

*A STAFF MANAGEMENT SYSTEM FOR MAINTAINING
IMPROVEMENTS IN CONTINENCE WITH ELDERLY
NURSING HOME RESIDENTS*

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We developed a staff management system for maintaining treatment gains achieved on a specialized continence unit located in a geriatric nursing home. Geriatric assistants learned to use a prompted voiding procedure to maintain improved dryness for 4 elderly residents. The staff management system included self-monitoring and recording of prompted voiding activities and supervisory monitoring and feedback based on group performance of these activities. Results show that the system was effective in maintaining prompted voiding activities with corresponding maintenance of improved patient continence. However, a gradual decline in staff performance was noted 4 to 5 months after the initiation of the system. During a subsequent phase of the study, provision of individual feedback restored staff performance to previous levels. Results are discussed in relation to the practicality of prompted voiding interventions in nursing home environments and the applicability of staff management systems in this setting.

DESCRIPTORS: institutional staff management, incontinence, behavioral gerontology, prompted voiding

Behavioral interventions have been used successfully to treat various problems of institutionalized elderly individuals (Williamson & Ascione, 1983). However, much of the research focusing on the care of such persons has involved specially trained research personnel as behavior change agents. Because these individuals are often not responsible for routinely carrying out treatment procedures in nursing homes, the applied significance of this research is in doubt.

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A few investigators have employed direct care workers (geriatric assistants) as behavior change agents. Geriatric assistants have been trained to use token systems to increase activity levels (Mishara & Kastenbaum, 1974) and social responsiveness (Nigl & Jackson, 1981) among geriatric patients residing in a psychiatric institution. Geriatric assistants have also been taught to use behavior management procedures to decrease patient dependency on staff and to improve patients' performance of various activities of daily living (Barrowclough & Fleming, 1986; Sperbeck & Whitbourne, 1981). Unfortunately, none of these studies describes procedures to maintain these activities.

One lesson learned from the application of behavioral interventions in institutions for the developmentally delayed is that staff training activities do not necessarily result in improved performance in the day-to-day job situation (Whitman, Scibak,

& Reid, 1983). Although staff members may acquire knowledge of procedures through in-service training, they often will not perform these procedures consistently unless systematic management procedures are implemented.

Urinary incontinence is a serious clinical problem in geriatric long-term care settings. Its prevalence in nursing homes has been reported to range between 38% and 60%, and its management has been estimated to cost approximately \$0.5 to \$1.5 billion each year (Ouslander & Kane, 1984). Behavioral treatments of geriatric incontinence have shown considerable promise in recent years (Burgio, Engel, McCormick, Hawkins, & Scheve, 1988; Schnelle *et al.*, 1983). Both studies employed a prompted voiding procedure that included scheduled prompts by staff for toileting, social approval by staff for dry pants and requests for toileting assistance, and mild social disapproval for wet pants. Significant reductions in the frequency of incontinence episodes were observed. The necessity for staff management procedures designed to maintain these changes was acknowledged but not addressed. Indeed, a recent review failed to identify a single published report of the use of behavioral staff management procedures in geriatric nursing homes (Burgio & Burgio, *in press*).

The goal of our study was to develop a staff training and management system that would facilitate transfer of continence skills from a specialized continence unit to regular nursing units in a nursing home. During Phase 1, we developed a staff management system and examined its impact on 4 residents. During Phase 2, we modified the system to promote long-term maintenance of continence.

METHOD

Setting

The study was conducted in a 223-bed urban nursing home primarily serving elderly individuals. Seventy-three percent of the residents were classified as receiving intermediate or skilled nursing care, and 27% resided in a chronic care unit (a classification denoting a greater degree of disability). The

residents were distributed among five nursing units with 45- to 46-bed capacities. Fifteen beds on one unit were designated continence unit beds. The continence unit was more heavily staffed during the day and evening shifts.

Nursing unit staffing consisted of one head nurse (RN), two LPNs, and six geriatric assistants (GAs) on the day shift and one LPN and four GAs on the evening shift. The maintenance program was conducted by the GAs on the nursing units. The GAs were predominantly female, had a high school education or less, and were of relatively low socioeconomic status. The GA-to-patient ratio was 1:8 during the days and 1:11 during the evenings.

Subjects

All subjects had been residents of the nursing home for at least 1 year prior to the initiation of the study and had displayed a stable rate of incontinence during the year. Consent for participation was obtained from either the subject or, in the case of an incompetent subject, from his or her next of kin. Diane was a 60-year-old white female with a score of 14 on the mini-mental state assessment and a diagnosis of senile dementia (Folstein, Folstein, & McHugh, 1975). (Scores on the mini-mental state assessment range from 0 to 30, with scores less than 24 suggesting significant cognitive impairment.) A behavioral assessment of toileting skills indicated that the subject was ambulatory and capable of independently toileting without verbal or physical prompting. Jenny was a 92-year-old white female with a score of 27 on the mini-mental state assessment. She required some physical assistance in completing the toileting response. Rene was an 82-year-old white female with a score of 8 on the mini-mental state assessment and a diagnosis of senile dementia. She was generally noncompliant during the toileting skills assessment, although she finally toileted with substantial staff assistance. Dave was an 80-year-old white male with a mini-mental state assessment score of 1 and a diagnosis of senile dementia. He was unresponsive during the toileting skills assessment and required total assistance in toileting on his nursing unit.

All of the subjects spent most of their day im-

mobile in a wheelchair and were seldom observed toileting either independently or with assistance. Diane and Jenny were considered to have excellent, and Rene and Dave poor, receptive language capabilities. Rene was receiving 12.5 mg b.i.d. Ben-dryl, and Dave was receiving 1 mg b.i.d. of Hal-dol. Both medications have anticholinergic properties and can cause sedation.

Response Definitions

Wet/dry. Any wetness found on the urine collection pad or undergarment was scored as wet. If no wetness was detected, dry pad was scored.

Completed prompted voiding. A GA was considered to have completed a prompted voiding if he or she initialed the self-monitoring form and recorded that the patient was prompted to void. If the GA recorded that the patient was prompted to void but refused, this was recorded as completed prompted voiding. The patients were rarely non-compliant with a prompt to void; thus, almost all recordings of prompted voiding represent a toileting event.

Observation System and Interobserver Agreement

Two independent observation systems operated on the nursing units: pad checks conducted by four research assistants (RAs) and pad checks conducted by the GAs during prompted voiding maintenance procedures. The RAs also collected data on GAs' compliance with the maintenance procedure.

RA pad checks. All nursing unit pad check data were collected by the RAs. RAs checked each client's undergarments and absorbent pad at 2-hr intervals (7:00 a.m. to 7:00 p.m.) Monday through Friday. (As a result of occasional patient absences, the number of checks ranged from three to seven, with a mean of 6.2 checks per patient per day during Phase 1.) To check the pad, the RA approached the subject and informed him or her that he or she needed to check the pad. The subject was taken to his or her room where the pad was checked for wetness. A wet pad was replaced with a new pad. If the subject's clothes were wet or soiled, the observer informed the GA, who then changed the

subject's clothes. The GA was also informed if the subject requested toileting.

GA pad checks. During the maintenance phases of the study, GAs were asked to record whether the clients were wet or dry each time they conducted the prompted voiding procedure.

GA compliance. GAs were scheduled to conduct four to seven prompted voidings per day depending on the specific patient's maintenance schedule. Each week the RAs collected the GA self-monitoring forms. Compliance with the schedule was determined by the percentage of scheduled prompted voidings completed.

Reliability assessment. Reliability checks were conducted during 10% of the RA pad checks on an interval-by-interval basis for occurrence agreement (Bailey & Bostow, 1979). Reliability for dry pad averaged 88%. The nursing unit head nurses observed GA-assisted toiletings during 25 morning blocks of time (7:00 a.m. to 12:00 p.m.) and recorded their observations on the same self-monitoring form used by the GAs. These reliability observations were unannounced and were distributed equally among all GAs. Occurrence reliability was 93% for percentage of dry pads and 100% for completed prompted voidings.

Design and Experimental Procedures: Phase 1

During this phase of the study, we tested a management system with the staff of two nursing units. The effects of the system were assessed by monitoring the toileting accidents of the first 4 pilot subjects discharged from the continence unit before beginning a larger multisubject trial.

Design. The design was a series of four A-B interventions, with A representing the effects of normal continence care activities and B representing the effects of the staff training and management package. Between baseline and the implementation of the staff management procedure, all subjects were admitted to the continence unit, where they were exposed to another 10-day baseline phase followed by 2 to 3 months of treatment.

Baseline (nursing unit). Baseline pad checks were conducted by the RAs on 10 days over a 2-week period. Lengthy baseline phases were con-

sidered unnecessary because chronic geriatric incontinence is a relatively stable condition that rarely improves spontaneously. The GAs on the nursing units were informed that continence assessments were being conducted and were asked not to alter their continence care activities in any way during this phase. A survey of normal continence care activities in this nursing home just prior to the initiation of this study showed that staff assisted in toileting or prompted patients to toilet only occasionally (Burgio, Jones, & Engel, 1988).

Continence unit. Details of continence unit baseline and intervention procedures can be found in Burgio, Engel, McCormick, Hawkins, & Scheve (1988). The continence unit intervention consisted of prompted voiding, assistance in toileting, corrective feedback for incontinence, and praise for dry pad checks, independent toileting, and requests for toileting assistance.

Staff training. One week prior to the subjects' discharge from the continence unit, all day and evening staff on the nursing units received an hour-long course in applying the prompted voiding procedure. Training included verbal and written instructions and modeling of maintenance procedures by the experimenters. Staff members were informed that all subjects would be discharged from the continence unit with a prompted voiding schedule, ranging from every 2 to 4 hr from 8:00 a.m. to 8:00 p.m. They were to approach the subject at the scheduled times and verbally prompt the patient to toilet. These prompts were delivered 5 s after the staff member approached the patient to allow patients an opportunity to self-initiate. If a subject was ambulatory and cognitively impaired, the GA was instructed to guide the subject physically to use the toilet or toileting device. If a patient refused toileting, the GA urged but did not coerce him or her to toilet. Patients rarely declined an opportunity to toilet. It is important to note that toileting did not necessarily mean physically transferring a patient onto the toilet. For some patients it required handing them a urinal or bedpan or prompting them to use a urinal attached to the wheelchair. When toileting was completed, the patient was informed that the GA would return at

the next scheduled time. In addition, GAs were requested to praise appropriate voiding and requests for staff assistance for toileting.

Staff management. During the 1-hr course, the GAs and nurses were also instructed in the use of the management system. This system included self-monitoring, supervisor monitoring, and performance feedback components. A self-monitoring form (available from the first author upon request) allowed the GAs to record whether the patient was wet or dry at each prompted void and to indicate the type of toileting device used. They were asked to initial the form and to complete a checklist of appropriate GA-prompted voiding activities included at the bottom of the form.

A multilayered supervisory monitoring and feedback system was used. The LPNs, as first line supervisors, were asked to observe at least two prompted voiding procedures per week. They recorded wet/dry and the prompted voiding activities listed in the checklist on their own version of the self-monitoring forms. The LPNs then administered praise and corrective feedback to the GAs based on their performance of the prompted voiding procedure immediately following each observation.

The experimenters collected all GA self-monitoring forms and the LPN monitoring forms from the unit clerk. Weekly summaries were then generated for percentage of prompted voidings completed by the GAs for each subject. During Phase 1 these results were based on the performance of the GAs as a group and did not represent any individual GA's performance.

The experimenters met individually with the head nurses of both units for the purpose of providing data on GA performance. Completion of 80% or more scheduled prompted voidings for each patient was considered satisfactory. The head nurses then showed these data to staff members at biweekly meetings. She praised staff for group performance of 80% or above. If performance dropped below 80%, corrective feedback was provided. The experimenters also supplied these same data to the director of nursing at biweekly meetings. Finally, the experimenters met with GAs monthly to show

them figures of patients' percentage dry data. In this way, the GAs were able to observe the effects of their efforts.

Design and Experimental Procedures: Phase 2

Four to 5 months after the initiation of Phase 1 maintenance, we noted a gradual decline in the GAs' compliance with assigned prompted voidings. Consequently, we decided to modify the staff management feedback component to include feedback on individual staff performance.

Design. We employed a multiple baseline design across the two nursing units. A 2-week time-lag was provided between the units when modifying the feedback component.

Baseline. At the time of our Phase 2 analysis, 10 patients were in the maintenance phase of the study (including our original 4 pilot subjects). These 10 patients constituted a larger and more representative sample of incontinent nursing home patients, and thus, we included their data in our analysis. The additional 6 patients were similar to our pilot patients in terms of severity of incontinence and cognitive and mobility status.

During the 3-week baseline period on Unit A and 5-week baseline period on Unit B, the experimenters continued to report group performance feedback to the supervisory nursing staff while individual GA data were being collected.

Intervention. During Phase 2 intervention, all Phase 1 conditions continued, except that the experimenter now provided bar graphs to the head nurses and director of nursing that displayed individual GAs' mean percentage of assigned prompted voidings completed for a 2-week period. The head nurses shared this information with the GAs during their weekly staff meetings and provided appropriate praise and corrective feedback.

RESULTS

Phase 1

Figure 1 shows the nursing unit baseline and 2-week and 3-month follow-up data for the 4 pilot subjects. The means and standard deviations of continence unit baseline and treatment phases are

also presented in the figure. All patients showed improvements in dryness as a function of the continence unit treatment.

The 2-week follow-up data on the nursing units indicate that all subjects' incontinence was improved when compared to nursing unit baseline. The improvement in continence was generally maintained at the 3-month follow-up assessment. Only 1 subject, Rene, was not found to be as dry during the 3-month follow-up (55.7%) as she was during the 2-week follow-up (70.2%), although this was still an improvement over nursing unit baseline (44.3%). Upon examining the individual subject data on percentage of prompted voidings completed, it was noted that there was a decrease in staff members' completion of prompted voidings with Rene, from 100% prompted voidings completed during the 2-week follow-up to 80% completed during the 3-month follow-up. Prompted voidings remained constant for the remaining 3 subjects.

Phase 2

During Phase 1 follow-up assessments, the GAs reported that they completed an average of 82.8% of their assigned prompted voidings (there was no difference in compliance during the 2-week and 3-month follow-up periods). Within 6 months after the initiation of Phase 1 maintenance, compliance had decreased considerably. Figure 2 shows the weekly mean percentage of assigned prompted voidings completed by staff on Units A and B during group and individual performance feedback conditions. During the last 3 weeks prior to the Phase 2 intervention, staff members on Unit A conducted an average of 59.8% of their assigned prompted voidings for their 2 maintenance subjects. On Unit B, staff members conducted an average of 44.4% of their assigned prompted voidings for the 8 maintenance subjects discharged to their unit.

Upon application of the individual staff performance feedback intervention, compliance rebounded to 81.6% on Unit A and 85.4% on Unit B. With the exception of Week 2 on Unit A, there was no overlap in the weekly means between the group and the individual performance feedback

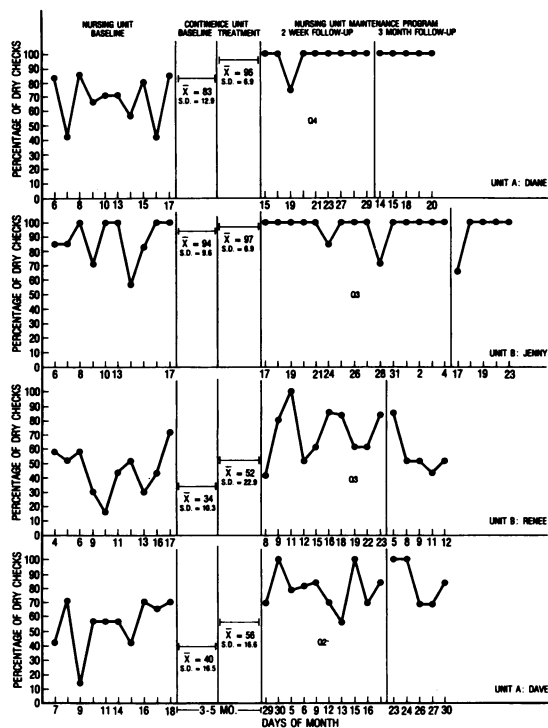


Figure 1. Phase 1: Percentage of dry checks during nursing unit baseline and 2-week and 3-month follow-up for Diane, Jenny, Rene, and Dave. Means and standard deviations of continence unit baseline and treatment are provided for comparison. Q2 denotes that the patient was on a 2-hr prompted voiding schedule.

conditions. Although there was no corresponding increase in mean percentage dry checks reported between the two conditions for the 2 subjects on Unit A (63.9% dry during the group feedback condition vs. 63.4% dry during the individual feedback condition), a slight but reliable mean increase from 68.4% dry to 72.4% dry was recorded for the 8 subjects on Unit B. All but 1 subject on Unit B was observed to be drier, with the per patient increase ranging from 0.3% to 14.2%.

DISCUSSION

The results of this study show that a staff training and management procedure with self-monitoring and performance feedback components allowed geriatric assistants to develop and consistently perform continence maintenance skills in a geriatric nursing home. Patients were discharged from the specialized

continence unit significantly drier than during the pretreatment phase. The data suggest that these patients remained drier at the 2-week and 3-month maintenance assessments on the nursing units as a result of the GAs' performance of these continence maintenance skills.

These conclusions require two inferences that we believe are supported by the data. First, we do not have observational data on the GAs' performance of prompted voiding immediately prior to training. Thus, we assume that prompted voiding occurred at a very low rate under normal nursing home routine. This assumption is supported by a survey of these GAs conducted a few months prior to the initiation of this study (Burgio, Jones, & Engel, 1988), in which the GAs reported that they prompted their elderly patients infrequently. After the staff training and management procedure was implemented, staff members reported that they completed an average of 82.8% of their assigned prompted voidings. Considering the number assigned, this yielded between 3.3 and 5.8 prompted voidings per patient per day. In an observational study conducted in a similar nursing home, Schnelle, Sowell, Hu, and Traugher (1988) found that GAs normally assisted their patients in toileting an average of 0.49 times per day.

Assuming that GAs increased their rate of prompted voiding, we infer that the increases in dryness observed with our patients during maintenance were largely a function of changes in staff behavior. This inference is supported by two facts. First, as noted earlier, chronic geriatric incontinence in nursing home patients rarely improves without active intervention. Second, given the severe physical disabilities of our patients and their dependence on staff for most activities of daily living, it is highly unlikely that the improvements in continence were a function of increases in independent toileting. Nevertheless, to enhance the internal validity of this intervention, future investigators should consider using a control unit or a multiple baseline design across units when designing studies in this area.

Our staff management package included self-monitoring and supervisory feedback components.

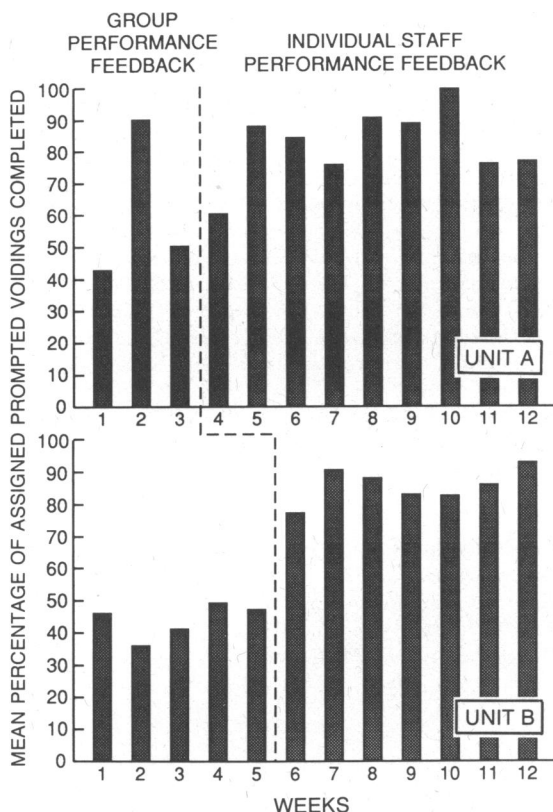


Figure 2. Phases 1 and 2: Mean weekly percentage of assigned prompted voidings completed by staff on Units A and B during group and individual performance feedback conditions.

A number of published studies have shown that self-monitoring, when combined with some type of supervisory feedback, can be used effectively to change staff behaviors in facilities that serve developmentally disabled individuals (e.g., Richman, Riordan, Reiss, Pyles, & Bailey, 1988). Our study extends these findings by demonstrating that these procedures can be implemented successfully in a nursing home with no prior use of behavioral staff management techniques.

Our results show a decline in the GAs' compliance with assigned prompted voidings 4 to 5 months after the self-monitoring and group feedback system was implemented (Phase 1). When feedback on individual staff performance was provided (Phase 2), performance of the prompted voiding procedures again reached or exceeded criterion. However, although the data show an in-

crease in performance when individual feedback was provided, conclusions regarding the comparative efficacy of these two feedback procedures are tentative, because we were not able to control for possible sequence effects.

We have also not established whether prompted voiding is a cost-effective procedure. In one analysis, Creason (1987) reported that prompted voiding, compared to traditional continence care, resulted in a savings of \$1,100 per patient per year. In contrast, Schnelle et al. (1988) found that a 1- and 2-hr prompted voiding procedure generated higher costs than normal continence care as a result of increased labor costs associated with the prompted voiding intervention. However, the authors noted that, although prompted voiding takes more time than alternative procedures, it does not require so much time that additional staff would have to be hired. They also asserted that, if staff management procedures could be employed to increase staff efficiency, there would be substantial savings on supplies and no additional labor costs.

In summary, our data suggest that a staff management procedure with self-monitoring and supervisory feedback components was associated with maintained improvements in elderly patients' continence. Researchers need to identify which patients are most likely to benefit from prompted voiding and investigate further the cost effectiveness of the procedure.

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