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University of Cincinnati Hospital
Cincinnati, Ohio

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PREFACE

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ACKNOWLEDGMENTS AND AVAILABILITY OF REPORT

This report was prepared by Karen A. Worthington, M.S., R.N., of the Hazard Evaluations and Technical Assistance Branch, Division of Surveillance, Hazard Evaluations and Field Studies (DSHEFS) and Vernon Putz Anderson, Ph.D. of the Division of Biomedical and Behavioral Science (DBBS). Desktop publishing by Elaine Moore.

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SUMMARY

On September 28, 1995, the Chief Safety Officer of the University of Cincinnati Hospital (UCH) submitted a request to NIOSH for assistance under the Institute's Health Hazard Evaluation and Technical Assistance (HETA) Program. The purpose of the request was "to help address the ergonomic related injuries and stresses experienced by employees within the Environmental Services (ES) and Central Transportation (CT) departments" at UCH.

On December 6, 1995, the Chief of the Medical Section of NIOSH's HETA program met with representatives from hospital administration, the safety department, and the unions to explain NIOSH's HETA program. On January 18, 1996, a NIOSH medical officer met with hospital employees, union representatives, managers, and University Health Service personnel to gather information about job responsibilities, work processes, data sources, and medical management of work-related musculoskeletal injuries. At this time, a third group of employees potentially at risk for musculoskeletal disorders was identified. These employees perform a variety of patient care, housekeeping, and dietary tasks and their job title is Patient Care Service Associate (PCSA).

On March 14, 1996, the NIOSH medical officer and a NIOSH ergonomist conducted an ergonomic exposure assessment. The assessment was based on the combined results of (1) personal interviews with staff, and (2) an onsite-task analysis, including videotaping of workers, which was used to complete an ergonomic checklist for identifying and evaluating ergonomic risk factors. The goal was to describe the ergonomic hazards associated with these jobs and recommend possible approaches which the hospital might use to address them.

The results of the evaluation show that workers in the three job categories we evaluated, Environmental Services, Central Transportation, and Patient Care Service Associates, are at risk for developing musculoskeletal disorders affecting the upper extremity. Furthermore, PCSAs and CT workers are also at risk for lower extremity musculoskeletal disorders. PCSAs had the highest score for combinations of risk factors known to contribute to musculoskeletal disease. Recommendations include the initiation of employee-based programs of ergonomic intervention, establishment of an on-going system of surveillance for musculoskeletal injury and disease, multi disciplinary review of the hospital's current medical management, return-to-work and disability policies for musculoskeletal injuries and disease among workers, and development of an ongoing system for incorporating the input of the employee-based teams into long-range renovation and architectural plans.

Keywords: SIC Code 8062 (hospital), ergonomics, health care workers, hospital workers, housekeepers, musculoskeletal injury, musculoskeletal disease, ergonomic exposure assessment, ergonomic hazards.

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INTRODUCTION

On September 28, 1995, the Chief Safety Officer of the University of Cincinnati Hospital (UCH) submitted a request to NIOSH for assistance under the Institute's Health Hazard Evaluation and Technical Assistance (HETA) Program. The purpose of the request was "to help address the ergonomic related injuries and stresses experienced by employees within the Environmental Services and Central Transportation departments" at UCH.

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BACKGROUND

The health services industry is one of the largest employment sectors in the United States, employing almost 9 million persons in 1993.[1] Between 1980 and 1993, hospital workers experienced a 30% rise in rates of injury and illness, increasing from 7.9 to 11.8 injuries/illnesses per 100 full-time workers.[1] In the 1980s, approximately half of all workers' compensation claims filed by hospital workers were for sprain/strain injuries.[2, 3] In a comprehensive study of health care workers conducted at Northwestern Health Science Center and Hospital, the groups with the highest rates of injury were custodial/housekeeping personnel, followed closely by food services/nutrition employees and nurses.[4] In this facility, over half of the sprain and strain injuries involved the back and the act of lifting and twisting.

UCH is a 700-bed medical, research, and teaching facility with approximately 3,100 employees and is comprised of old and new buildings, connected by corridors, walkways, and tunnels. Both inpatient and ambulatory care services are provided. Five unions represent workers at the hospital. Workers involved in this study are represented by the American Federation of State, County, and Municipal Employees (AFSCME).

To track hospital-wide rates of injury and illness for comparison with national data, UCH safety personnel analyze data from the Occupational Safety and Health Administration (OSHA) Log and Summary of Occupational Injuries and Illnesses, the OSHA 200 log. The hospital's rate of OSHA-recordable injuries and illnesses was 10.73 per 100 full-time employees (FTEs) in 1994 and 6.4/100 FTEs in 1995. These injury and illness rates are lower than the latest available national rate for hospital workers, 11.4 in 1994.[4] Strains and sprains accounted for 38% of UCH's OSHA-recordable injuries in 1994 and 40% in 1995.

To more inclusively track injury trends within departments and over time, UCH safety personnel also analyze data from their internal accident reporting system. These data are difficult to compare with data from other hospitals due to the different definitions and reporting systems used. They are most useful for year-to-year and in-hospital comparisons. Accident rates for all UCH workers combined were 22/100 FTE in 1994 and 19/100

FTEs in 1995. The department with the highest rate of reported injuries for these years was the Operating Room /Obstetrical Equipment processing area (73/100 FTEs in 1994, 50/100 FTEs in 1995). Ergonomics consultants have already made recommendations to the hospital about appropriate engineering controls for this area. The second and third ranking departments were Environmental Services (ES) (73/100 FTEs in 1994, 50/100 FTEs in 1995) and Central Transport (CT) (41/100 FTEs in 1994, 30/100 FTEs in 1995). ES workers experienced a wide variety of injuries, including sharp/splash exposures, cuts, and abrasions. Approximately 13% were strains and sprains. This proportion is consistent with studies in other academic medical centers,[4] however, among CT personnel, half of all injuries were back or extremity strains and sprains. This information, along with the overall increasing trend in these types of injuries at UCH, prompted the Health Hazard Evaluation (HHE) request.

Data on the treatment and outcome of musculoskeletal injuries and disease were sought from the hospital's University Health Services Department. Due to constraints in the data collection and documentation systems, no additional information that could be analyzed for trends by job category or department could be readily provided. Many changes are taking place in the University Health Services Department, including a possible change in the workers' compensation system. The hospital employs its own disability manager, who provided information about the work-related, musculoskeletal injury cases that he managed.

METHODS

Ergonomic Assessment

An ergonomic assessment was conducted to identify potentially hazardous job conditions. The ergonomic evaluation consisted of a walkthrough inspection of 2 patient care floors and the routes and equipment used for transporting patients. Discussions were conducted with 6 CT workers and 4 PCSAs. These observations and interviews provided the information used to complete the ergonomic checklist. One ES worker was extensively interviewed and videotaped performing routine cleaning tasks in a room where the patient had been discharged. The purpose of the videotapes was to document the postural demands and repetitiveness of the tasks performed. This information was extracted from the video through playback analysis (either in real time or in slow motion) and was used to complete the ergonomic checklist for this job category.

Medical Assessment

The medical portion of this HHE included a review of the hospital's accident report data and OSHA 200 Log data as well as interviews with medical personnel at the hospital's employee health unit. Voluntary, group interviews were conducted with 6 workers from the Central Transport Department and with 4 PCSAs who were available during the NIOSH visit. The Environmental Services employee who was videotaped for the ergonomic evaluation was interviewed. Selection of the employees was coordinated by UCH safety personnel, the department managers, and the NIOSH investigators. Information obtained from the interviewed employees included work history, work-related symptoms experienced, and employees' perceptions of stressors on-the-job.

EVALUATION CRITERIA

Overexertion injuries, such as low back pain, tendinitis, and carpal tunnel syndrome, are often associated with job tasks that include: repetitive, stereotyped movement about the joints, forceful exertions, awkward postures, direct pressure on the nerves and soft tissues, and work in cold environments or exposure to whole-body or segmental vibration.[5,6,7] The risk of injury appears to be enhanced as the intensity and duration of exposures to these factors are increased and the duration of recovery time is reduced.[8] Although personal factors (age, gender, weight, fitness) can affect an individual's susceptibility to these

disorders, studies conducted in high-risk industries show that the risk associated with personal factors is small when compared to that associated with occupational exposures.[9]

Sprains and strains due to overexertion are more frequent than any other type of work-related injury in the health care industry, and the occupations of workers most frequently injured are nurses' aides, registered nurses, LPNs, and cleaners.[3] Studies of job tasks within these occupations have found high levels of biomechanical stress, especially from patient lifting and transferring tasks.[10,11,12,13] In addition to actual lifting, poor design of patient care areas necessitating awkward postures and prolonged stooping and bending can create additional stressors.

Because of the multifactorial nature of work-related musculoskeletal disorders, there are no completely validated models for predicting the risk of injury associated with specific jobs or job tasks. There are no federal standards for the control of work-related musculoskeletal disorders. At the time of this investigation, OSHA had recently published a draft checklist for identifying and evaluating risk factors.[14] The checklist was viewed as a well researched tool which could be used at UCH to help identify problem jobs and tasks that need further investigation. It had been widely distributed and used in a variety of work settings, including a large urban hospital where NIOSH and the facility are working cooperatively to address back injuries associated with patient handling. This checklist, hereafter referred to as the ergonomic checklist, was constructed to identify those combinations of risk factors that occur most frequently in a workplace and are those associated with the highest amount of risk of work-related musculoskeletal injuries and illnesses.

The ergonomic checklist (Attachment A) is divided into three parts to assess: (1) main job duties and risk factors, (2) risk factors for the upper extremity, and (3) risk factors for the back and lower-extremity. Within each of these parts, risk factors are assigned scores that increase with duration of exposure to each risk factor. To use the checklist, each work task or job is evaluated to decide which, if any, risk factors are present and for how long each day a worker is exposed to each risk factor for a given work task. The assigned scores for each combination of risk factor/exposure duration identified are added separately for the upper and lower extremity checklists. The manual handling risk factor table contributes to the assessment of back/lower extremity risk factors but not to the upper extremity. If the composite score of the checklist parts exceeds five, OSHA suggests that a more in-depth worksite analysis is needed to fully determine the hazards and the need to correct them. The goal is to change the job through combinations of engineering or administrative controls in order to reduce the composite score to five or less.

RESULTS

Central Transport Workers

At the time of our visit, there were 35 employees in the Central Transport Department (CT), five of whom were supervisors and dispatchers. As noted in Table 1, the main job duties of the CT workers include three task categories, transferring patients, transferring materials, and locating equipment. Transferring patients takes up 60% of the 8-hour workday.

For most CT employees, the work consists of moving patients between patient rooms or outpatient clinics and diagnostic/treatment centers in the hospital complex. Transfer activities include moving both mobile and bedridden patients from bed to stretcher, bed to wheelchair, and chair to wheelchair. One worker is dispatched for each transport assignment unless the requestor or CT worker thinks a second person is needed. On the patient floors, CT personnel are sometimes assisted with transfers by the nursing staff. Patients are asked to assist with the transfer as much as possible. At present, no slip sheets or transfer devices are used for moves from a bed to a stretcher. A lift and pivot technique is most often used for bed/chair to wheelchair assists. CT workers assess the physical capabilities of patients

by asking patients about the extent to which they can assist with a transfer or by inquiring of floor staff. Wheelchairs and stretchers must be moved over a variety of floor surfaces, such as concrete, linoleum, tile, and carpeting when transporting patients from one location to another.

A secondary duty of the CT workers is to transfer materials, such as laboratory specimens and medical charts, from one location to another. Workers who are assigned this job make several trips an hour through the Medical Arts Building, which is a high-rise tower. Although the specimens are not heavy, the CT personnel use the stairs and may climb up to 10 flights on each run.

Employees interviewed felt that more time than necessary is spent locating wheelchairs and stretchers on the hospital floors in preparation for patient transport. Attempts have been made to address this problem by assigning equipment to specific workers for use throughout the day, but this proved unsuccessful due to schedule delays. When asked about the condition of equipment, one employee noted that equipment condition had recently improved; a number of new wheelchairs and stretchers were purchased and placed into service. Employees believe that defective equipment contributes to injuries.

During the group interview, several workers reported problems controlling equipment on ramps and when moving through doorways, especially when working alone. They also felt that moving heavy patients or simultaneously moving patients and equipment was difficult. Workers tend to help each other informally because requests to the dispatcher for help might be interpreted as "not being able to do the job." Workers were concerned about routes of transport requiring them to take patients outside the building in all types of weather. When asked about particularly difficult transports, employees identified (1) trips to the Magnetic Resonance Imaging lab, which requires an outside trip via an elevator with manual doors, and (2) transfers to the Barrett Center. Employees seemed particularly stressed by the current procedure for transporting deceased patients to the morgue. Although covered on a stretcher, the body is obvious and workers felt that this was upsetting to visitors and patients encountered in hallways. They were also anxious about the downsizing occurring at the hospital, noting that workers in their department were expected to perform the same amount of work although their numbers had decreased. They felt uncertain about their job security.

Risk factors

Tables 2 and 3 illustrate the scoring of the individual risk factors for CT workers identified for the upper and lower extremities through use of the ergonomic checklist. Based on scoring of the ergonomic checklist for CT workers, total scores exceeded five for both upper extremities and trunk/lower extremities. This indicates that CT workers perform tasks that pose a risk for developing musculoskeletal disorders and reflects the need to further investigate those jobs and examine medical incident records to determine the nature and potential for musculoskeletal injuries.

Environmental Services Workers

The Environmental Services (ES) Department employs approximately 150 full-time workers. In addition, 35 temporary workers supplement this staffing level. An outside contractor manages the department. Within the past three years, the size of the department decreased by 40 full-time employees.

ES staff are responsible for cleaning all areas of the hospital, including patient rooms, offices, labs, diagnostic centers, hallways, and visitor areas. They also transport and dispose of trash and medical waste throughout the hospital. The greatest segment of their work involves surface wiping, as noted in Table 4. In specialized areas such as the operating room, work may differ significantly from general patient care areas.

Initial training is provided to new hourly employees

by a management contractor, which is also responsible for reporting, recording, and investigating injuries among employees. One ES services worker on the day shift was observed, videotaped, and interviewed by the NIOSH team. Her assignment on a patient care floor included 3 rooms from which patients had been discharged and 9 rooms where patients were staying. The floor, which was chosen by the UCH safety director, was thought to be representative of other patient care floors. In general, this worker stated that discharge rooms require the most work. If bedside curtains must be changed following a patient with specific infectious diseases, some assistance is provided, otherwise all work was accomplished by the ES worker assigned to the floor. The most physically challenging task identified by this worker was washing the walls. Although a lot of floor-mopping was done, this activity did not seem to present as much ergonomic difficulty. Limited amounts of trash and linen are carried by the ES personnel for short distances for disposal at collection points on the unit.

Risk factors

Tables 5 and 6 present the scoring of the individual risk factors for the ES worker described above. The total score for the lower extremity checklist was 3 and the total score for the upper extremity list was 5. This indicates that ES workers perform tasks that collectively pose a risk for developing upper extremity musculoskeletal disorders. A more in-depth worksite analysis is needed to determine the hazards and needed changes.

Patient Care Service Associates

Patient Care Service Associates (PCSAs) were recently hired in two hospital units. Their training is coordinated by the Nursing Department and includes training in lifting and moving patients. PCSAs are assigned to a single floor and perform multiple tasks, including housekeeping duties, patient transport, distributing dietary trays, and feeding patients. Assignments usually include a minimum of 10 patient rooms. Table 7 illustrates that PCSAs had the greatest number of tasks of all job categories evaluated and that housekeeping duties occupy the majority of their time.

PCSAs have been instructed to do all patient transfers with assistance, but sometimes workers transfer patients alone. No slip sheets or transfer devices were in use. PCSAs are frequently called upon for tasks that require immediate attention. The 3 PCSAs interviewed felt that they have the most extensive patient contact of all employees and often feel quite stressed about accomplishing their assigned duties. They reported morale to be low in many of the units. PCSAs were concerned about being placed at risk for communicable diseases - they often feel uninformed about patients who could be sources of disease transmission.

Risk factors

Tables 8 and 9 illustrate the scoring of the individual risk factors identified for the upper and lower extremities through use of the ergonomic checklist. Total scores for both the upper extremities (8) and lower extremities (6) indicate that PCSAs perform tasks that pose a risk for developing musculoskeletal disorders in both of these areas and that a more in-depth worksite analysis is needed to determine the hazards and needed changes.

DISCUSSION

The results of the ergonomic assessment are consistent with worker reports of physical stresses. They suggest a need for a closer examination of the tasks performed by all three job categories. A comprehensive ergonomic prevention program may be needed. The newest job category, the PCSAs, appears to incorporate tasks with the greatest ergonomic risk for both upper and lower extremity musculoskeletal disorders.

The problems that were identified by the ergonomic assessment do not have simple solutions and may

entail investment involving both human and capital costs. An effective, long-term solution will require a team approach incorporating commitment from employees and management at all levels and in multiple departments. Since many of the jobs involve complex tasks and the jobs change continuously, the optimum approach would be to develop a base of ergonomic knowledge in employees themselves so that employees can improve their working methods and help to identify and implement engineering controls. In addition, work organization factors also need to be evaluated.

Currently, there is an approach to ergonomic problems which is being successfully used in health care settings where patient handling has been a source of significant employee pain and disability.[15] The program is based on establishing employee-management advisor teams (E-MATs) to coordinate and focus the organization on intervention strategies that are effective and economically feasible. The E-MAT model was developed as an alternative to existing safety and health programs found in the health care industry.[15,16] Historically, a safety and health program in this industry was organized around a single, centralized committee of department management representatives with little or no employee input. These management representatives usually had limited knowledge of the engineering, chemical, mechanical, or other special functions of the other represented departments.

The E-MAT approach is now being used to address ergonomic problems in at least six health care facilities that range in size from a 1,800-bed urban hospital to a 100-bed nursing home in a rural community.[17] In each facility, there has been steady progress in prevention activities that is now evident in reduced incidence rates of musculoskeletal disorders.

The E-MAT model calls for the establishment of teams of at least four persons within each distinct work group, consisting of equal representation of employees and management. A large hospital, for example, might have teams for nursing, laboratories, medical records, dietary, and housekeeping, whereas a small nursing home might have teams limited to nursing, dietary, and housekeeping. Committees established as true labor-management partnerships take advantage of the skills, knowledge, motivation, and communication networks already available in the workforce. Because E-MATs are based on employee participation and partnership, they foster a proactive approach to workplace health and safety. E-MATs established in the automotive industry, for example, have been successful in (1) conducting ongoing surveillance of health and safety problems, (2) exploring avenues to abatement of such problems, and (3) identifying control technology and training needs to prevent additional problems. The operating principle of the E-MAT is simple: all safety and health issues raised by a majority of the team must be acted upon by the supervisor.

Evaluation of these efforts will require reliable data on injury and illness as well as a commitment of time and resources to allow E-MAT teams to meet and obtain training. Some means of monitoring musculoskeletal problems (including those without an instantaneous event) which are treated by the hospital's occupational health provider is advisable. Current policies on medical management and return-to-work may require modification and should include the input of E-MAT teams along with health and safety, disability, risk management, and human resources personnel. Psychosocial stressors are also considered part of a comprehensive ergonomics approach. The influences of stressors such as potential downsizing and questions of job security should be considered.

CONCLUSIONS

Workers in the three job categories we evaluated, ES, CT, and PCSAs, may be at risk for developing musculoskeletal disorders affecting the upper extremity. Furthermore, PCSAs and Central Transport workers may also be at risk for lower extremity musculoskeletal disorders. The newest job category, PCSAs, had the highest score for combinations of ergonomic stressors.

Our conclusions are based largely on the observations made by NIOSH staff during one site visit, and on the subjective reports supplied by a small number of workers. The hospital's accident report data also provided evidence of musculoskeletal injuries occurring among the workers in the three job categories that were examined.

RECOMMENDATIONS

1. The hospital's occupational health services provider should develop a means for tracking and evaluating rates of musculoskeletal disorders by department and job category. It may also be beneficial to determine the costs currently associated with these cases. Workers' compensation administrators should be able to provide regular reports of this information in the format that is most useful and meaningful to the employer.

2. The hospital should initiate employee-based programs of intervention by establishing employee-management advisor teams (E-MATs) for ergonomics with the intent of changing the work culture and emphasizing the role of the worker in ergonomic problem-solving. Separate teams for each job category are most appropriate, but since many job duties overlap, a single E-MAT team may be feasible. To be successful, teams must receive management commitment and have true labor involvement. Adequate time for meeting and training must be allocated, and a long-term view of desired results should be taken. Teams should be given responsibility for evaluating potential interventions, including potential costs. A means for follow-up and evaluation of any interventions must be established at the outset.

Proposed activities of the E-MAT teams:

- identifying needs and arranging ergonomics training for the team.
- assessing co-workers knowledge of, and interest in, ergonomics; for example, identification of risk factors, awareness of the need to report injuries, potential solutions or interventions.
- investigating potential interventions such as lifting devices or changes in work practices (i.e., lifting teams) and proposing appropriate interventions to co-workers and management.
- participating in training and education of co-workers, especially regarding interventions
- monitoring implementation of devices and work practice changes as well as reporting, follow-up and evaluation

3. The hospital should form a multi disciplinary team to review the hospital's current medical management, return-to-work, and disability policies for musculoskeletal disorders among workers. Such a team should include occupational health and safety professionals, case managers, the disability manager, and human resources and risk management personnel. There should be collaboration with the E-MAT teams regarding all future policy and procedure changes or development.

4. Hospital administrators, engineers, and architects should find an ongoing means for incorporating the input of the E-MAT ergonomics teams (as well as other health care workers) into long-range renovation and architectural plans. This will help avoid inherent design problems which contribute to injury and illness. This proactive approach to ergonomics allows more effective engineering controls to be "built in" rather than trying to manage inadvertent risk factors which emerge if ergonomics is not incorporated in the design and planning of hospital facilities.

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Table 1

Main Job Duties and Risk Factor Categories
(Central Transportation Workers)

Tasks	Risk Factors , Upper Extremity	Risk Factors, Lower Extremity	% Time
Transfer Patient (TP)	Posture/Force	Lifting	60%
Transfer Materials (TM)	Hand Force	Carrying	25%
Locating Equipment (LE)	None	None	15%

Table 2

Upper Extremity Risk Factors
(Central Transportation Workers)

Risk Factor (Upper)	Tasks	Checklist #	Score
Repetition	---	1-3	0
Hand Force	TP/TM	4,5	3
Awkward Postures	TP/TM	6-10	3
Contact Stress	---	11,12	0
Vibration	---	13,14	0
Environment	---	15,16	0
Control-Pace	TP/TM	17	1
Total Upper Extremity			7

Table 3

Back / Lower Extremity Risk Factors
(Central Transportaation Workers)

Risk Factor(Lower)	Tasks	Checklist #	Score
Awkward Postures	TP	1-8	5
Contact Stress	---	9,10	0
Vibration	---	11	0
Push/Pull	TP	12,13	2
Total Lower Extremity			7
Manual Lifting Part C	PT		9

Table 4

Main Job Duties and Risk Factor Categories
(Environmental Service Workers)

Tasks	Risk Factor Upper	Risk Factor Lower	% Time
Surface Wiping (SW)	Repetition	Squatting	40%
Floor Cleaning (FC)	Force/Repetition	Bending	25%
Bed Making (BM)	Forces/Fingers	Bending	15%
Trash Pickup (TP)	Awkward Postures	Lifting	15%
Positioning Furniture (PF)	Awkward Postures	Push/Pull	5%

Table 5

Upper Extremity Risk Factors
(Environmental Service Workers)

Risk Factor (Upper)	Tasks	Checklist #	Score
Repetition	SW/FC	1-3	2
Hand Force	SW/BM/FC	4,5	0
Awkward Postures	SW/BM/FC/TP	6-10	2
Contact Stress	PF	11,12	0
Vibration	None	13,14	0
Environment	None	15,16	0
Control-Pace	All	17	1
Total Upper Extremity			5

Table 6

Back /Lower Extremity Risk Factors
(Environmental Service Workers)

Risk Factor (Lower)	Tasks	Checklist #	Score
Awkward Postures	SW/BM/FC/	1-8	3
Contact Stress	PF	9,10	0
Vibration	None	11	0
Push/Pull	PF	12,13	0
Total Lower Extremity			3
Manual Lifting Part C	PF		4

Table 7

Main Job Duties and Risk Factor Categories
(Patient Care Service Associates)

Tasks	Risk Factor Upper	Risk Factor Lower	% Time
Surface Wiping (SW)	Repetition/Force	Bending/Squatting	25%
Floor Cleaning (FC)	Forces/Repetition	Back Bending	25%
Bed Making (BM)	Hand Forces	Awkward Postures	15%
Patient Transfers (PT)	Forces/Postures	Lifting/Twisting	15%
Food Tray Handling (FT)	Pinch Forces	None	15%
Trash Pickup (TP)	Awkward Postures	Lifting	5%

Table 8

Upper Extremity Risk Factors
(Patient Care Service Associate)

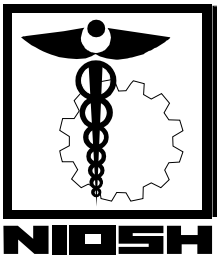
Risk Factor (Upper)	Tasks	Checklist #	Score
Repetition	SW/FC	1-3	1
Hand Force	BM/FT/PT	4,5	3
Awkward Postures	SW/PT/TP	6-10	2
Contact Stress	FT	11,12	1
Vibration	None	13,14	0
Environment	None	15,16	0
Control-Pace	All	17	1
Total Upper Extremity			8

Table 9
Back / Lower Extremity Risk Factors
(Patient Care Service Associates)

Risk Factor (Lower)	Tasks	Checklist #	Score
Awkward Postures	SW/PT	1-8	5
Contact Stress	None	9,10	0
Vibration	None	11	0
Push/Pull	PT	12,13	1
Total Lower Extremity			6

Attachment A

OSHA Draft Ergonomic Checklist
5/18/95



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Safety and health at work for all people
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