe the development of infection control measures, the conduct of surgical procedures, and the management of high-risk procedures during the SARS outbreak.

RESULTS: Forty-one operative procedures, including 15 high-risk procedures (surgical tracheostomy), were performed on SARS-related patients. One hundred twenty-four healthcare workers had direct contact with SARS patients during these procedures. There was no transmission of SARS within the operating room complex. CONCLUSIONS: Staff personal protection, patient risk categorization, and reorganization of operating room workflow processes formed the key elements for the containment of SARS transmission. Lessons learned during this outbreak will help in the planning and execution of infection control measures, should another outbreak occur.


An outbreak of severe acute respiratory syndrome (SARS) was detected in Singapore at the beginning of March 2003. The outbreak, initiated by a traveler to Hong Kong in late February 2003, led to sequential spread of SARS to three major acute care hospitals in Singapore. The critical factor in containing this outbreak was early detection and complete assessment of movements and follow-up of patients, healthcare workers, and visitors who were contacts. Visitor records were important in helping identify exposed persons who could carry the infection into the community. In the three hospital outbreaks, three different containment strategies were used to contain spread of infection: closing an entire hospital, removing all potentially infected persons to a dedicated SARS hospital, and managing exposed persons in place. On the basis of this experience, if a nosocomial outbreak is detected late, a hospital may need to be closed in order to contain spread of the disease. Outbreaks detected early can be
managed by either removing all exposed persons to a designated location or isolating and managing them in place.


BACKGROUND: Aerosols and droplets are produced during many dental procedures. With the advent of the droplet-spread disease severe acute respiratory syndrome, or SARS, a review of the infection control procedures for aerosols is warranted. TYPES OF STUDIES REVIEWED: The authors reviewed representative medical and dental literature for studies and reports that documented the spread of disease through an airborne route. They also reviewed the dental literature for representative studies of contamination from various dental procedures and methods of reducing airborne contamination from those procedures. RESULTS: The airborne spread of measles, tuberculosis and SARS is well-documented in the medical literature. The dental literature shows that many dental procedures produce aerosols and droplets that are contaminated with bacteria and blood. These aerosols represent a potential route for disease transmission. The literature also documents that airborne contamination can be minimized easily and inexpensively by layering several infection control steps into the routine precautions used during all dental procedures. CLINICAL IMPLICATIONS: In addition to the routine use of standard barriers such as masks and gloves, the universal use of preprocedural rinses and high-volume evacuation is recommended.

3.4 Contact transmission/Transmission de contact


3.5 Disease transmission, professionnell to patient/Contamination soignant-soigné

3.6 Other/autres


Microorganisms are transmitted in hospitals mainly by contact, droplet, and airborne routes. Orthopaedic surgeons have a substantial occupational risk of contracting a blood-borne infection because of frequent handling of sharp instruments and objects during operative procedures. Aerosolization means the formation of aerosols and droplets when blood or other body fluids are mechanically disturbed. Smaller particles (<5 microm) will remain suspended in air. Pathogens that can survive in these small airborne particles may cause infection if they are inhaled. Aerosol-generating procedures in patients with tuberculosis or severe acute respiratory syndrome (SARS) may facilitate airborne transmission. The Hospital Infection Control Practices Advisory Committee and the Centers for Disease Control and Prevention have established guidelines for isolation precautions in hospitals.

Approximately 70% of the population in the western world become infected with the herpes simplex virus type 1 (HSV-1) by the second decade of life. This review discusses the role of the HSV-1 as a potential occupational hazard for dental workers, focusing on herpes labialis, herpetic whitlow and keratitis. The risks associated with the dental treatment of patients with HSV-1, both from the perspective of the clinician and the patient are presented. Procedures for minimising the impact of HSV-1 within the dental practice, in particular infection control, delivery of treatment and patient education, are addressed. The management options for recurrent herpes labialis are also reviewed.

4 Infection Control/Hygiène


BACKGROUND: From April to June 2001, an outbreak of extended-spectrum beta-lactamase (ESBL)-producing Klebsiella pneumoniae infections was investigated in our neonatal intensive care unit. METHODS: Cultures of the gastrointestinal tracts of patients, the hands of healthcare workers (HCWs), and the environment were performed to detect potential reservoirs for ESBL-producing K. pneumoniae. Strains of K. pneumoniae were typed by pulsed-field gel electrophoresis using XbaI. A case-control study was performed to determine risk factors for acquisition of the outbreak clone (clone A); cases were infants infected or colonized with clone A and controls (3 per case) were infants with negative surveillance cultures. RESULTS: During the study period, 19 case-infants, of whom 13 were detected by surveillance cultures, harbored clone A. The overall attack rate for the outbreak strain was 45%; 9 of 19 infants presented with invasive disease (n = 6) or developed invasive disease (n = 3) after colonization was detected. Clone A was found on the hands of 2 HCWs, 1 of whom wore artificial nails, and on the designated stethoscope of a case-infant. Multiple logistic regression analysis revealed that length of stay per day (odds ratio [OR], 1.05; 95% confidence interval [CI95], 1.02 to 1.09) and exposure to the HCW wearing artificial fingernails (OR, 7.87; CI95, 1.75 to 35.36) were associated with infection or colonization with clone A. CONCLUSION: Short, well-groomed, natural nails should be mandatory for HCWs with direct patient contact.

5 Physical hazards/Risques physiques

5.1 Ionizing radiations/Rayonnements ionisants


Back pain disability is a serious and costly problem affecting the nursing profession. The purposes of this study were to determine risk factors for work-related low back pain (WRLBP) in registered nurses and to record the reported use or reasons for nonuse of mechanical lifts. Our hypothesis was that workers who attributed the cause of WRLBP to their own actions would be knowledgeable about back safety, would be more likely to use lifts, and would report less WRLBP. A random sample of 270 registered nurses was selected from two acute care hospitals in central Illinois to identify WRLBP risk factors. This cross-sectional study gathered information on individual, physical workload, psychological, and organizational factors that may present a risk for WRLBP. Information was also collected on the use of safety devices and back
pain symptoms. The response rate was 50.4%. Nearly 84% of respondents had WRLBP in the past, and 36.2% had WRLBP in the past year that limited movement or interfered with routine activities. Among the risk factors significantly associated with WRLBP were more years worked in nursing, frequent lifting, and low social support. Only 11% reported that they routinely used mechanical lifting devices, and the primary reason given for failure to use lifting equipment was unavailability of equipment. The reasons for the lack of use of mechanical lifts should be investigated and addressed.


Nursing assistants (NAs) who work in nursing and personal care facilities are twice and five times more likely, respectively, to suffer a musculoskeletal disorder compared to service industries and other health care facilities, respectively. The purpose of this study was to develop an ergonomics training program for selected NAs at a state-run veterans' home to decrease musculoskeletal disorders by 1) developing questionnaires to assess musculoskeletal stress, 2) evaluating the work environment, 3) developing and using a training package, and 4) determining the application of the information from the training package by NAs on the floor. Results show two new risk factors not previously identified for nursing personnel in the peer-reviewed literature. Quizzes given to the nursing personnel before and after training indicated a significant improvement in understanding the principles of ergonomics and patient-handling techniques. Statistical analysis comparing the pre-training and post-training questionnaires indicated no significant decrease in musculoskeletal risk factors and no significant reduction in pain or discomfort or overall mental or physical health.


Although back disorders are a major occupational problem for nursing staff, few studies distinguish different types. By means of a structured questionnaire, we performed a cross-sectional study on the prevalence of diagnosed lumbar disc hernia, chronic low-back pain (LBP) (at least 90 d in the preceding 12 months) and acute LBP (intense pain for at least 1 d) with respect to physical, individual and psychosocial factors among female nurses (n=587), nursing aides (n=228) and head-nurses (n=43) working in a university hospital (95% of the female workforce). Almost all respondents reported known high-risk occupational activities. Overall prevalence of reported back disorders was 44% (acute LBP 19%, chronic LBP 17%, lumbar hernia 8%). On multinomial logistic regression analysis, scoliosis and commonly stress-related psychosomatic symptoms were associated with all three types of back disorder; trauma/fractures of the spine, pelvis and/or legs and a global work-environment/job-satisfaction score with acute LBP; increasing age with lumbar disc hernia. While confirming the relevance of considering different definitions of back disorder, our data indicate items for investigation in cohort studies. These include: identification of specific risk factors for lumbar hernia; avoidance of possible work-environment risk factors such as hurried execution of different tasks at the same time; and influence on job suitability of underlying spinal pathologies such as scoliosis.


AIMS: To identify the work factors that predict intense low back pain (LBP) and LBP related sick leaves in nurses' aides. METHODS: The sample comprised 4266 randomly selected Norwegian nurses' aides, not bothered or only a little bothered by LBP during the previous three months, and not on sick leave when completing a mailed questionnaire in 1999. Of these, 3808 (89.3%) completed a second questionnaire 3 months later and 3651 (85.6%) completed a third
questionnaire 15 months later. Intensity of low back symptoms and certified sick leaves attributed to LBP during the observation period were assessed by self reports at the follow ups.

RESULTS: After adjustments for LBP during the three months prior to baseline, baseline health complaints, demographic and familial factors, and a series of physical, psychological, and social work factors, logistic regression analyses revealed the following associations: intense low back symptoms were predicted by frequent positioning of patients in bed, perceived lack of support from immediate superior, and perceived lack of pleasant and relaxing culture in the work unit. LBP related sick leaves were predicted by frequent handling of heavy objects, medium level of work demands, perceived lack of supportive and encouraging culture in the work unit, working night shifts, and working in a nursing home. Long term LBP related sick leaves were associated with changes of work or work tasks during the observation period that resulted in a perceived reduction of support and encouragement at work. CONCLUSIONS: Not only frequent mechanical exposures, but also organisational, psychological, and social work factors, such as night shift work, perceived lack of support from superior, and perceived lack of a pleasant and relaxing or supporting and encouraging culture in the work unit, are associated with an increased risk of intense low back symptoms and LBP related sick leaves in nurses' aides.


BACKGROUND: Several epidemiological studies have shown a statistically significant association between standing work and chronic venous insufficiency of lower limbs. This condition has been associated with an enhanced oxidative stress that, according to the literature, could represent a risk factor for cardiovascular and other systemic diseases. AIMS AND METHODS: To evaluate venous pressure of the lower limbs and reactive oxygen species (ROS) before and after work in 62 workers with a standing occupation (surgery room nurses) and 65 outpatient department nurses who can walk during their working time. RESULTS: After work, a statistically significant increase of venous pressure of the lower limbs levels was observed in both the study group and controls. Standing workers showed significantly higher mean levels of ROS after work.

6 Chemical hazards/Risques chimiques

Occupational Dermal Exposure to Cyclophosphamide in Dutch Hospitals: A Pilot Study
WOUTER FRANSMAN, ROEL VERMEULEN, And HANS KROMHOUT

Introduction: Several studies have shown that exposure to antineoplastic drugs can cause reproductive toxic effects as well as carcinogenic effects. Presence of these drugs in the urine of hospital personnel has been widely studied and some work has been done on exposure by inhalation. So far, assessment of dermal exposure to antineoplastic drugs has not been extensively studied. In this pilot study we assessed potential and actual dermal exposure for several common hospital tasks. Results were used to derive an optimal measurement strategy for a currently ongoing exposure survey. Methods: Dermal exposure to cyclophosphamide was determined in three Dutch hospitals during five tasks (preparation, decanting urine, washing the patient, removing bed sheets and cleaning the toilet) using pad samples on 10 body locations. In addition, protective medical gloves (worn during the performance of these activities) were collected to estimate potential exposure of the hands. Subsequently, hands were washed to measure actual exposure of the hands. Bulk samples (i.e. application and body fluids) were collected and possible contact surfaces were monitored to assess the amount of cyclophosphamide potentially available for exposure. Results: The results show that hospital personnel (i.e. pharmacy technicians and oncology nurses) are dermally exposed to cyclophosphamide during performance of their daily duties. Exposure occurred predominantly...
on the hands and sporadically on other body locations (i.e. forehead and forearms). Gloves used during preparation of cyclophosphamide were more contaminated than gloves used in other tasks, however, actual exposure of the hands (underneath the gloves) was highest during decanting of urine of treated patients. Glove samples correlated significantly with handwash samples (r = 0.57, P = 0.03, n = 15). The level of protection from gloves varied between tasks, being highest for gloves used during preparation (median = 98%) and lowest for gloves used during decanting urine (median = 19%). Conclusion: This pilot study demonstrated that dermal exposure to cyclophosphamide is common among hospital personnel. The results showed that hands, forearms and forehead accounted for 87% of the cyclophosphamide total body exposure. Glove samples together with handwash samples enabled estimation of glove efficiency, which appeared to vary strongly between tasks observed.

http://annhyg.oupjournals.org/cgi/content/abstract/48/3/237?etoc

6.1 Anesthetics

7 Allergy/Allergies


Allergic diseases have increased in many developed countries including Japan. Doctors are also at risk for allergic diseases from exposure to allergens in working conditions and hospital environments. We investigated the factors relating to occupational allergy in doctors. Self-administered questionnaires were mailed to all doctors (n=895) who had previously graduated from School of Medicine, Fukui Medical University. Data from 307 responders (response rate: 34.3%, male 241, female 66, mean age +/- S.D., 30.8 +/- 4.2) were analyzed. Eighty-nine doctors stated that they had occupational allergy including contact dermatitis, allergic rhinitis and/or asthma. Fifty-four had contact dermatitis caused by surgical gloves; 77 had contact dermatitis from disinfectants, e.g. 23 from chlorhexidine gluconate; 21 from povidone iodine; and 15 from ethanol. Fifteen doctors experienced allergic rhinitis and/or asthma caused by handling laboratory animals. Univariate analysis showed that profession (surgical doctors) and past histories of allergic diseases (rhinitis, sinusitis, or atopic dermatitis) were significantly related to occupational allergy in doctors, but that gender, smoking or physical exercise were not significantly related to it. A logistic regression analysis showed that past histories of allergic diseases and the profession of surgical doctors were significantly related to occupational allergy, but that gender, age or smoking were not significantly related to it. The results of the present study suggest that past history of allergic diseases is a factor predisposing to occupational allergy in doctors. It is necessary and possible to extend more prophylactic measures for doctors, especially for surgeons, because exposure to responsible agents and materials for them can be more frequent.


Cyanoacrylate (CA) and its homologues have a variety of medical, dental and commercial applications as adhesives. The increasing use of CA in dentistry, particularly as an adhesive and sealing glue, has raised concerns regarding its potential toxicity in humans. Reported toxicity of CA is uncommon in the dental workplace, but may manifest as conditions such as urticaria, contact dermatitis and other dermatoses. Dental staff using CA adhesives should avoid direct contact with CA and use appropriate personal protective measures. Maintaining higher levels of humidity, optimizing room ventilation and using special air
conditioning filters in the working environment may be useful in minimising the toxicity of volatile CA adhesives.

8 Stress – Mental disorders/Stress – psychopathologie


This qualitative, explorative study identified work-related stressors and coping mechanisms of registered nurses (RNs) within a hospital setting. A sample of 10 RNs was interviewed about work-related stressors and observed under normal working conditions. RNs identified stress related to failure to meet patients’ needs, self-expectations, workload, and inexperienced colleagues. Staff development implications include education of clinical nurses and administrators in identifying systems barriers to providing patient care, interventional staffing, stress debriefing, patient assessment, and active coping.


Increasingly, organizations are experiencing changes as a result of extensive downsizing, restructuring, and merging. In Canada, government-sponsored medicine has been affected as hospitals have merged or closed, reducing essential medical services and resulting in extensive job loss for hospital workers, particularly nurses. Hospital restructuring has also resulted in greater stress and job insecurity in nurses. The escalation of stressors has created burnout in nurses. This study examines predictors of burnout in nurses experiencing hospital restructuring using the MBI-General Survey which yields scores on three scales: Emotional exhaustion, Cynicism, and Professional efficacy. Multiple regressions were conducted where each burnout scale was the criterion and stressors (e.g., amount of work, use of generic workers to do nurses’ work), restructuring effects, social support, and individual resources (e.g., control coping, self-efficacy, prior organizational commitment) were predictors. There were differences in the amount of variance accounted for in the burnout components by stressors and resources. Stressors contributed most to emotional exhaustion and least to professional efficacy. Individual resources were more likely to contribute to professional efficacy and least to emotional exhaustion. Stressors and resources accounted for approximately equal amounts of variance in cynicism. Three conclusions were drawn. First, present findings parallel others by showing that individual coping patterns contribute to professional efficacy. Second, emotional exhaustion was found to be the prototype of stress. Third, prior organizational commitment, self-efficacy, and control coping resulted in lower burnout.


AIMS: To determine differences in health-care costs associated with moderate alcohol consumption among female health-care workers while controlling for other risk factors that may be correlated with alcohol use. DESIGN AND SETTING: Non-randomized, prospective, observational study of health-care costs by female health-care workers in a large managed care organization recruited between 1 January 1998 and 1 July 2000. PARTICIPANTS: Six hundred and eighty-five female employees, continuously and stably employed by the managed care organization, who received health-care through the affiliated managed care organization. All women completed a health risk appraisal as part of the company's Employee Wellness Plan; 218 women were categorized as moderate drinkers and 467 as abstainers/light drinkers. MEASUREMENTS: Total costs of in-plan and out-of-plan health-care utilization, by type of service, during the 6 month period after completing the health risk survey were calculated.
FINDINGS: Using 218 one-to-one matched pairs of moderate drinkers and abstainers/light drinkers, no significant differences in total, outpatient or inpatient costs were observed during the 6 month observation period. Pharmacy costs were significantly lower for moderate drinkers (-43 dollars, 95% CI = -88.82 dollars to -2.41 dollars), primarily due to differences in costs from anxiolytic (including barbiturates and benzodiazepines), hypnotic and sedative drug fills.

CONCLUSIONS: Findings demonstrate the value of risk factor matching when studying the relationship between alcohol use and health-care utilization. The discovery of differential pharmacy utilization raises the possibility that alcohol consumption may reduce the use of prescribed central nervous system depressants.


PURPOSE: To investigate (a) the effect of job-related stress on job performance among hospital nurses, and (b) the effect of social support from coworkers on the stress-performance relationship. DESIGN: A correlational descriptive survey was used to investigate these relationships among a convenience sample of 263 American hospital nurses and 40 non-American nurses who were accessible via the Internet. METHODS: Data were collected using a Web-based structured questionnaire, which included the Nursing Stress Scale, the Schwirian Six Dimension Scale of Nursing Performance, the McCain and Marklin Social Integration Scale, and the demographic form. Descriptive statistics, Pearson product-moment correlations, and hierarchical regression techniques were used to analyze the data. FINDINGS: Perceived social support from coworkers enhanced the level of reported job performance and decreased the level of reported job stress. The analysis also indicated a curvilinear (U-shaped) relationship between job stress and job performance; nurses who reported moderate levels of job stress believed that they performed their jobs less well than did those who reported low or high levels of job stress. CONCLUSIONS: Results indicted the importance of social support from coworkers, as well as the need for further research to test the U-shaped relationship between job stress and job performance.


SLAVES TO THEIR WORK: The Anglo-Saxons were the first to evoke the "burn out syndrome" although the Canadians prefer to use "burning" in order to emphasize these situations in which the person is as it were literally "consumed by his/her work". The burn-out syndrome more specifically involves all those who have chosen to devote their lives to others. This is the case notably with health care workers because they are in direct contact with suffering, poverty, hardship, disease and death. THE ENHANCING FACTORS: There is no particular pre-morbid personality. Nevertheless, various factors can be at the origin of a burn out syndrome: subconscious motivations in the choice of the profession, capacity to adapt to hardship at work, excessive idealization of the profession, lack of recognition and the absence of any possibility of promotion. INSTALLATION IN 4 STAGES: The onset of an occupational burn out syndrome is usually insidious. Schematically, the first stage is idealistic enthusiasm. Then a helpless stagnation period follows with progressive disinterest, followed by a phase of frustration, before the onset of an apathetic disenchantment with search for a form of security. VARIOUS POINTS IN COMMON WITH DEPRESSION: A range of effects exist: sleep and digestive disorders, reduced performance, progressive feeling of exhaustion with impact on friends and relatives, irritability towards others, absence of dialogue, and a feeling of "emptiness". THREE ELEMENTS TO THERAPEUTIC POSSIBILITIES: The first consists in improving work conditions by changing the environment; the second consists in improving communications and
enhancing the end to isolation and the third consists in changing the employee's private life. Such as reorganizing the person's life so that they can disconnect and develop other interest than through their work.

9 Violence/Violence


Most studies examining violence in a forensic setting have adopted a statistical approach to associate relevant predictors and the likelihood of violence. Views of patients and nurses have been a relatively neglected research area. This study explored patients' and nurses' accounts of violent incidents, considering similarities and differences in their narratives. Permission was obtained from the local National Health Service Research Ethics Board and the Research Ethics Committee of University of East London. Anonymized transcripts were produced from semi-structured interviews conducted in a Medium Secure Unit with four nurses and four patients, who consented to talk at length with the first author about violent events they had witnessed on the Unit. Grounded theory analysis of the data generated a core category, 'control', and five constituent themes: the construction of identity of the perpetrator of violence; nurses' dual role of caring and controlling; aspects of parentalism involved in control; following set policies and procedures; and segregation from mainstream society. Because of widespread social interest and media coverage in the topic, discursive examination was made of aspects of social context arising within the data. This study was small scale and exploratory, and further confirmatory research is needed. Nevertheless, clear contrasts between the nurse and patient accounts indicated tentative suggestions for training (including user involvement) and intervention in managing violent behaviour.


AIMS: To identify the magnitude of and potential risk factors for violence within a major occupational population. METHODS: Comprehensive surveys were sent to 6300 Minnesota licensed registered (RNs) and practical (LPNs) nurses to collect data on physical and non-physical violence for the prior 12 months. Re-weighting enabled adjustment for potential biases associated with non-response, accounting for unknown eligibility. RESULTS: From the 78% responding, combined with non-response rate information, respective adjusted rates per 100 persons per year (95% CI) for physical and non-physical violence were 13.2 (12.2 to 14.3) and 38.8 (37.4 to 40.4); assault rates were increased, respectively, for LPNs versus RNs (16.4 and 12.0) and males versus females (19.4 and 12.9). Perpetrators of physical and non-physical events were patients/clients (97% and 67%, respectively). Consequences appeared greater for non-physical than physical violence. Multivariate modelling identified increased rates for both physical and non-physical violence for working: in a nursing home/long term care facility; in intensive care, psychiatric/behavioural or emergency departments; and with geriatric patients. CONCLUSIONS: Results show that non-fatal physical assault and non-physical forms of violence, and relevant consequences, are frequent among both RNs and LPNs; such violence is mostly perpetrated by patients or clients; and certain environmental factors appear to affect the risk of violence. This serves as the basis for further analytical studies that can enable the development of appropriate prevention and control efforts.

BACKGROUND: Reported rates of workplace violence are increasing and studies of violence and aggression to health service staff in the United Kingdom have largely focused upon mental health and accident and emergency units. The study of violence and aggression in other specialities has been neglected. This paper reports the findings from a survey of staff perceptions of training and support in an elderly care and head injury unit. AIMS AND OBJECTIVES: Staff in a care of older people and head injury unit, half of whom were nurses, were surveyed to identify their experiences of violence and aggression in the workplace, their receipt of training, the relevance of training and knowledge of support services. METHODS: An anonymous semi-structured questionnaire was sent to all nursing, therapy and psychology staff in the unit. Quantitative data were analysed by SPSS and content analysis was adopted for the qualitative data. RESULTS: Just over half the participants had experienced an incident of violence or aggression in the past 12 months. Training was judged to be relevant by almost 90% of respondents but was not always delivered in line with trust guidance. Staff who had been involved in incidents were more likely to identify training needs. A higher percentage of nurses than other professions were involved in incidents, but they were not as aware of the staff support department as other professional groups. CONCLUSIONS: The findings indicate that care of older people and head injury units should examine more closely the delivery of staff training on violence and aggression, and invite staff to identify their training needs. A national survey of approaches to staff support may be worthwhile. RELEVANCE TO CLINICAL PRACTICE: Staff who had received training judged it to be relevant to their working situations, but outstanding training needs should be identified and addressed. Confidential staff support facilities should be well publicized.


BACKGROUND: Violence, for example physical, psychological, financial and sexual abuse and neglect, exists and is an under-reported problem in caring situations involving adult persons with intellectual disabilities and their caregivers, where both parties can be seen as victims and perpetrators. AIMS AND OBJECTIVES: To investigate violent situations involving Swedish adult persons with intellectual disabilities and their caregivers in group-dwellings. DESIGN: A total population-based survey. METHODS: A questionnaire, including violence towards adults with intellectual disabilities and violence towards staff members during 1 year, was sent to all staff members (n = 164) from 17 care settings for adults with intellectual disabilities with a response rate of 74%. RESULTS: Thirty-five per cent of 122 respondents admitted they had been implicated in or witnessed a violent incident towards an adult person with intellectual disabilities and 14% of the staff members admitted they themselves had been the perpetrators. Sixty-one per cent of the staff members described various situations when they were exposed to violence from an adult person with intellectual disabilities. Physical violence was most frequently reported. Most of the aggression occurred in helping situations when persons with intellectual disabilities did not co-operate or when both actors reacted with violence. The violent situations led the staff members to feel powerless and inadequate. In order to cope they discussed with each other or with the manager. CONCLUSIONS: Violence seems to be accepted as a natural part of the daily care for adult persons with intellectual disabilities. Most of the violence is physical and psychological and occurs in close helping situations. RELEVANCE TO CLINICAL PRACTICE: Supportive interventions, i.e. supervision for the staff members and training of communication skills individually or in group for the adults with intellectual disabilities.
Nurses represent the largest group of professional caregivers. Most are also informal caregivers for family members, including children, parents, spouses, and other relatives. The impact of these caregiving roles, individually and in combination, has important implications for the health of nurses. This article focuses on nurses' health, emphasizing research on the influence of the work and family stress on physical and psychosocial dimensions of health. Health and safety concerns of nurses are discussed and findings from longitudinal studies of nurses' health are presented. Challenges for maintaining a healthy nursing workforce for the future are discussed.

Due to the complexity of human health, emphasis is increasingly being placed on the need for and conduct of multidisciplinary and/or interdisciplinary health research. Yet many academic and research organizations—and the discipline-specific associations and journals—may not yet be prepared to adopt changes necessary to optimally support interdisciplinary work. This article presents an ongoing interdisciplinary research project's efforts to investigate mechanisms and pathways that lead to occupational health disparities among healthcare workers. It describes the promises and pitfalls encountered during the research, and outlines effective strategies that emerged as a result. Lessons learned include: conflict resolution regarding theoretical and methodological differences; establishing a sense of intellectual ownership of the research, as well as guidelines for multiple authorship; and development and utilization of protocols, communication systems, and tools. This experience suggests a need for the establishment of supportive structures and processes to promote successful interdisciplinary research.

Residents spend a large amount of time in noneducational activities. Eliminating these activities would bring our rotations into compliance with the 80-hour workweek. It would also generate a large amount of time for educational activities within our training program.

Although identification of risks to dental healthcare workers has been explored in several industrialized nations, very little data is available from developing countries. This paper examines the occupational hazards present in the dental environment and reports survey results concerning attitudes and activities of a group of Nigerian dental care providers. A survey on occupational hazards was conducted among the clinical dental staff at the Dental Hospital of the Obafemi Awolowo University Teaching Hospital Complex, Ile-Ife in Osun State, Nigeria. Thirty eight of the forty staff responded, yielding a response rate of 95%. Subject ages ranged from 26 to 56 years with approximately 25% in the 31-46 year old bracket. All of the staff were aware of the occupational exposure to hazards, and the majority had attended seminars/workshops on the subject. Only five staff members (13.2%) owned a health insurance policy and 26 (68.4%) had been vaccinated against Hepatitis B infection. All dentists (24) had been vaccinated compared with only two non-dentists; this relationship was significant (p= 30.07, chi2=0.000). Fourteen members of the clinical staff (36.8%) could recall a sharp injury in the past six months, and the majority (71.1%) had regular contact with dental amalgam. Wearing protective eye goggles was the least employed cross infection control measure, while backache was the most frequently experienced hazard in 47% of the subjects. The need for Hepatitis B vaccinations for all members of the staff was emphasized, and the enforcement of strict cross infection control measures was recommended. The physical activities and body positions that predispose workers to backaches were identified and staff education on the prevention of backaches was provided.

10.2 Evidence Based Medicine

11 Conference announcement

12 Documents en Français

12.1 Reglementation

12.2 Articles& documents en Français

Nouveau calendrier vaccinal 2004