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Compliance with Universal Precautions by Health Care Workers in a Rural Community Emergency Room

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**COMPLIANCE WITH UNIVERSAL PRECAUTIONS BY HEALTH CARE
WORKERS IN A RURAL COMMUNITY EMERGENCY ROOM**

by

Jane E. DeVries

**A Thesis
Submitted to the
Faculty of The Graduate College
in partial fulfillment of the
requirements for the
Degree of Master of Arts
Department of Psychology**

**Western Michigan University
Kalamazoo, Michigan
August 1989**

COMPLIANCE WITH UNIVERSAL PRECAUTIONS BY HEALTH CARE
WORKERS IN A RURAL COMMUNITY EMERGENCY ROOM

Jane E. DeVries, M.A.

Western Michigan University, 1989

Performance feedback has been used in various organizations to correct problems in the areas of safety, customer service, absenteeism, and tardiness. The present research examined the effects of performance feedback to increase compliance with universal precautions in an emergency room department. Four subjects (Registered Nurses) were observed for glove wearing in any of six different situations common to the emergency room. These included cleaning instruments, cleaning a laceration, giving an injection, phlebotomy, inserting an intravenous catheter, and obtaining and/or transporting specimens other than blood. A multiple baseline experimental design was employed in this study. Results indicated that performance feedback increased glove wearing in all subjects.

ACKNOWLEDGEMENTS

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Special thanks also goes to my mother, Jean DeVries, for all her support and encouragement every step of the way.

Jane E. DeVries

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INTRODUCTION

Acquired Immune Deficiency Syndrome (AIDS) was recognized in the United States in 1981 (Center for Disease Control, 1981). Where and when the virus first originated is not clear. The first sign of the human immunodeficiency virus (HIV) was found in stored blood in Zaire in 1959 (Brunet & Ancelle, 1985; Center for Disease Control, 1981; Gottlieb et al., 1981; Nahmias et al., 1986). It is thought that the HIV spread through the urban areas of Central Africa in the late 1970s (Quinn, Mann, Curran, & Piot, 1986). The presence of HIV is ten times greater in the urban areas of Zaire than in its rural areas. However, in other rural areas, such as in rural areas of Uganda, the virus has spread rapidly (Serwadda et al., 1985). This suggests that social changes and varying lifestyles may promote the spread of AIDS (Piot et al., 1988).

In the United States HIV was initially found in high percentages in California and New York. In 1982, 71% of all HIV infections were found in these areas. In January, 1988, this rate had decreased to 48% (Gadsby, 1988). According to the Center for Disease Control (CDC), as of December 31, 1988, there were 82,764 cases of AIDS reported in the United States and its territories

("AIDS and Human Immunodeficiency,..." 1989). Of these 82,764 cases, more than 46,000 have been fatal ("AIDS and Human Immunodeficiency,..." 1989). AIDS is spreading rapidly, with the rate doubling every 12 to 14 months. At this rate the number of AIDS cases in the United States will reach 270,000 by 1991 (Center for Disease Control, 1987).

The best way to stabilize the spread of AIDS is to block the mode of transmission. AIDS can be transmitted in a number of ways, which include sexual, parenteral, and maternal-infant routes (Koop, 1988). The differences in the behaviors of the rural Zairians and the rural Ugandans suggest that AIDS transmission may stabilize if behaviors thought to increase its spread are absent (Piot et al., 1988). Individuals who are at high risk of contracting AIDS are those who engage in high risk behaviors, such as, having sex--oral, anal or vaginal--with someone who is infected with the AIDS virus, or sharing drug needles and syringes with an infected person (Koop, 1988). The virus can also be transmitted from the mother to the baby before or during birth. Some of those with hemophilia and others contracted AIDS from receiving blood (Koop, 1988). HIV has been isolated from multiple body substances but has only been found to be transmitted via blood, semen, vaginal secretions, and possibly breast milk (American Hospital Association, 1988). The relative

constancy of the risk groups strongly suggest that other means of contact do not transmit infection (Friedland & Klein, 1986).

Many health care workers in hospital and clinic settings are frequently exposed to body fluid substances thought to transmit AIDS. Even though health care workers have numerous contacts with infected patients, their risk of contracting HIV is low relative to high risk groups such as homosexuals, intravenous drug users, or hemophiliacs. The risk of the patient contracting the disease from the health care worker is even lower (American Hospital Association, 1988; Friedland & Klein, 1986; Public Health Service, 1986). However, there have been reported cases of health care workers developing HIV antibodies after contact with the body fluids of a HIV positive patient (Kelen et al., 1988; "Needlestick transmission of HTLV-III,..." 1984; Update: Human immunodeficiency, 1987). Some of these health care workers contracted the disease via an accidental needlestick; through the spraying of blood in the eyes, mouth, or any mucous membrane; and through handling of blood without preventive garb in the presence of a break in skin integrity ("Recommendations for Prevention,..." 1987).

As of June, 1988, there had been 11 reported cases of HIV in health care workers. These workers had no

identifiable risk factors, and the workers contracted HIV while providing health care ("Apparent transmission,...", 1986; Grint & McEvoy, 1985; Neisson-Vernant, Arif, Mathez, Leibowitch, & Monplaisir, 1986; Oksenhendler, Harzix, LeRoux, Rabian, & Clauvel, 1986; Stricof & Morse, 1986).

In a study of unrecognized HIV infection in emergency department patients, 4% of the patients studied in an inner city emergency department, who showed no risk factors for HIV, were HIV positive (Kelen et al., 1988). Health care workers could not have judged whether the patient was positive or negative for HIV on the basis of apparent risk factors (Kelen et al., 1988).

Health care workers view AIDS as a major risk factor in caring for patients (O'Donnell, O'Donnell, Pleck, Snarey, & Rose, 1987). Their fears are probably exacerbated by the fact that there is no cure for AIDS. The average mortality rate from time of diagnosis is 18-20 months for about 80% of those infected (American Hospital Association, 1988). The occupational risk may be small, but contracting the disease can be deadly.

A career as a health care worker does not have to pose such a great threat because the transmission of HIV is preventable to a large degree by the use of universal precautions (American Hospital Association, 1988; Center for Disease Control, 1987; Public Health Service, 1986).

Universal precautions are preventive barriers, such as gloves, masks, protective eye wear, and gowns which prevent exposure to potentially infected blood and body substances (American Hospital Association, 1988). (See Appendix C for a detailed description of universal precautions as defined by the American Hospital Association). The Occupational and Health Administration expects hospitals to conform to these precautions as part of the hospitals' responsibility to keep the workplace free of recognized hazards. These precautions are to be implemented when caring for any and every patient regardless of apparent risk factor (American Hospital Association, 1988).

Though hospital staff may be aware of the modes of transmission of HIV and other diseases, compliance with universal precautions is inconsistent. It appears that health care workers make subjective decisions about who is and who is not at high risk. In a typical case, for example, a health care worker follows universal precautions when initiating venipuncture for a known IV drug user, but no gloves are worn implementing the same procedure on an 83-year-old female. One cannot tell risk factors in an emergency; therefore, every emergency should be handled with universal precautions, as should any interaction of a health care worker with a patient's body fluids. This not only protects the health care

worker but also protects the patient if the health care worker is positive for HIV (American Hospital Association, 1988).

The use of universal precautions requires a change in behavior on a consistent basis in order to prevent contracting or transmitting the disease. To date, there has been no scientific analysis of the effectiveness of compliance with universal precautions (Rhame & Maki, 1989). The CDC has endorsed the use of universal precautions from a theoretical standpoint but it has never been assessed whether this is the most practical means of protecting health care workers and patients (Rhame & Maki, 1989).

Most of the research on AIDS has been directed at prevention outside the hospital environment, and even more research has been directed toward those who have already contracted the disease. It is important to focus on prevention to stabilize the transmission of HIV (Piot, et al., 1988), reduce the loss of manpower to society, and to reduce hospital costs (American Hospital Association, 1988). Research focusing on prevention and cure is a must in order to gain some control over this deadly disease.

A way to address the area of prevention of AIDS transmission would be to increase the consistent use of universal precautions. One way to do this is to use a

performance feedback procedure. Performance feedback is "information given to individuals about the quality or quantity of their past performance" (Prue & Fairbank, 1981, p.65). This procedure is chosen over others because it is simple to use, inexpensive, and flexible (Fairbank & Prue, 1982). Performance feedback has proven useful in various organizational areas to correct problems in the areas of safety (Chhoker & Wallin, 1984; Sulzer-Azaroff & De Santamaria, 1980), customer service (Brown, Malott, Dillon, & Keeps, 1980), and absenteeism and tardiness (Lamal & Benfield, 1978). Given the success with which performance feedback was used with other problem behaviors, it is plausible that this method may be effective in training adherence to universal precautions.

The purpose of the present study was to assess how the use of performance feedback can increase adherence to universal precautions in a hospital setting. The behaviors observed were "gloves on" or "gloves off" in any of six situations warranting universal precautions. It was expected that performance feedback would increase glove wearing in all of the subjects.

METHOD

Subjects

Four emergency room employees were recruited to participate in the study. Subjects were recruited from a pool of 14 regularly scheduled male and female Emergency Department employees, which include Registered Nurses (RN) and Emergency Medical Technician Specialists (EMT-S).

Only regularly scheduled Emergency Room (ER) employees were included in the selection pool. Four subjects who were willing to participate and did not have overlapping shifts or vacation plans were selected. They were also willing to sign the informed consent form (Appendix A). The subjects were RNs, two working the 10:00 am-8:00 pm shift and two working the 12:00 mn-10:00 am shift. All four subjects were female RNs with a range of nursing experience from 4-35 years. The age range of these subjects was 34-63 years.

Setting

The study took place in the emergency department of a 60-bed hospital located in a rural community. The emergency department averages approximately 40-45

patients in a 24-hour period. It includes a six-bed emergency room and four-bed outpatient clinic. The hospital services 35,000 people in surrounding counties. The majority of the patients seen are receiving some type of financial assistance (medicaid or general assistance) and others have no insurance at all.

Materials

A recording sheet was used to record observations (Appendix D). Other materials included a graph for each individual showing the subject how often they wore gloves in situations where it was warranted (Appendix E). Performance feedback was provided in written form (Appendix F).

Procedure

Due to the nature of the study the individuals were told that they would be observed for behaviors that were related to the care of the emergency room patient. The behaviors were not specified in order to avoid reactivity. The subjects were told that at the project's completion they would be debriefed regarding what behaviors were observed and why they were observed. They were also assured that none of the information gained in the study could affect their jobs in a negative manner. The only supervisory involvement in the study was

obtaining approval from the Nursing Supervisor.

With the exception of the researcher, the observers were not identified to the subjects. However, the subjects were told that co-workers would be observing. The observers were people who could observe the subjects unobtrusively. In addition, the researcher was present on many occasions without observing the behavior; thus, they did not know at what times the researcher was observing their behavior or what behaviors the researcher was monitoring. A minimum of fifteen percent of the time, subjects were observed by two independent observers.

The observers were trained in the following manner:

1. They were told to observe subjects, noting whether gloves were on or off in any of six situations, which included: cleaning instruments, cleaning a laceration, giving an injection, phlebotomy, inserting an intravenous catheter, and obtaining and/or transporting specimens other than blood.

2. They were then instructed to observe the subject's behavior whenever it was possible during the time they were scheduled to work with the subject. Those observers who did not work in the ER observed in the ER as their jobs would allow. All observers, with the exception of the researcher, collected data during working hours so no personal time was required to be

involved in the study.

3. The researcher assessed whether or not the observers were in agreement regarding what behaviors constituted each of the six situations. This was done by having the observer identify and pair each behavior as it occurred in the ER with the definition of that behavior on the recording sheet.

4. The observers were then given a recording sheet. They were instructed to record the subject's initials, the observer's initials, the situation (phlebotomy, cleaning a laceration, and so forth), the occurrence or nonoccurrence of glove-wearing behavior, the date and the time on the recording sheet. A practice session was held with each observer to be sure all observers were filling out the recording sheet according to instructions.

5. It was emphasized to the observers that it was important not to be obvious about observing the subject's behavior in order to avoid contamination of the results. Observers were trained individually in order to avoid being in the hospital when they were off duty.

Once the subjects were chosen, a period of baseline observation ensued. The subjects were observed for a minimum of four data points to establish baseline. Each data point was composed of five to six observations made during one 10-hour shift. The observations were made throughout the 10-hour shift. If less than four

observations were collected in one shift that data was discarded. If more than six data observations were collected the points used were from the beginning of the shift until a total of six observations had been obtained. More than one data point could be collected in one day. For example, if 12 observations were obtained in one day, this would equal two data points. Observations were not carried from one day to the next. Baselines were complete when a minimum of four data points of a stable or decreasing nature were obtained. This was done to be sure no other variables other than performance feedback would affect the results. A multiple baseline design was employed to control for time.

The intervention was performance feedback (independent variable) in the form of a written statement and a graph of the observations made by the researcher. This feedback was presented by the Infection Control Coordinator after she had been instructed by the researcher in how to give performance feedback and to request behavior change on the part of the subject. She was instructed to give the prepared performance feedback statement (Appendix F) to the subject after she read it herself. The researcher recorded the average percentage of the time that the subject wore gloves, out of all the opportunities to wear gloves, in the appropriate space on the performance feedback record prior to giving it to the

Infection Control Coordinator. The Infection Control RN was then told to request behavior change by making a positive statement, such as, "We notice you have been wearing gloves 15% of the time, and we are glad of that. We would like to see you increase your glove wearing and request that you do so in all of the following situations noted on the performance feedback record."

The Infection Control Coordinator was chosen for she is actually in the position of a staff RN. Performance feedback has been most successful when given by the supervisor (Balcazar, Hopkins, & Suarez, 1986), but this may have been perceived as a threat to the ER employees so the Infection Control RN was chosen.

All observers and the Infection Control Coordinator signed the "Statement of Confidentiality Issue" form (Appendix B) before being allowed to participate in the research project.

The feedback was given following baseline and was scheduled every other week after performance feedback was initiated. Included in the feedback were, (a) the number of times gloves were worn out of all opportunities to wear gloves, in the form of a percent; (b) the six situations where gloves should be worn; (c) a request for behavior change; and (d) a graph plotted with the data points, including all data points up to that particular feedback session. Feedback took only five minutes and

was always given on a subject's working day so none of their personal time was used for research. At the project's completion, the subjects were debriefed regarding what behaviors were observed and why they were observed.

RESULTS

Reliability

Two observers collected independent observations simultaneously for 22% of the total number of observations for subject 023, 15% for 045, 19% for 067, and 17% for 089. These observations were compared to establish interobserver reliability. An agreement was scored if both observers recorded the same condition (A-F), the same date, and the same time.

Interobserver agreement was calculated by total agreement. Total agreement is defined as "an index of total agreement describes the extent to which two observers record the same number of occurrences of behavior" (Page & Iwata, 1986, p.107). This was calculated by taking the sum of the number of responses scored by each observer across the session, dividing the smaller number by the larger, then multiplying the quotient by 100. For three subjects the reliability check was 100%. For subject 045, the reliability was 93%.

Glove-Wearing Adherence

The responses measured in this study were whether

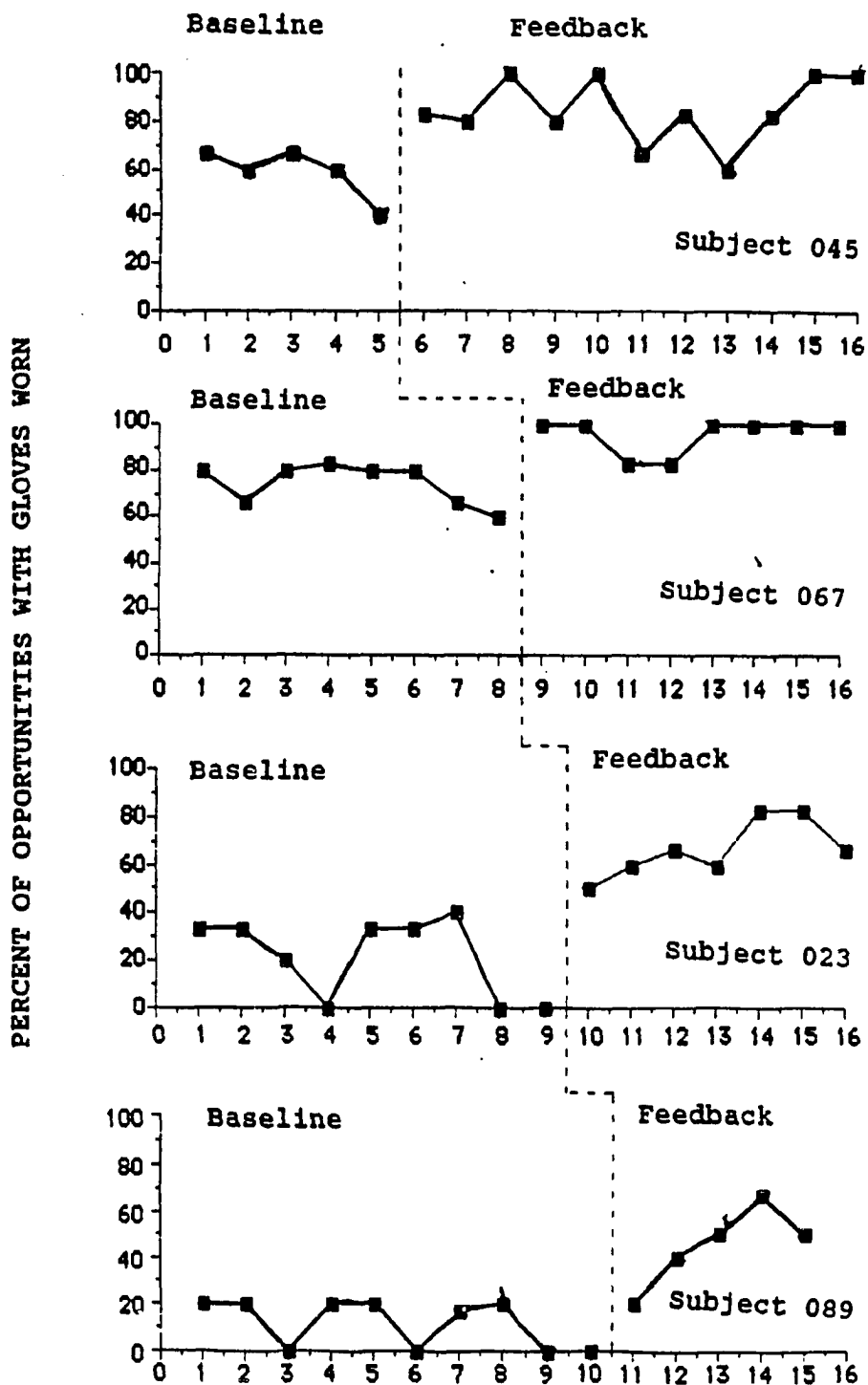


Figure 1. Percent of Times Wearing Gloves per Block of Observations (5-6 opportunities).

gloves were on or off in any of the six previously stated situations. Data points are in percentages, composed of the number of times gloves were worn in an observation period divided by the number of opportunities to wear gloves X 100.

The behavior in question was assessed during baseline conditions. Following baseline the intervention was introduced to one subject at a time until all subjects had benefited from the intervention. The subject's behavior was again assessed and any significant changes from baseline were noted.

All four subjects showed an increase in glove-wearing behavior during and following the intervention (See Figure 1).

Subject 023 wore gloves 17% of all opportunities to wear gloves in the baseline phase. This subject started baseline at 33%, gradually dropping to 0%. The baseline rate then increased to 33%, then 40% but dropped back to 0%. During the intervention, 023 increased to 50% immediately following the first performance feedback session. The subject then went from 60% up to 83%, but the last data point collected was 67%. Following intervention, 023 increased glove wearing to 66%, which is a 49% increase.

Subject 045 averaged 59% during baseline and increased to 85% in the intervention phase, a 26% increase. During

baseline 045 ranged from 60%-67%, but dropped to 40% just prior to the intervention. During the intervention, the first five data points range from 80%-83%, in the middle of the intervention phase the percentages decreased to 60% and 67%, but for the final two data points collected were at 100%.

Subject 067 started with a high baseline average of 74% and increased to 96% in the intervention phase, which was an overall increase of 22%. This subject ranged from 80% in the initial phase and remained between 60% and 80% throughout baseline. During intervention the subject maintained 100% in six of the eight data points, with the low scores of 83%.

Subject 089 wore gloves 12% of the opportunities in the baseline phase and increased the average to 45% following performance feedback, an increase of 33%. This subject started out with 20% and then dropped to 0% which was the stable pattern throughout baseline. During the intervention, the subject started out with 20% but gradually increased to 67%, decreasing to 50% at the end of the study.

Overall, the four subjects averaged 40.5% during baseline and 73% in the intervention phase. The occurrence or nonoccurrence of glove wearing can be broken down into specific number of observations per situation (A-F). This can also be assessed in greater detail by

Table 1
Total Number of Observations per Situation (A-F)
Separated into Baseline and Observation
Phases

Situation	Subjects							
	023		045		067		089	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
A	67	100	40	100	100	100	33	100
B	40	100	100	100	100	100	67	100
C	5	0	0	57	10	67	0	0
D	0	100	67	100	100	100	0	0
E	57	100	67	100	80	93	0	71
F	17	69	50	100	91	100	20	57

Note: Observations are represented in percent form, as the number of observations where gloves were worn out of the total number of observations. Pre represents the baseline phase and Post represents the intervention phase.

examination of observations per situation in the baseline and intervention phases (Table 1). Subject 023 improved glove wearing in all situations, except C. Subject 045 improved in situations C-F, where C showed the least improvement, for gloves were still off 9 out of 23 opportunities. Subject 067 showed improvement in C, E, and F. This subject never had gloves off during baseline in situations A, B, or D. Subject 089 had no observations during baseline in situation D. There was improvement for this subject in all other areas except C, which remained unchanged. From the table it should be noted that the behavior least affected by performance feedback appears to be situation C.

DISCUSSION

Results of this study show that performance feedback by the Infection Control Coordinator resulted in an increase in glove-wearing behavior by ER nurses. Existing literature (Balcazar et al., 1986) states that the most consistent effects of performance feedback are when it is given by the supervisor or manager. No consistent effects have been noted when feedback has been presented by a co-worker (Balcazar, et al., 1986). These results contradict the existing literature in that the feedback was given by the Infection Control RN who was another health care worker who did not work in the ER and was not a supervisor. Perhaps there may have been further increase in glove-wearing behavior had the ER supervisor given the feedback. Furthermore, the Infection Control nurse may hold a "perceived" position of power and influence over the other staff. This is a strong possibility for it is the Infection Control Coordinator's responsibility to see that the infection control standards for the hospital are maintained.

Rhame and Maki (1989) protest that although universal precautions have been instituted to avoid required HIV testing, little has been done to insure that universal precautions were followed by hospital staff. The

current study shows that none of the health care workers wore gloves in all situations warranting gloves. While compliance improved with feedback, subjects did not comply 100% of the time. Perhaps universal precautions are not as practical in reality as they are in theory; therefore, more may be required than performance feedback, as instituted in this study, to gain 100% compliance.

Wearing gloves with every patient was reportedly difficult for all subjects. There were many reasons given for this difficulty. For example, many of the patients were people the nurses had known most of their lives making it seem unrealistic that they would have AIDS. In addition, it was difficult to conceptualize elderly people as capable of transmitting HIV. Most of the employees had never seen anyone with AIDS and believed that to be a problem only in larger cities.

It was also noted that compliance with universal precautions may be impractical due to poor glove quality. Many gloves had holes in them before they were used or were so thin that they were torn while being put on. Furthermore, the fingers adhered so one's hand would not fit inside the glove, and many were so large they were too cumbersome for fine motor use. Research must be done regarding the quality of the gloves themselves health care workers can be expected to use them consis-

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Perhaps manufacturing standards need to be set for gloves so they are more usable.

The behavior with the lowest level of compliance was giving an injection, situation C. The subjects believed this standard to be too rigid of a restriction and therefore did not comply with using universal precautions in that instance. This may be why performance feedback was not as effective in increasing glove wearing in situation C. All subjects also questioned the effectiveness of gloves with injections, phlebotomy, and IV's for it would be very easy for the needle to pierce through the gloves into the skin.

The urgency of care in the ER makes compliance most difficult. If it was difficult to find an acceptable pair of gloves in an emergency situation, the health care worker would give the patient emergency medical care before finding a pair of suitable gloves. This may have been advantageous to the patient but could put the health care worker at risk.

There are several areas that can be addressed in future research. First, the current research could be extended to other components of universal precautions. For example, using protective eyewear, masks, or clothing are other preventive features of universal precautions. Second, the ease of compliance with universal precautions needs to be examined. One might also examine how

performance feedback may be more effective if changes were made in the structure of the environment, for example, gloves were more accessible. Third, the use of performance feedback could be extended to other areas outside of the ER. Finally, the effects of performance feedback over time in maintenance of high compliance with glove wearing could be addressed.

APPENDICES

Appendix A

Subject Informed Consent Form

Informed Consent for Participation in an Investigation

I understand that I am being invited to participate in a research study entitled "Behaviors of health care workers when caring for patients in the Emergency Room". The purpose of this study is to assess various behaviors of health care workers involved in caring for Emergency Room patients. I understand that the exact behaviors to be observed will not be divulged at this time to prevent skewed results. I also understand that after all the data have been obtained I will be debriefed as to the specific nature of the results. This will be done within four weeks of my last feedback session.

As a participant in this study I will be asked to allow one to two researchers to observe and record my behavior while I am on duty in the Emergency Room. Following the initial observation period I will be given feedback on my behavior and will be told what specific behaviors are being observed. A graph of my behavior and a written summary of the data collected will be shown to me regarding the behaviors observed. I will initial the feedback sheet along with the person presenting the feedback. The initials show that the feedback has been reviewed.

I understand that the feedback session will only last five minutes and that I will not be required to be involved in this study on my own time, only during working hours. I will participate in feedback sessions occurring on a weekly basis after the initial observation period.

I may withdraw from the study at any time without penalty.

A potential benefit to participation in the study is to improve quality of patient care in the Emergency Room where I work. Any information obtained will be held in the strictest confidence of the researchers. All researchers will sign a confidentiality form. All data will be coded by numbers with names removed to insure confidentiality. Name and number codings will be destroyed after analysis. All data will be stored in a locked cabinet in the principal investigator's possession. My signature below authorizes the investigators to use the data in scientific presentations and publications provided there is no personal identification.

I understand that any questions or complaints I have now or any time in the future may be addressed to Dr. M. Michele Burnette at 387-4472 or Jane E. DeVries, RN,BS at 637-1466.

My signature below indicates that I have read and understood the above information and have decided to participate in the study. I may keep one copy of this form.

Signature _____

Date _____

Signature of the Investigator _____

Appendix B

Statement of Understanding of Confidentiality

Statement of Understanding of Confidentiality

As a research assistant, I will not divulge any information which comes to me through the carrying out of my assigned duties.

This shall include:

not discussing any subject or any information pertaining to any subject with anyone (even including my own family) who is not directly working with said subject.

not discussing any subject or any information pertaining to any subject in any place where it can be overheard by anyone not directly working with said subject.

not mentioning any subject's name nor acknowledging directly or indirectly, any person named as a subject except to those authorized to have this information.

not describing any behavior which I have observed or disclosing any information learned through my relationship as an assistant of this research, except to those authorized to have this information.

I have read and understood the Michigan Health Code on "Confidentiality" (330.1748 Section 748) and "Privileged Communication" (330.1750).

Date _____

Signature _____

Appendix C

Description of Universal Precautions as Described by the American Hospital Association and the Centers for Disease Control

Description of Universal Precautions as described by the American Hospital Association and the Centers for Disease Control

Since it is often not possible to know when an individual may be infected with the HIV or other blood-borne agents, the consistent use of protective barriers and practices for avoiding exposure to potentially infected blood and body fluids is the most reliable method for minimizing transmission risks. This approach is referred to as "universal precautions" and has been advocated by the Centers for Disease Control (CDC) and is currently mandated by the Occupational Safety and Health Administration (OSHA). Universal precautions emphasize the need for all health care workers to consider all patients as potentially infected with HIV or other blood-borne agents. As such, all health care institutions -- regardless of their AIDS caseload -- should adopt the practice of universal precautions to minimize the risk of transmission of HIV and other blood-borne agents, either from patients to staff or staff to patients.

Experiences with HBV, HIV, and other blood-borne diseases have shown that patients with such infections are often not identifiable when admitted to a health care setting. It has rapidly become the consensus of leaders in infection control that application of the precautions advocated for the prevention of blood-borne diseases to all patients is the most reliable means of preventing transmission. These precautions include the use of gloves when touching potentially infected blood and fluids or mucous membranes. Masks and eye protection should be worn when there is the likelihood of blood or other fluids being splashed onto mucous membranes, and gowns are indicated only when splashing is anticipated. These precautions apply to the management of all patients in both institutional and non-institutional health care settings, including emergency care departments, outpatients clinics, ambulatory care settings, and physicians' and dentists' offices.

Implementation of universal precautions for all patients eliminates the need for the isolation category "Blood and Body Fluid Precautions" as previously recommended by the CDC for patients known or suspected to be infected with the HIV or other blood-borne agents. However, additional isolation precautions may still be necessary for some patients with transmissible infections such as tuberculosis (an airborne disease).

All health care institutions should have policies and procedure that reflect the practice of universal precautions. It is important to provide both initial orientation and continuing education and training to all health care workers on the need for compliance with protective measures. Implementation of these policies and practices should include effective monitoring of compliance, combined with education, counseling, retraining, and if necessary, disciplinary action for health care workers who fail to follow recommended precautions (AHA, 1987-83).

Appendix D
Recording Sheet

Recording Sheet

Date_____

Time_____

Subject_____

Observer_____

Condition I

A-Cleaning instruments

B-Cleaning a laceration

C-Giving an injection

D-Phlebotomy

E-Inserting an

intravenous catheter

F-Obtaining and/or

transporting specimens

other than blood

Condition II

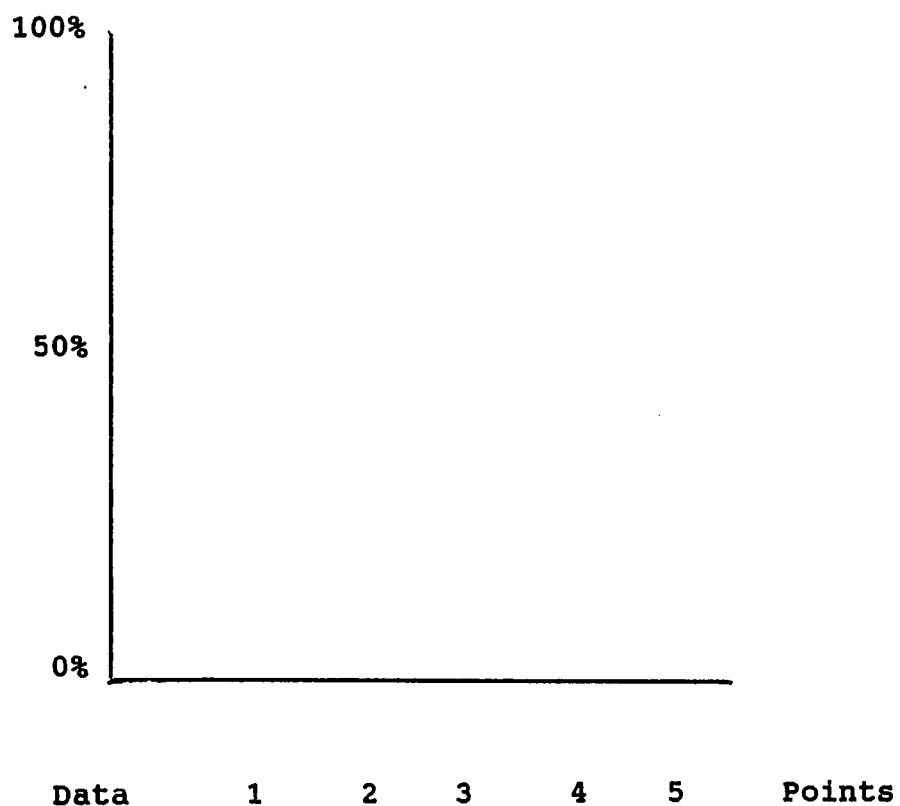
Gloves on or off

Time

_____	A B C D E F	On	or	Off
_____	A B C D E F	On	or	Off
_____	A B C D E F	On	or	Off
_____	A B C D E F	On	or	Off
_____	A B C D E F	On	or	Of
_____	A B C D E F	On	or	Off

Appendix E

Subjects Personal Graph

Subject's Personal Graph

Baseline Graph for Subject _____

or

Postintervention Graph for Subject _____

Appendix F

Performance Feedback Record

Performance Feedback Record

Dear _____,

You have been observed and found to wear gloves ____% of the time when the situation calls for gloves to be worn. Please wear gloves more often when you are involved in any of the following activities; cleaning instruments, cleaning a laceration, giving an injection, inserting an intravenous catheter, phlebotomy, and obtaining or transporting specimens other than blood. This will help prevent the spread of many infections and will also help prevent you from contracting AIDS while providing healthcare.

Thank-you,
Infection Control

BIBLIOGRAPHY

- AIDS and human immunodeficiency virus infection in the United States. (1989). Morbidity and Mortality Weekly Report, 38, 1-38.
- American Hospital Association. (1988). AIDS/HIV Infection: Recommendations for Health Care Practices and Public Policy (Report No. RA644.A25A47). Chicago: American Hospital Association.
- Apparent transmission of human T-lymphotrophic virus type III/lymphadenopathy associated virus from a child to a mother providing health care. (1986). Morbidity and Mortality Weekly Report, 36, 76-79.
- Balcazar, F., Hopkins, B.L., and Suarez, Y. (1986). A critical objective review of performance feedback. Journal of Organizational Behavior Management, 7, 65-89.
- Brown, K.M., Malott, R.W., Dillon, M.J., & Keeps, E.J. (1980). Improving customer service in a large department store through the use of training and feedback. Journal of Organizational Behavior Management, 2, 251-367.
- Brunet, J.B., & Ancelle, R.A. (1985). The international occurrence of acquired immune deficiency syndrome. Annals of Internal Medicine, 103, 670-673.
- Center for Disease Control (1981). Pneumocystis pneumonia. Morbidity and Mortality Weekly Report, 30, 250-255.
- Center for Disease Control (1987). Communication to the American Hospital Association. Chicago: American Hospital Association.
- Chhokar, J.S., & Wallin, J.A. (1984). A field study of the effect of feedback frequency on performance. Journal of Applied Psychology, 3, 524-530.

- Fairbank, J.A., & Prue, D.M. (1982). Developing performance feedback systems. In L. W. Frederiksen (Ed), Handbook of Organizational Behavior Management (pp. 281-299). New York: John Wiley.
- Friedland, G.H., & Klein, R.S. (1986). Transmission of the human immunodeficiency virus. The New England Journal of Medicine, 317, 1125-1135.
- Gadsby, P. (1988, March). AIDS Watch: Mapping the epidemic: Geography as destiny. Discover, 28-31.
- Gottlieb, M.S., Schroff, R., Schanker, H.W., Weissman, J.D., Fan, P.T., Wolf, R.A., and Saxon, A. (1981). Pneumocystis carinii pneumonia and mucosal candidiasis in previously healthy homosexual men. New England Journal of Medicine, 305, 1425-1431.
- Grint, P., & McEvoy, M. (1985). Two associated cases of acquired immunodeficiency syndrome. Public Health Lab Service Community District Report, 42, 4.
- Human immunodeficiency virus infection in the United States: A review of current knowledge. (1987). Morbidity and Mortality Weekly Report, 36, 1-48.
- Kelen, G.D., Fritz, S., Qaqish, B., Brookmeyer, R., Baker, J.L., Kline, R.L., Cuddy, R.M., Goessel, T.K., Floccare, D., Williams, K.A., Sivertson, K.T., Altman, S., & Quinn, T.C. (1988). Unrecognized immunodeficiency virus in emergency department patients. The New England Journal of Medicine, 318, 25, 1645-1650.
- Koop, C.E. (1988). Understanding AIDS: A Message From the Surgeon General. Rockville, MD: U.S. Department of Health and Human Services.
- Lamal, P.A., & Benfield, A. (1978). The effects of self-monitoring on job tardiness and percentage of time spent working. Journal of Organizational Behavior Management, 1, 141-149.
- Nahmias, A.J., Weiss, J., Yao, X., Lee, F., Kodsil, R., Schanfield, M., Matthews, T., Bolognesi, A., Durack, D., Motalsky, A., Kanki, P., and Essex, M. (1986). Evidence for human infection with an HTLV III/LAV-like virus in Central Africa, 1959. Lancet, 3, 1279.

- Needlestick transmission of HTLV-III from a patient infected in Africa. (1984). Lancet, 2, 1376-1377.
- Niesson-Vernant, C., Arif, S., Mathez, D., Leibowitch, J., & Monplaisir, N. (1986). Needlestick HIV seroconversion in a nurse. Lancet, 2, 814.
- O'Donnell, L., O'Donnell, C.R., Pleck, J.H., Snarey, J., & Rose, R.M. (1987). Psychosocial responses of hospital workers to acquired immune deficiency syndrome (AIDS). Journal of Applied Social Psychology, 17, 269-285.
- Oksenhendler, E., Harzix, M., LeRoux J.M., Rabian, C., Clauvel J. (1986). HIV infection with seroconversion after a superficial needlestick injury to the finger. New England Journal of Medicine, 315, 582.
- Page, T.J. & Iwata, B.A. (1986). Interobserver agreement: History, theory, and current methods. In A. Poling & R.W. Fuqua (Eds.), Research Methods in Applied Behavioral Analysis (pp. 99-126). New York: Plenum Press.
- Piot, P., Plummer, F.A., Mhalu, F.S., Lambroy, J-L., Chin, J., & Mann, J.M. (1988). AIDS: An international perspective. Science, 239, 573-579.
- Prue, D.M., & Fairbank, J.A. (1981). Performance feed back in organizational behavior management: A review. Journal of Organizational Behavior Management, 3, 1-16.
- Public Health Service. (1986). Coolfont report: A PHS plan for prevention and control of AIDS and the AIDS virus. Public Health Reports, 101, 341-348.
- Quinn, T.C., Mann, J.M., Curran, J.W., & Piot, P. (1986). AIDS in Africa: An epidemiological paradigm. Science, 234, 955.
- Recommandations for prevention of HIV transmission in health care settings. (1987). Morbidity and Mortality Weekly Report, 36(Suppl. 2s), 3-5.
- Rhame, F.S., & Maki, D.G. (1989). The case for wider use of testing for HIV infection. New England Journal of Medicine, 320, 1248-1254.

- Serwadda, D., Sewankambo, N.K., Carswell, J.W., Bayley, A.C., Tedder, R.S., Weiss, R.A., Mugerwa, R.D., Lwegaba, A., Kirya, G.B., Downing, R.G., Clayden, S.A., & Dalglish, A.G. (1985). Slim disease: A new disease in Uganda and its association with HTLV-III infection. Lancet, 2, 849.
- Stricof, R.L., & Morse, D.L. (1986). HTLV-III/LAV seroconversion following a deep intramuscular needlestick injury. New England Journal of Medicine, 314, 1115.
- Sulzer-Azaroff, B., & De Santamaria, M.C. (1980). Industrial safety hazard reduction through performance feedback. Journal of Applied Behavior Analysis, 13, 287-295.
- Update: Human immunodeficiency virus infections in health care workers exposed to blood of infected patients. Morbidity and Mortality Weekly Report, 36, 285-288.