

Increasing Direct Care Staff Compliance to Program
Implementation by Providing Supervisors with
Prescriptive Checklists

by

Jennifer Lattimore
B. A., Mercer University, 1975

Submitted to the Department of
Human Development and Family Life
and the Faculty of the Graduate
School of the University of
Kansas, in partial fulfillment of
the requirements for the degree of
Master of Arts.

Professor in Charge

Committee Members

For the Department

ACKNOWLEDGEMENTS

I am extremely grateful for the guidance and support in conducting this research provided by James E. Favell, the editorial advice given patiently and repeatedly by Judith E. Favell and Marion O'Brien, and the advice on the interpretation of the results from Todd R. Risley. I would also like to thank Meda Smith for clerical assistance on the initial manuscript and Barbara J. Haile for assistance and instruction on the final manuscript preparation. Frankie Jones should be credited with providing morale support and Micheal L. Jones was responsible for the adverse coercion he deemed necessary for the completion of this manuscript. Finally, I want to express special thanks to Terry Stephens and the Physical Therapy Department staff, and Dr. J. Iverson Riddle for encouragement, cooperation and support of research efforts at Western Carolina Center. This research was partially supported by NICHD grant # 10853.

ABSTRACT

Effective treatment programs for multi-handicapped mentally retarded persons may require consistent compliance to program implementation. Traditional methods used to increase direct care staff compliance to treatment programs in residential facilities are often ineffective. This study investigated the effects of workshops and providing direct care staff supervisors with a training and management tool, prescriptive checklists, on increasing compliance by direct care staff to 14 individual client physical therapy body positioning prescriptions. Scores on a posttest in the workshop suggested that supervisory and direct care staff understood the principles of body positioning; however, increased compliance was not observed until the introduction of the supervisors' checklist, which resulted in a mean increase of 28% in compliance across all clients. This study confirms previous research indicating that workshop training is an ineffective method of increasing direct care staff compliance to treatment programs and that providing direct care staff supervisors with a training and management tool is an effective alternative.

Increasing Direct Care Staff Compliance to Program
Implementation by Providing Supervisors with
Prescriptive Checklists

Although litigation has firmly established the right to treatment and education for multi-handicapped individuals in institutional settings (e.g., Wyatt v. Stickney, 1972; MARC v. Maryland, 1974), more recently emphasis has been placed on the right to effective treatment (Wildgen & Risley, 1981). Ultimately the professional who prescribes treatment must assume responsibility for evaluating treatment effectiveness. However, as noted by Mayo (1978), it is necessary to determine the consistency with which treatment is carried out in order to adequately assess the effectiveness of the treatment.

Though many effective treatment programs have been demonstrated (cf. Journal of Applied Behavior Analysis, 1968 to present), experimental demonstration of effective treatment is quite different from adapting treatment to consistent program implementation (Balthazar, 1972). The consistency of program implementation in mental retardation facilities has been found to be low (Bible & Sneed, 1976; Blindert & Lawrence, 1977). Marshall and Marks (1981) suggest that a technology of service delivery is needed for improving the consistency in program implementation.

Some investigators have attempted to use traditional management procedures such as memoranda from administrators (Quilitch, 1975), staff inservice training programs (Quilitch, 1975; Blindert &

Lawrence, 1977), and threats to fire staff (Pierce & Risley, 1974) to improve consistency in program implementation, but have found these methods ineffective. Achieving consistency is complicated by the fact that frequently staff who implement programs are not administratively answerable to the professionals (e.g., physical therapists, psychologists, etc.) who prescribe them.

Two existing areas of research appear to be applicable to improving compliance to program implementation in mental retardation facilities: organizational behavior management and patient compliance to medical regimens. The organizational behavioral management literature (e.g., Journal of Organizational Behavior Management) identifies components of effective staff management, while the literature on patient compliance provides the professional who lacks administrative control guidelines for developing prescriptions for obtaining maximal compliance. Thus, an examination of both sources is relevant to training staff, implementing treatment programs, and maintaining compliance to program prescriptions.

Much of the service delivery in mental retardation facilities relies on paraprofessionals who have relatively little formal education and minimal training relevant to prescribed services. Thus, the professional prescribing treatment is initially faced with how most effectively to train staff in needed skills. Inservice training in classroom settings may include lectures (Gardner, 1972), audiovisual presentations (Quilitch, 1975), and roleplaying (Gardner, 1972); none of these methods has been shown to affect program implementation even

when program skills and proficiency on paper and pencil tests are demonstrated in the classroom (Gardner, 1972). These findings are consistent with the conclusions reached by Dunbar and Agras (1980) from their review of the research on the effects of patient education on compliance with therapeutic programs. Dunbar and Agras maintain that education beyond that which is necessary to ensure memory and comprehension may be counter productive (i.e., may result in decreased compliance to prescription).

Instruction necessary for program implementation, with supervision of implementation, such as scheduling and feedback (Quilitch, 1975), inservice training and supervisor feedback (Fabry & Reid, 1978; Montegar, Reid, Madsen, & Ewell, 1977), and public notices and tokens (Pommer & Streedbeck, 1974), has been shown effective in training staff on new program responsibilities but has been applied in these studies at the direct care staff level with the active assistance of the direct care staff supervisors. The professional attempting to gain compliance to a treatment program may not be able to obtain the necessary cooperation of the direct care staff supervisors. Dunbar and Agras (1980) also recommend using concise instruction and supplying feedback on compliance to therapeutic regimens but stress that the schedule of implementation should not be disruptive to other routine activities.

A wide array of contingencies for increasing or maintaining program implementation has been identified for direct care staff. These include money (Pommer & Streedbeck, 1974; Patterson, Griffin, & Panyan, 1976), trading stamps (Bricker, Morgan, & Grabowski, 1972;

Hollander & Plutchik, 1972; Hollander, Plutchik, & Horner, 1973), and preferred days off (Iwata, Bailey, Brown, Foshee, & Alpern, 1976). However, professionals may be limited, either economically or administratively, to using low cost readily available contingencies such as praise (Brown, Willis, & Reid, 1977; Montegar, Reid, Madsen, & Ewell, 1977), publicly posted feedback (Panyan, Boozer, & Morris, 1970; Welsch, Ludwig, Radicker, & Krapfl, 1973; Kreitner, Reif, & Morris, 1977) and self-recording (Burg, Reid, & Lattimore, 1980). Furthermore, contingencies have generally been applied to direct care staff rather than at the supervisory level.

The literature on compliance to therapeutic regimens has largely concentrated on initiating or increasing compliance with little attention given to maintaining compliance, which may be due to the relative newness of this area of research (Dunbar & Agras, 1980), or the expense of long-term studies of compliance. Dunbar and Agras summarize their review of research related to maintaining compliance to prescriptions with two conclusions: (1) compliance to prescription declines over time, and (2) the effects of an intervention to improve compliance have not been shown to maintain after the intervention is withdrawn. Therefore it may be necessary for the professional to maintain an active intervention as long as treatment is prescribed.

Interventions in previous research have been directed at the caregiver. For the professional responsible for the implementation and maintenance of therapeutic regimens across a large number of separately supervised caregivers, intervention at the caregiver level may be a

difficult if not impossible undertaking for a number of reasons. First, the cost to the professional in terms of the time needed to train each group of caregivers may be unrealistic. Secondly, the professional may be unable to obtain the necessary cooperation of direct care staff supervisors in order to intervene. Finally, intervention by an outside administrator may result in a conflict in supervision or, worse, in the deterioration of some other component of service delivery for which the professional is not responsible due to circumvention of normal supervisory channels. An alternative approach to increasing compliance to therapeutic regimens is to intervene at the supervisory level rather than with direct care staff. Intervention at the supervisory level would presumably be more cost efficient for the professional, provide for flexibility in program implementation across supervisory groups, and transfer the day-to-day responsibility for training and monitoring program implementation to the direct care supervisors.

An important dimension of physical therapy services involves body positioning of non-ambulatory clients. For example, body positioning has been used as a corrective and preventative treatment for contractures and deformities resulting from abnormal tonic reflexes, abnormal muscular tone, and the pull of gravity (Finnie, 1975; Bobath & Bobath, 1972). Since a large portion of treatment is not provided by physical therapists but by caregivers during routine care (Mayo, 1978), compliance to physical therapy programs by direct care staff in mental retardation facilities must be a central consideration to program development by physical therapists.

This study assessed compliance to physical therapy body positioning prescriptions by direct care staff in an ICF/MR certified and AC/MRDD accredited mental retardation facility. Two interventions were examined for their effects on compliance to therapeutic regimens by direct care staff. The first intervention consisted of a typical approach taken by professionals in institutional settings: workshop training of caregiver and supervisory staff. In the second intervention supervisors were provided with a training and management tool, prescriptive checklists, and the effects on direct care staff compliance to physical therapy regimens was measured.

METHOD

Subjects and Setting

Fourteen clients, 13 males and 1 female, ranging in age from 6 to 27 (\bar{X} age = 18), were selected to participate in this study based on their identification by the physical therapist as needing specialized positioning and their limited ability to change positions independently. The clients records indicated that each was either severely or profoundly mentally retarded and had multiple sensory and motor handicaps including hearing and vision impairments, spasticity, spinal and bone deformities, contractures, and seizure disorders (Appendix A shows individual client characteristics). All clients were nonambulatory and nonverbal.

The clients lived within one of three wards in the nonambulatory unit of a large mental retardation facility. Seven clients, Group A,

lived in the same ward and the other seven, Group B, lived in one of two smaller wards in an adjacent supervisory area within the same administrative unit.

A total of ten direct care staff were involved in the investigation. Staff-to-client ratios were the same for both groups of clients (5 staff to 20 clients), with the exception of supervisory staff. Group B had two supervisors (one for each ward).

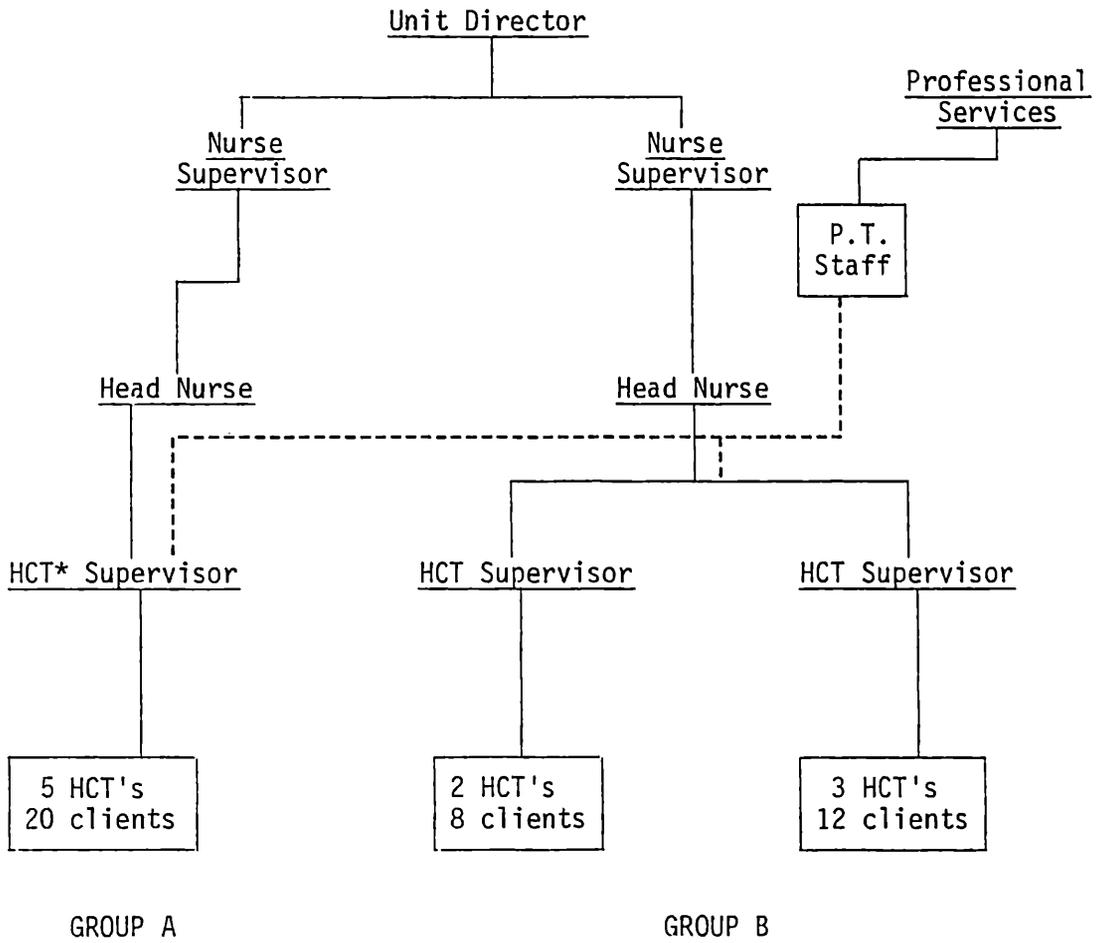
Each group of direct care staff was supervised by Health Care Technician Supervisors under the immediate supervision of a "Head Nurse". The nurses were in turn responsible to one of two "Nurse Supervisors" directly under the Unit Director (Figure 1 shows the table of organization).

Materials

A prescriptive checklist was developed on the basis of the Physical Therapist's recommendations, for use as a measure of degree to which subjects were correctly positioned. The checklists (one for each group of seven clients) contained a list of corrective techniques for specific postural problems (e.g., flexed arms and legs, scoliosis, legs pulled to one side, and extension) within three general positioning categories: lying (supine or prone), side-lying, and sitting. Beside the list of corrective techniques were seven columns, one identified for each client. Those techniques determined by the Physical Therapist as not applicable to a particular client were indicated on the checklist by blacking out the cell

Figure 1. Table of organization for two separate supervisory areas under the same Unit Director.

Table of Organization for Service Delivery



_____ Administrative

----- Consultative

* H e a l t h C a r e T e c h n i c i a n

corresponding to the technique for that client on the checklist (see Figures 2a and 2b).

Recording Procedures and Reliability

All observations were conducted between 8:00 a.m. and 3:30 p.m., Monday through Friday. An observation consisted of a trained observer determining the clients' position (i.e., back-lying or stomach-lying, side-lying, or sitting) and scoring each dimension of the position with either a "+" (Yes), a "-" (No), or an "NA" (Not Applicable) according to the positioning checklist. Observations were made within the clients' ward (livingroom or bedroom), diningroom, or hallway. Clients were not observed during training or treatment sessions (e.g., education or physical therapy) or while engaged in basic care activities (e.g., diapering, bathing, feeding). Clients were rated in the order in which they were located. Each checklist took approximately three minutes to complete.

Observations were conducted four times during each day. Approximately one check was randomly scheduled during each two hours to prevent staff from positioning clients just prior to the checks. This frequency of checks was based on the minimal number of times direct care staff would be expected to position clients across the day. A long standing policy in the institution maintained that direct care staff were to re-position clients every two hours to prevent decubitus ulcers from developing.

A percent correct measure was calculated for each clients' position, for each observation by summing the total correct aspects of a

Figure 2a and 2b. The positioning checklist contains each dimension on which clients were scored either "+" (Yes), "-" (No), or "NA" (Not Applicable) on the left hand side of the pages. Reliability on each dimension of positioning across clients is presented on the far right hand side of the checklist.

POSITIONING

Instructions: Observe client and select applicable position to rate.

Observer: _____ Date: _____

Rel. _____

Cottage: _____

Start time: _____ Stop time: _____

Ratine: + = Yes
 - = No
 NA = Not Applicable

*Reliability

	Client's initials		*Reliability		
	TB	MF	Baseline	Post treatment	Overall
I. Back-lying (supine) or stomach-lying (prone):					
Did caregiver ensure that:					
a. client's head, neck, and trunk form a straight line by using equipment (sandbags, pillow, etc.) as needed?			87	89	88
b. client's legs are together with toes and knees facing forward by using equipment as needed?			91	83	88
If client has <u>windblown</u> legs (legs fall to one side), did caregiver ensure that:					
a. client's knees are supported on sides and underneath to prevent excess pressure?			92	78	86
b. a small pillow or towel is placed between the knees to prevent excess pressure?			54	86	67
If client has <u>scoliosis</u> (curvature of the spine), did caregiver ensure that:					
a. client is supported by pillow or sandbags against the hump of the curve and if necessary, under the arm and against the hip on the opposite side?			83	92	87
If client has <u>flexed arms and/or legs</u> , did caregiver ensure that:					
a. client's arms and/or legs are extended to the limit of ROM, with pillow and/or towels used to hold limbs in an extended position?			75	--	75
II. Side-lying					
Did caregiver ensure that:					
a. client's head is supported by a pillow?			100	83	92
b. client's head, neck, and trunk form a straight line using a pillow if necessary?			100	67	85
c. if possible, the top arm is flexed, brought forward, and supported by a pillow?			100	83	92
d. the client's bottom leg is straight with knees and toes forward (if possible) and the top leg flexed, brought forward and supported by a pillow?			71	83	77

*reliability on each position dimension is summarized across Groups A and B.

POSITIONING (continued)

	TB	MF
II. <u>Side-lying</u> (continued)		
If client has <u>windblown legs</u> , did caregiver ensure that:		
a. client is placed on side opposite to that on which legs are pulled?		
b. client has a pillow under and between knees to prevent the pull of gravity from being too strong?		
If client has <u>scoliosis</u> , did caregiver ensure that:		
a. client is placed on the hump side?		
If client assumes <u>extension</u> posture, did caregiver:		
a. position with head and shoulders forward?		
b. flex client's legs at hips and knees?		
III. <u>Sitting</u>		
Did caregiver ensure that the client:		
a. is in his or her own chair?		
b. has hips and knees flexed at right angles?		
c. has lower back against the back of the chair?		
d. has feet flat on foot support (if possible)?		
e. has seat belt fastened tightly, low across lap?		
f. has all supportive belts fastened?		
	+ 's	Total rated
	%	

Reliability

	Baseline	Post treatment	Overall
	100	100	100
	100	100	100
	100	100	100
	100	100	100
	100	100	100
	100	100	100
*	--	0	0
*	--	0	0
	100	100	100
	71	85	76
	91	90	91
	56	93	67
	82	85	83
	85	90	87
	83	87	85

Across dimensions.

COMMENTS: _____

*Observed once after baseline (applicable to 3 out of 14 clients).

position and dividing this by the total possible correct. Overall daily percent correct positioning was calculated by adding the total correct positioning aspects on all observations conducted that day and dividing by the total possible correct aspects.

Fifty percent of the observations were conducted by two physical therapists, one primary observer for each group of clients. Two licensed physical therapy assistants and two research assistants (including the first author) conducted the remaining observations and acted as reliability observers. Although there were no totally naive observers, one of the reliability observers was unaware of when treatment was conducted and another was naive to the research question.

Observer training was conducted prior to baseline in the late afternoon (i.e., on a different shift) to reduce possible staff reactivity to the observers. Observer training consisted of the primary observer identifying each client on the checklist and briefly reviewing the applicable techniques for proper positioning (a detailed description of observer instructions is contained in Appendix B). Prescribed positioning techniques applied either incorrectly or incompletely were rated as not having been applied (i.e., "No").

Reliability between two independent observers was calculated by summing the total cells in agreement and dividing this by the total cells scored by either observer. Reliability was computed on occurrence data only (i.e., when one or both observers scored an item "+" or "-" on the checklist) due to the predominance of non-occurrences during baseline.

A total of 23 reliability checks were conducted: nine during baseline and six following treatment for Group A, four during baseline and four following treatment for Group B. Reliability per observation, summarized across clients and positions, ranged from 70 to 95% ($\bar{X} = 84\%$) for Group A and for Group B reliability ranged from 69 to 100% ($\bar{X} = 87\%$). Overall reliability per client (across positions and conditions) ranged from 75 to 91% ($\bar{X} = 84\%$) for Group A and from 70 to 94% ($\bar{X} = 87\%$) for Group B. Reliability averaged across both Group A and B was 83% during baseline and 87% after treatment. Overall reliability across conditions and clients ranged from 0 to 100% on specific position dimensions with a mean of 85% (the reliability for each dimension of each position is contained on Figures 2a and 2b). Some variability in reliability may be accounted for due to the low frequency of occurrence. In both instances of 0% reliability the position was only observed once (i.e., one disagreement).

Procedure

A multiple baseline design across two supervisory areas was employed to measure the effect of a workshop and monitoring the use of a checklist by supervisors on compliance to positioning prescriptions by direct care staff. Observations were conducted as described above throughout each condition in the study.

Baseline. When questioned by direct care staff about the purpose of the checks, the observers informed staff that they were trying to gather information on how well clients were positioned.

No feedback was given regarding the content of the checks. When specific questions were asked about how to position a particular client, staff were either referred to the physical therapist or the physical therapist would answer the question after completing a check.

Workshop. Prior to baseline, the slide show portion of the workshop was shown to the Unit Director, the two Nurse Supervisors, the two Head Nurses and the three Health Care Technician Supervisors for an informal validation of the need for proper positioning of clients by direct care staff. All supervisory staff agreed on the importance of proper positioning and the usefulness of the workshop as a method of teaching these skills to direct care staff.

The Director of the Physical Therapy Department felt that the ongoing method of conducting on-site inservice training on specific client positioning needs, as requested by direct care staff supervisors, was both costly and ineffective. She developed a workshop intended to improve client positioning by providing direct care staff and their supervisors with uniform training on general principles of proper positioning. Since all staff were required to attend, the workshop provided a basis for accountability (i.e., all staff received equal and complete training). Additionally, the workshop allowed for training a large number of staff at one time and could be conducted by a paraprofessional -- presumably an advantage in terms of efficiency.

The workshop contained four primary elements: a slide show, a list of positioning principles, a question and answer session, and a

posttest. The slide show was used to demonstrate basic principles of positioning, contrasting good positions with poor positions while sitting, lying, and side-lying. Examples of positioning techniques were shown across basic problem areas (i.e., flexed arms and legs, scoliosis, windblown legs, and extension postures) using various support equipment (wheelchairs, bean bag chairs, mats, and beds). All staff were given a handout outlining positioning principles demonstrated in the slide show and were encouraged to ask questions. A posttest based on the basic principles shown in the slide show and outlined in the handout was given to all staff. In order to complete the workshop, staff were required to pass the posttest with a score no lower than 70%. Staff making a score of 70% or less were required to repeat the workshop until the criterion was met. A copy of the list of positioning principles and posttest is contained in Appendix C.

Workshops were conducted at the end of the shift on day 7 for Group A and day 8 for Group B. A second workshop was conducted on day 12 for any staff who needed to repeat the workshop or who had missed the first workshop. Of the 16 staff involved in this study (supervisory and direct care), only one person was required to repeat the workshop and the second posttest was completed with a score of 100% (a summary of test results is contained in Table 1).

Supervisors' Checklist. Prior to treatment the unit director was shown the results of baseline and the workshops. She was also shown the checklists and her approval was obtained for the treatment portion of this study.

Table 1

Positioning In-service Training:
Post-test Result for Staff in Positioning Study

	<u>Test Scores</u>	
	<u>Group A</u>	<u>Group B</u>
Nurse Supervisor	100	*
Head Nurse	97	85
Health Care Technician Supervisor	85	100/100**
Health Care Technician 1	94	94
2	82	79
3	94	88
4	79	97
5	85	94
Mean test scores	90	92

* The Nurse Supervisor for Group B did not attend the positioning workshop.

** (1) Scores for Health Care Technician Supervisor in both cottages for Group B (see Table of Organization for service delivery).

(2) One of the Health Care Technician Supervisors failed the first post-test but completed the second with a score of 100 percent.

On day 31, the Health Care Technician Supervisor, Head Nurse and Nurse Supervisor for Group A, were shown the results of baseline and the workshop. The individualized prescriptive checklist was offered for use as a guide to individualized client positioning. It was suggested that supervisory staff use the checklist to evaluate positioning of clients by direct care staff. The physical therapist reviewed the rating of positions with the checklist until supervisory staff ratings were in agreement with the therapist. Supervisors were encouraged to contact the therapist with questions regarding use of the checklist.

On day 41, the same procedure used with Group A was repeated with Group B. However, the Head Nurse for this group and a Health Care Technician Supervisor for one of the two wards were not present during the initial data presentation and checklist training which necessitated conducting a second session on day 53 for them.

Although a schedule of one check per day was recommended, supervisors were encouraged to work the checks into their own particular schedule of monitoring direct care staff performance. Although feedback was suggested, no instructions were given on how or when to give direct care staff feedback. Additionally, supervisory staff were asked to turn in their completed checks to the Physical Therapy Department.

In summary, supervisors reviewed the results of Physical Therapy checks, were given copies of the checklist, were trained in how to use the checklist and were requested to send their completed checks

to the Physical Therapy Department. There was no feedback given to the supervisors on either their use of the checklist or the results of the investigators' observations.

Based on checklists completed by supervisors and sent to the Physical Therapy Department, supervisors for Group A conducted an average of nine checks per week and supervisors for Group B conducted an average of six checks per week. Supervisors for both Groups A and B initiated use of the checklist on the second day after checklist training.

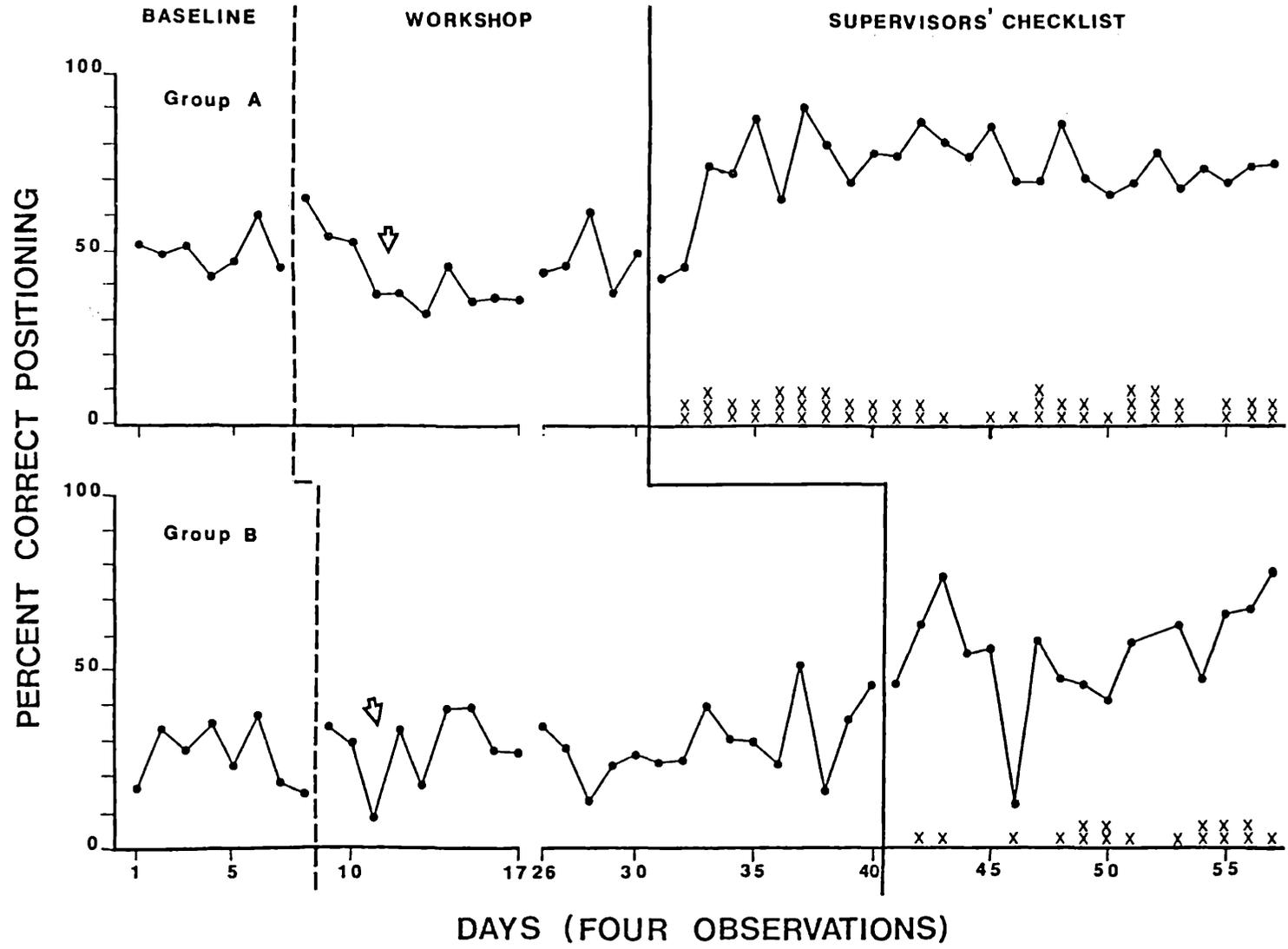
Consumer Satisfaction

A questionnaire was distributed to supervisory staff at the completion of this study to assess the supervisors' overall satisfaction in knowledge of proper positioning techniques, the present level of proper client positioning, use of the checklist, and the need for feedback on positioning from the Physical Therapy Department (a copy of the questionnaire is contained in Appendix D).

RESULTS

The effects of the workshops and the supervisors' checklists on the daily mean percent correct positioning observed are shown in Figure 3. Examination of the workshop condition shows little change from baseline. For Group A, the mean correct positioning went from 49% during baseline to 45% during the workshop condition. Group B went from a mean of 27% to 29%. The break in the abscissa, shown

Figure 3. The percent correct positioning observed for Group A and B across days. Four observations were conducted each week-day. The number of checklists turned into the Physical Therapy Department during the supervisors' checklist condition is indicated for Group A and B on the abscissa.



in Figure 3 represents 8 weekdays in which observations were suspended due to observer absences.

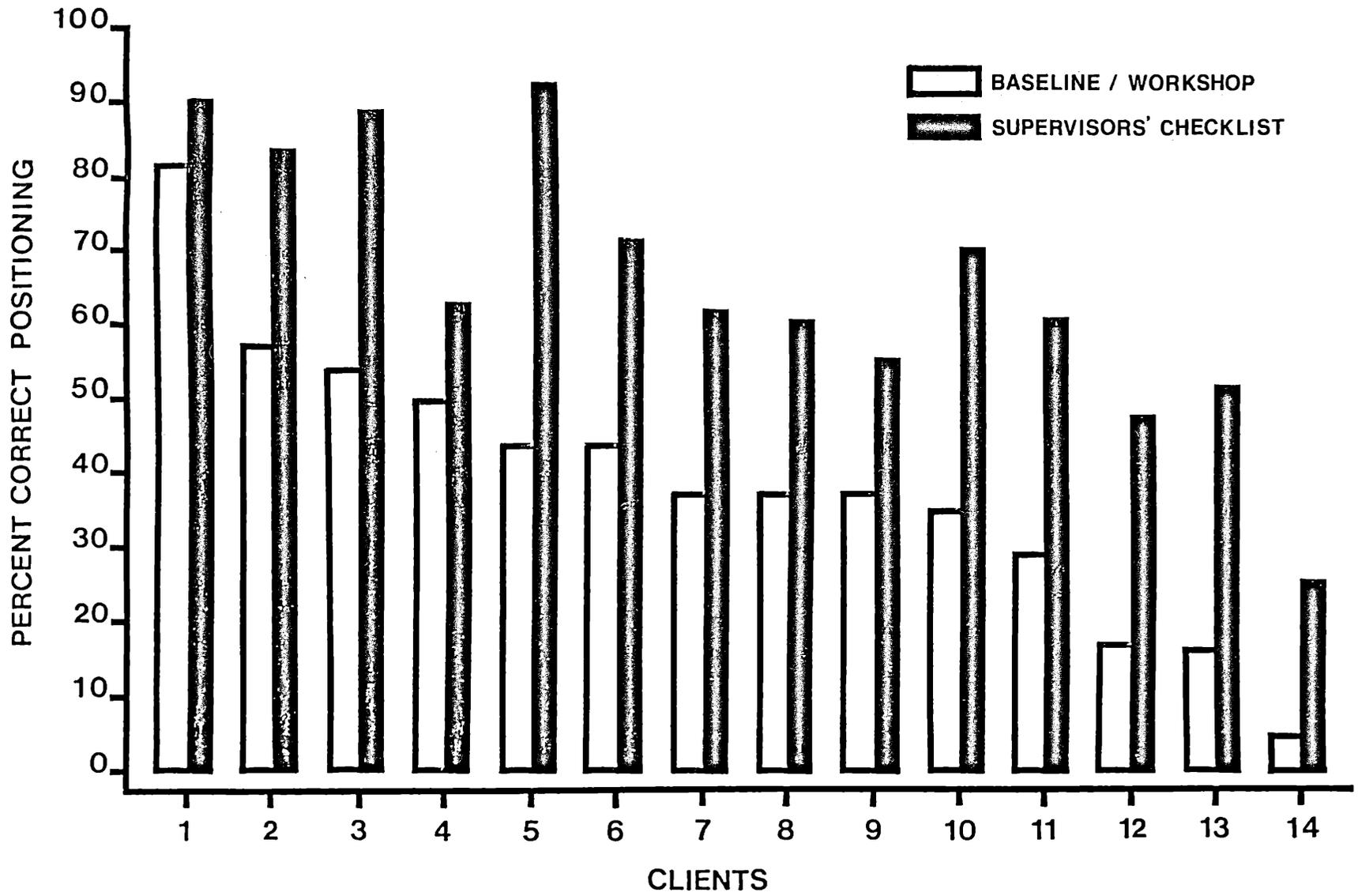
Implementation of the supervisors' checklists resulted in an increase in the condition mean of 30 percentage points for Group A and 28 percentage points for Group B. The mean percent correct positioning during the supervisors' checklist condition was 75% and 57% for Group A and B respectively.

The mean percent correct positioning for each client before and after implementation of the checklists is displayed in Figure 4. Figure 4 shows that correct positioning increased across all clients, from 9 to 48 percentage points. The mean percentage point increase across all clients was 28. One subject was excluded from the last 12 days of treatment due to a transfer.

Consumer Satisfaction Survey

Five out of the seven supervisory staff completed the questionnaire distributed to assess satisfaction with use of the checklist. One supervisor in Group B retired prior to the distribution of the questionnaire. The other supervisor, in Group A, had not conducted any checks. Responsibility for using the checklist had been formally divided between the other two supervisors in Group A as they felt it best reflected their specific supervisory structure. Only one supervisor stated that conducting checks took a significant amount of time away from other responsibilities. All five supervisors, however, stated that continued use of the checklist was the easiest and least time consuming method of maintaining proper client

Figure 4. The percent correct positioning observed across each client. Clients are listed in order of the percent correct positioning observed in baseline and workshop conditions with the highest to lowest percent correct listed from left to right.



positioning. Four out of the five supervisors felt that client positioning could be improved and that feedback from the Physical Therapy Department was needed. A complete summary of responses to the questionnaire is contained in Appendix D.

DISCUSSION

Professionals in an institutional setting often respond to a lack of program compliance by assuming that program implementors lack sufficient training. Workshops are particularly appealing in that a large amount of information may be presented simultaneously to a large group of staff and the comprehension of the material tested with exam. Unfortunately, the assumption that paper and pencil proficiency assures proficiency in application is not borne out (Gardner, 1974). It may be that failure is due to a lack of consequence in application (Ayllon & Azrin, 1968; Quilitch, 1975). Workshops are clearly insufficient for producing consistent compliance in program implementation.

In the present study, an assumption by supervisory staff that a workshop on positioning would lead to increased compliance to positioning prescriptions was suggested by the informal validation of the workshop usefulness. The persistence of this assumption was observed in requests for repeat workshops by supervisors. These requests were made informally during the review of the baseline and workshop data, at the beginning of the supervisors' checklist condition, and formally in response to the Supervisors' Questionnaire.

If administrators were held accountable for demonstrations of effectiveness in staff training and management procedures, as suggested by Quilitch (1975), assumptions of effectiveness might be replaced with measures of service delivery.

One rationale frequently used to justify workshops is the need for disseminating a large amount of instructional information. Although the instructional effects of the workshops on the supervisors' checklist condition cannot be assessed in this study, our informal observations lead us to doubt the effectiveness of workshops for presenting instructional information for application in individual treatment programs. Inappropriate or nonfunctional use of positioning aids (e.g., sandbags, pillows, towels) immediately following the workshop was anecdotally reported by the observers, suggesting that the concise and specific nature of the instruction contained in the prescriptive checklist was necessary.

Although the accuracy of the supervisors' data was not addressed since the supervisors' data was not used to assess client positioning, the frequency of checklist use by the supervisors was examined. Frequency was determined by counting the number of checklists turned into the Physical Therapy Department. No attempt was made to determine whether or not the number of checklists reflected an accurate count of the number of checks conducted. It appears unlikely that the relationship between the number of checks conducted and the percent correct positioning seen in Figure 3 would be so strong unless the number of checks turned in was relatively accurate. The

frequency of checks ranged from zero to three across the days in the checklist condition for Group A and B, however, checks were conducted more frequently by Group A. Group A supervisors averaged 1.9 checks per day and Group B supervisors averaged 1.1 checks per day. The lower frequency of checks conducted by Group B may have accounted for the greater variability observed in the percent correct positioning for clients in Group B.

An important component of the supervisors' checklist condition may have been simply reviewing the baseline and workshop data with supervisors. This type of feedback may have acted as a discriminative stimulus or instruction (Krumhus & Malott, 1980) for improving the consistency of proper client positioning. Improvement, however, was not observed until after the checklists were reportedly used by supervisors (the second day of the checklist condition for both Group A and B).

Improvement in client positioning seen in the checklist condition appears to have been primarily the result of providing direct care staff supervisors with an easily used training and management tool, the prescriptive checklist. Although validation of the importance of proper positioning by supervisors implies that proper positioning was considered an important aspect of routine care and consequences for failure to improve positioning may have been implicit in the Unit Director's approval of the intervention, it is important to consider the results in light of the fact that no feedback was given to the supervisors other than the initial review of the baseline

data during supervisor training. Providing supervisors with feedback on direct care staff performance might have enhanced the improvement or may be necessary for long term maintenance of improvement.

Responses to the Supervisors' Questionnaire indicated that the checklist was used to give feedback to direct care staff on positioning clients. Feedback was reportedly given on a one-to-one basis and at staff meetings but primarily to staff in the ward at the time the check was conducted. Although supervisors were never observed giving feedback to direct care staff on client positioning, all supervisors and staff were involved in on-going observation and feedback systems used for job performance and facility wide evaluation. In other situations training supervisory staff in giving feedback may be necessary. Familiarity with feedback systems also may have facilitated acceptance of the checklist in this setting.

The results of the workshop condition may have the most significant implications for staff training. Workshops typically result in large blocks of time taken from direct service delivery to the clients, based on the rationalization that this type of training will improve the quality of service delivery. Giving supervisors the training and management tools, rather than sending staff to workshops, reduces the loss in service to the client and provides a structure for maintaining performance through performance evaluation feedback.

The actual limits of maintaining good positioning were not established in the present study. Therefore, the potential for

improving consistency in compliance is unclear. Further research is needed to develop a method of setting standards for proper client positioning. Establishing standards of consistency necessary for effective treatment would enable the physical therapist to provide supervisors with specific goals and feedback on meeting those goals. Feedback on compliance might then be given to supervisors as a part of the physical therapists' routine assessment of client positioning prescriptions.

This study replicates previous research demonstrating that workshops are ineffective in increasing compliance to program implementation. Providing supervisors with a training and management tool, a prescriptive checklist, was effective in increasing direct care staff compliance to program implementation. Further, an intervention applied at the supervisory level was clearly shown to affect direct care staff performance. Additional research on interventions at the supervisory level may aid in the development of a technology of program implementation in human services settings.

References

- Ayllon, T., & Azrin, N. H. The token economy: A motivation system for therapy and rehabilitation. New York: Appleton-Century-Crofts, 1968.
- Balthazar, E. E. Residential programs in adaptive behavior for the emotionally disturbed more severely retarded. Mental Retardation, 1972, 10 (3), 10-13.
- Bible, G. H., & Sneed, T. J. Some effects of an accreditation survey on program completion at a state institution. Mental Retardation, 1976, 14 (5), 14-15.
- Blindert, D. H., & Lawrence, C. Consistency of teaching: An observational study in an institutional setting for retarded children. Mental Retardation, 1977, 15 (6), 13-15.
- Bobath, K., & Bobath, B. Cerebral palsy. In P. H. Pearson and C. E. Williams (Eds.), Physical therapy services in the developmental disabilities. Springfield, Illinois: Charles C. Thomas, 1972.
- Bricker, W. A., Morgan, D. G., & Grabowski, J. G. Development and maintenance of a behavior modification repertoire of cottage attendants through T.V. feedback. American Journal of Mental Deficiency, 1972, 77, 128-136.
- Brown, K., Willis, B. S., & Reid, D. H. Differential effects of supervisor verbal feedback and feedback plus approval on institutional staff performance. Journal of Organizational Behavior Management, 1981, 3, 57-68.

- Burg, M., Reid, D. H., & Lattimore, J. The use of self-recording as a staff management technique in an institutional setting. Journal of Applied Behavior Analysis, 1979, 12, 363-376.
- Dunbar, J. M., & Agras, W. S. Compliance with medical instructions. In J. W. Ferguson & C. B. Taylor (Eds.), The comprehensive handbook of behavioral medicine, Vol. 3. New York: Spectrum Publications - Medical and Scientific Books, 1980.
- Fabry, P. L., & Reid, D. H. Teaching foster grandparents to train severely handicapped persons. Journal of Applied Behavior Analysis, 1978, 11, 111-123.
- Finnie, N. Handling the young cerebral palsied child at home (2nd Ed.). New York: E. P. Dutton, Inc., 1975.
- Gardner, J. M. Teaching behavior modification to nonprofessionals. Journal of Applied Behavior Analysis, 1972, 5, 517-521.
- Hollander, M. A., & Plutchik, R. A reinforcement program for psychiatric attendants. Journal of Behavior Therapy and Experimental Psychiatry, 1972, 3, 297-300.
- Hollander, M. A., Plutchik, R., & Horner, V. Interaction of patient and attendant reinforcement programs: The piggyback effect. Journal of Consulting and Clinical Psychology, 1973, 41, 43-47.
- Iwata, B. A., Bailey, J. S., Brown, K., Foshee, J., & Alpern, M. Modification of institutional staff behavior using a performance based lottery. Journal of Applied Behavior Analysis, 1976, 9, 417-431.

- Kreitner, R., Reif, W. E., & Morris, M. Measuring the impact of feedback on the performance of mental health technicians. Journal of Organizational Behavior Management, 1977, 1, 105-109.
- Krumhus, K. M., & Malott, R. W. The effects of modeling and immediate feedback in staff training. Journal of Organizational Behavior Management, 1980, 2, 279-293.
- M.A.R.C. v. Maryland (Baltimore Cty.; Cir. Ct., E. No. 100/182/77676, April 9, 1974).
- Marshall, A. M., & Marks. H. Implementation of "zero reject" training in an institutional setting. Analysis and Intervention in Developmental Disabilities, 1981, 1, 23-35.
- Mayo, N. E. Patient compliance: Practical implications for physical therapists. Physical Therapy, 1978, 9, 1083-1090.
- Montegar, C. A., Reid, D. H., Madsen, C. H., & Ewell, M. D. Increasing staff to resident interactions through in-service training and supervisor approval. Behavior Therapy, 1977, 8, 533-540.
- Panyon M., Boozer, H., & Morris, N. Feedback to attendants as a reinforcer for applying operant techniques. Journal of Applied Behavior Analysis, 1970, 3, 1-4.
- Patterson, E. T., Griffin, J. C., & Panyan, M. C. Incentive maintenance of self-help skill training programs for non-professional personnel. Journal of Behavior Therapy and Experimental Psychiatry, 1976, 7, 249-253.

- Pierce C., & Risley, T. R. Improving job performance of neighborhood youth camps aids in an urban recreation program. Journal of Applied Behavior Analysis, 1974, 7, 207-216.
- Pommer, D. A., & Streedbeck, D. Motivating staff performance in an operant learning program for children. Journal of Applied Behavior Analysis, 1974, 7, 217-221.
- Quilitch, H. R. A comparison of three staff-management procedures. Journal of Applied Behavior Analysis, 1975, 8, 59-66.
- Sheldon-Wildgen, J., & Risley, T. R. Balancing clients' rights: The establishment of Human Rights and Peer Review Committees. In A. Bellack, M. Hersen, & A. Kazdin (Eds.), International handbook of behavior modification. New York: Plenum Press, in press.
- Welsch, W., Ludwig, C., Radiker, J., & Krapfl, J. Effects of feedback on daily completion of behavior modification projects. Mental Retardation, 1973, 11, 24-26.
- Wyatt v. Stickney, 344 F. Supp. 387 (M.D. Ala. 1972); aff'd sub nom.

Appendix A

Demographic Information on Clients in Positioning Study

Appendix A

Demographic Information on Clients in Positioning Study

Client*	Visual Impairment	Hearing Loss	Hip		Contractures				Spinal Deformities			Medical Diagnosis
			Subluxation	Dislocation	Arms	Legs	Windblown Legs	Extension	Scoliosis	Kyphosis	Lordosis	
TB		X			X	X			X	X		Spastic quadriplegia
MF	X		X		X	X	X					Spastic quadriplegia
SH	X		X	X				X	X		X	Spastic quadriplegia
DJ**		X			X	X			X	X		Spastic quadriplegia
FS**					X	X	X		X			Spastic quadriplegia
AS	X		X						X			Spastic quadriplegia
WT					X	X	X					Spastic quadriplegia
DA				X			X		X		X	Spastic quadriplegia
GF							X	X	X	X		Spastic quadriplegia
KJ	X					X	X	X	X		X	Spastic quadriplegia
RL							X		X			Spastic quadriplegia
RS				X		X		X	X			Choreoathetosis; Spastic quadriplegia
KW	X	X		X			X		X			Atonic diplegia
DW	X	X							X		X	Spastic quadriplegia

*1. Subjects ranged in age from 6 to 27 (\bar{X} age was 18 years).

2. All clients' clinical records indicated seizure disorders.

**Subjects diagnosed as severely retarded, all other subjects diagnosed as profoundly retarded.

Appendix B

Guide to the Positioning Checklist

Prepared by Terry Stephens, Director of Physical Therapy,
Western Carolina Center
Morganton, N.C.

Guide to the Positioning Checklist

Introduction

The checklist is quite straight forward and can be used easily and quickly after minimal introduction. Use of a few standard procedures and definitions will ensure its reliability across time and multiple raters.

The positioning checklist was designed for use with multi-handicapped non-ambulatory individuals. It provides a means for both prescribing positioning for specific individuals and an objective method for evaluating the extent to which actual positioning conforms to that prescription. One copy can be used to check as many as 8 clients at one time.

The checklist is not useful with individuals who have much independent movement as they often move out of positions as soon as placed. It can be used with those who slowly change position over a length of time. It is felt to be the caregiver's responsibility to adjust those individuals as needed. It has to be accepted that 100% correct positioning may not be possible with those clients.

Parts of the Checklist

The upper left hand corner contains abbreviated instructions and the rating score.

The upper right hand corner provides space for identifying information including who performed the positioning check, date, location, and time.

The rest of the front and most of the back consists of the actual positioning items to be checked and blocks for recording the ratings for each individual on each item. Initials of the individuals being checked are placed in the top row of blocks.

At the end of the rating section is space for tallying the ratings and computing the percentage of items correct.

Definitions

Four specific abnormal postural problems are included on the checklist. These do not exhaust the abnormalities that will be found, but

were chosen as the most common.

Windblown legs refers to a hip deformity or habitual position in which both legs consistently fall toward the same side. The bottom leg is abducted and externally rotated at the hip, the top leg is adducted and internally rotated. Scoliosis refers to a lateral deviation of the spine. Flexed arms and legs refers to a positioning problem that often has a large functional component. This positioning category is used for those with severe flexion deformities or those who assume positions of extreme flexion. Extension postures describes individuals with marked extensor tone that includes neck and shoulder retraction and lower extremity extension.

Developing the Individual Positioning Prescription

Before the checklist can be used the therapist must decide which items are appropriate for the individuals involved.

The prone/supine and side-lying sections include some items that apply to the position in general and then items specific to identified problems (windblown legs, scoliosis, flexed arms and legs, extension). To develop specific positions for individuals these problems have to be identified first. The blocks corresponding to problems that do not apply are then blacked in (see the accompanying example). The therapist should try the individual in each position to see what problems arise.

There are some other instances when items may need to be blacked in so they are not rated even though the specific problem exists. For example, in side-lying the items for scoliosis and windblown legs both specify that the client be placed on the side that helps correct these problems. Very often when both these problems exist, placement on one side will be good for both problems. In other individuals, however, the legs may fall toward the side of the convexity of the curve, making one side beneficial to the curve and the opposite side good for improving the leg position. The therapist will need then to decide which position to emphasize and black out the appropriate cells. Another item that may need to be eliminated is in the "sitting" section - "has feet flat on foot support". When gross foot and ankle deformities are present, feet cannot be positioned flat and the item is blacked out as not

appropriate. Items which are appropriate sometimes and not others are left open and may be given an "NA" rating as indicated (An example is given in the rating section).

The sitting section is designed for use with individuals in their own adapted wheelchairs. Clients with whom this checklist has been used have a degree of neuromotor involvement that precludes their sitting in unadapted chairs. This section could be used for special seating arrangements other than wheelchairs.

There is a great deal of variation among clients and other exceptions may need to be made. A client with windblown legs may have his legs brought relatively near midline in supine. If in prone, this is impossible or uncomfortable, the prone position might not be rated for that client.

Rating

As mentioned in the introduction, a standardized approach will ensure rating reliability.

1) Defining the Position

There are a few situations when it may not be obvious what position was intended for the client. Positioning in bean-bags is rated as supine because the degree of hip and knee flexion does not approach 90 degrees. It is sometimes difficult to determine if a position should be rated as prone or side-lying particularly in a client with a severe c-curve of the spine. For convention, the position is rated as side-lying if both arms are on one side of the trunk and prone if one arm is on either side.

2) Assigning the Rating

If the positioning observed meets the stated criteria, assign a "+" and if it does not meet the listed criteria, assign a "-".

For some clients the criteria cannot be completely satisfied because of the extent of contracture or deformity present. In that case a "+" is given if the client is positioned as close as possible to the ideal. If there is any doubt whether or not the positioning is as good as possible, the rater

should test and see if the position can be significantly improved and assign a rating accordingly.

The equipment listed on the checklist can be used interchangeably with other items. For instance folded towels or blankets can be used instead of pillows. The equipment itself should not be considered in assigning a rating - only the actual position.

A rating of "NA" can be used when a specific item is not appropriate at a particular time. Example: Some clients have wheelchair straps for trunk positioning but wear a scoliosis brace part of the time. It is appropriate to rate the item "has all supportive belts fastened" "NA" rather than "-" if the straps are not used when the brace is being worn.

POSITIONING

Instructions: Observe client and select applicable position to rate.

Observer: _____ Date: _____

Rating: + = Yes
 - = No
 NA = Not Applicable

Rel. _____
 Cottage: _____

Start time: _____ Stop time: _____

	Client's initials	RL	KN	KJ	OW	DA	GF	RS	
I. BACK-LYING (SUPINE) OR STOMACH-LYING (PRONE):									
A. Did caregiver ensure that:									
1. client's head, neck, and trunk form a straight line by using equipment (sandbags, pillow, etc.) as needed?									
2. client's legs are together with toes and knees facing forward by using equipment as needed?									
B. If client has windblown legs (legs fall to one side), did caregiver ensure that: a small pillow or towel is placed between the knees to prevent excess pressure?									
C. If client has scoliosis (curvature of the spine), did caregiver ensure that: client is supported by pillow or sandbags against the hump of the curve and if necessary, under the arm and against the hip on the opposite side?									
D. If client has flexed arms and/or legs, did caregiver ensure that: client's arms and/or legs are extended to the limit of ROM, with pillow and/or towels used to hold limbs in an extended position?									
II. SIDE-LYING									
A. Did caregiver ensure that:									
1. client's head is supported by a pillow?									
2. client's head, neck, and trunk form a straight line using a pillow if necessary?									

Appendix C

Positioning Workshop Materials

Positioning Principles

Correct posture for:

- Back-lying or Stomach-lying - Arms relaxed at sides.
Straight line through head, neck, and trunk.
Legs together, toes and knees facing forward.
- Side-lying - Same as above except the top leg is flexed and brought forward. Top legs and arms are supported by pillows.
- Sitting - 1) Hips and knees flexed to right angles. Weight distributed evenly.
2) Lower back against back of chair.
3) Feet flat on foot support.
4) Seat belt fastened tightly, low across lap.

Positioning for:

Windblown legs (both legs pull to one side)

Back-lying: support in midline.

Side-lying: placed on the opposite side to which legs pull.

Scoliosis (curvature of the spine)

Back or stomach-lying: support against hump of curve, under-arm and against hip on the opposite side.

Side-lying: on the hump side.

Flexed arms and legs - extend with folded towels or pillows.

Extension posture - shoulders, arms and head brought forward.
flexed at hips and knees.

Positioning Post-Test

- 1) When you position a resident, how long should they stay in that same position?
 - a) 30 minutes
 - b) until they cry
 - c) up to 2 hours

- 2) When you put a resident in his wheelchair, you don't have to worry any more about positioning until time to take him out.
 - a) true
 - b) false

- 3) A good way to position a resident whose legs fall toward the right side is:
 - a) on his right side
 - b) on his left side

- 4) A good reason for positioning residents is to:
 - a) prevent pressure sores
 - b) make residents more comfortable
 - c) prevent deformities from developing or getting worse
 - d) all of the above

- 5) Good posture in standing or lying down includes the following:
 - a) the feet are together with knees facing _____
 - b) arms are relaxed at the sides
 - c) a straight line passes through the center of _____, neck, and _____.

- 6) Matching

___	a) a joint that won't move full range	1. side-lyer
___	b) a curvature of the spine	2. scoliosis
___	c) a positioning device	3. contracture

- 7) A resident has a curvature of the spine. You are given 3 sandbags to use to position him to make his spine straighter. Draw in where you would put those sandbags.



- 8) If a resident pulls his legs up when lying on his back you should use straps to fasten them down.
- a) true
 - b) false
- 9) If you want to position a resident with a curvature of the spine on his side, one side is usually a lot more beneficial than the other. If the curve causes a hump on the right side, the best side for positioning would probably be the _____ side.
- 10) If a resident tends to get very stiff and push back with head and shoulders, good positioning would include:
- a) head back
legs flexed at hips and knees
 - b) head, shoulders and arms forward
legs straight
 - c) head, shoulders, and arms forward
legs flexed at hips and knees
- 11) If a resident tends to push back and slide out of his wheelchair, describe how to fasten the seatbelt:
-
-
- 12) If a resident is very stiff, what is the best way to handle him when positioning?
- a) slowly to give the muscles time to relax
 - b) quickly to get him used to it as soon as possible
 - c) it doesn't really matter how you handle him if he ends up in a good position
- 13) When sitting in a wheelchair, residents should be allowed to slide forward on the seat and lean back a little in order to be comfortable.
- a) true
 - b) false
- 14) What kind of residents can be positioned in beanbags?
- a) residents with scoliosis
 - b) residents with windblown legs
 - c) residents who extend too much
 - d) all of these

15) When should residents who are unable to move be positioned?

- a) while in their wheelchairs
- b) at night in bed
all other times except during programming
- c) all the time
- d) during feeding
while in their wheelchairs

Appendix D

Supervisor's Questionnaire and Responses

Supervisor's Questionnaire and Responses

A total of five supervisors responded to the questionnaire: the Head Nurse and Health Care Technician Supervisor for Group A, and the Head Nurse, Nurse Supervisor, and one of the Health Care Technician Supervisors for Group B.

The questions and responses are presented below.

- 1) Now that the staff have learned how to position residents and you have become involved in monitoring the positioning, what do you think would be the easiest and least time consuming way to maintain good resident positioning in the future?
 1. "Keeping supervisors alert to good positioning techniques. Continue checklist (might be done less than 14 clients per day) with reliability check by P.T. Make positioning of particular residents a part of employee's work goals."
 2. "Keep doing the daily checks."
 3. "Continue monitoring to help maintain position. As far as how often to do this, this needs discussion with those people that have been involved."
 4. "Spot checks by P.T., Health Care Technician 11 and Nurse".
 5. "To continue monitoring as we are doing but allow the staff more time in the early morning to do this. Maybe no checks until after school starts 9:00 a.m. They are rushed the first two hours with bathing and feeding and do not have time to "hunt" the sandbags and position correctly, or else in-service third shift and do a check on them about 7-7:15 a.m."
- 2) Do you think more improvement can be made in how well the residents are positioned?
 1. "Yes. Review of your slide show two to four times per year. Continue to give actual demonstrations."
 2. "Yes."
 3. "No."
 4. "Yes. The residents that have been monitored usually have been positioned properly. We need improvement in positioning all residents who cannot position themselves."

5. "I feel that staff on first shift understand this and try to position correctly but I also feel that other shifts other than first should certainly carry on. Second shift tells us they do not have to do this and know nothing about it. In fact they get them out of position when they come in, especially in ___ Ward."
- 3) How comfortable do you feel now about your knowledge of positioning?
1. "Much more comfortable than before inservice; I am comfortable with all but the most involved residents."
 2. "Very comfortable. It's a reminder to both staff and me to position correctly."
 3. "There's always room to improve my knowledge and another seminar on positioning certainly could help refresh the proper positioning techniques."
 4. "Comfortable, I feel I know the "basics" but can learn more."
 5. "I think I understand it quite well and feel comfortable in giving feedback."
- 4) How comfortable are you in doing checks of the residents' positions using the checklist?
1. "Very. No problems with it."
 2. "Very comfortable with the monitoring."
 3. "They really help one."
 4. "Fine."
 5. "It helps to have the checklist for guidelines for each resident has different requirements and some of them may be overloaded without the checklist."
- 5) Is the checklist useful to you in:
- A. Remembering the right positions for individual residents?
 1. "Yes."
 2. No response.
 3. "Yes."
 4. "Yes."

5. "Yes."

B. Giving feedback to your staff about the positioning they are doing?

All five responses were "yes".

6) How do you use the checklist for giving feedback to staff?

A. On a one-to-one basis?

1. "Usually this way."

2. "One a one-to-one basis."

Three supervisors gave no response.

B. At staff meetings?

1. "Infrequently."

Four supervisors gave no response.

C. To the staff in the ward when you do the check?

1. "I may try this method."

Three supervisors gave feedback to the staff in the ward when the check was conducted and one supervisor did not give a response.

D. Other?

No responses.

7) Does making checks on positioning take a significant amount of time away from your other responsibilities?

1. "No, it does not take much time but the time that I usually can do it is 7-8:00 a.m. (before a.m. care); and noon to 1:30 p.m. (lunch and diapering times). I do note it at various other times on ward rounds but not as a specific monitoring."

2. "Yes, on some of my busiest days I find it impossible to check when I know the resident will be in the ward."

Three supervisors simply responded with a "No".

8) Do you have any other comments or suggestions?

1. "What about other problem residents in _____?"
2. "The checks have been helpful to staff to position correctly."
3. "Perhaps stick drawings of positions of specific residents could help especially the new staff and those that rotate."
4. "I think this is very good but we need cooperation from other disciplines. Often when the resident is brought back to the ward they have not positioned them, and if a check is made the health care technician gets the blame."

One of the supervisors did not give a response to this question.