Impact of an Educational Training Program on Restorative Care Practice of Nursing Assistants Working with Hospitalized Older Patients

Rachel Ritchie, MSc, MCSP, Susan Wood, Finbarr C. Martin, MD, and Gareth D. Jones, MSc, BHSc (hons) MCSP

ABSTRACT

• Background: Acute and prolonged exposure to hospital medical care can cause hospital-associated deconditioning with deleterious effects on patient care provision and quality of life. Physical rehabilitation provided by allied healthcare professionals can enable reacquisition of function via professional input into attainment of set goals. Separate to rehabilitative efforts, restorative care optimizes independence by motivating individuals to maintain and restore function. Nursing assistants (NAs) provide a significant amount of direct patient care and are well placed to deliver restorative care.

• Objective: To increase proportional restorative care interactions with hospitalized older adults by training NAs.

• Methods: A prospective cohort quality improvement (QI) project was undertaken at 3 acute hospital wards (patient minimum age 65 years) and 2 community subacute care wards in the UK. NAs working within the target settings received a 2-part restorative care training package. The primary evaluation tool was 51 hours in total of observation measuring the proportional change in restorative care events delivered by NAs.

• Results: NA-led restorative care events increased from 40 (pre-intervention) to 94 (post-intervention), representing a statistically significant proportional increase from 74% to 92% ($\chi^2(1) = 9.53, P = 0.002$). NAs on occasions inadvertently emphasized restriction of function to manage risk and oblige with rest periods.

• Conclusion: Investing in NAs can influence the amount of restorative care delivered to hospitalized older adults at risk of hospital-associated deconditioning. Continued investment in NAs is indicated to influence top-down, mandated restorative care practice in this patient group.

Key words: older people; restorative care; hospital associated deconditioning; nursing assistants; rehabilitation; training.

Hospital-associated deconditioning is defined as a significant decline in functional abilities developed through acute and prolonged exposure to a medical care facility environment, and is independent of that attributed to primary pathologies resulting in acute admission [1]. Considerable research on iatrogenic complications in older hospitalized populations [1–5] has shown the impacts of hospital-associated deconditioning and associated dysfunctions on quality of life for patients and the resultant burden on health and social care provision [6].

Physical rehabilitation has been shown to restore function through high-dose repetition of task-specific activity [7], and the benefits attributed to extra physical therapy include improved mobility, activity, and participation [8]. Simply defined, physical rehabilitation is the reacquisition of function through multidisciplinary assessment and professional therapeutic input in attainment of set goals. A more recent nomenclature in health settings is “restorative care,” defined as a philosophy of care that encourages, enables, and motivates individuals to maintain and restore function, thereby optimizing independence [9]. It has been clearly defined as a philosophy separate from that of rehabilitation [9] and remote from task-related or “custodial care,” which is designed to assist in meeting...
patients’ daily activity needs without any therapeutic value.

In UK rehabilitation wards, nursing staff provide 4.5 times as much direct patient care time compared with allied health professionals, with paraprofessional nursing assistants (NAs, equivalent to certified nurse assistants [CNAs] in the United States) responsible for half of this direct nursing care [10]. Kessler’s group examined the evolving role of NAs in UK hospitals [11]. From a national survey of 700 NAs and 600 trained nurses, the authors upheld the view that NAs act as direct caregivers including through routine tasks traditionally delivered by nurses. They identified that NAs exhibit distinct qualities, which are valued by qualified nurses, including routine task fulfilment and abilities relating to patients, which enable NAs to enhance care quality. Indeed, the national findings of Kessler’s group were generalizable to our own clinical setting where a NA cohort was a well-placed, available, and motivated resource to deliver therapeutically focused care for our hospitalized older population.

The theoretical relationship between care approaches is complex and represents a challenge for service users and policy makers. For instance, comprehensive rehabilitation delivery during an acute care episode may lead to users not seeking custodial care at home. Conversely, day-to-day activities realized by custodial care at home may lead to users not seeking acute rehabilitative care [12]. With stable resources being assigned to more dependent users in higher numbers, reactive care regardless of environment has often been the model of choice.

However, an economic rationale has developed more recently where investment in maintenance and preventative models results in healthcare savings with models including the 4Rs; reablement, reactivation, rehabilitation, and restorative care [13]. In North America, restorative care approaches have resulted in favorable results in nursing home facilities [14] and at home [15], and restorative care education and motivation training for nursing assistants was effective in supporting a change in beliefs and practice behaviors [16]. While results show restorative care practices in the non-acute care sector are advantageous, it is unknown whether these approaches if adopted in hospital settings affect subsequent healthcare utilization in the non-acute facilities, or even if they are feasible to implement in acute facilities by a staff group able to do so. Therefore, the purpose of this QI project was to deploy a restorative care educational intervention for NA staff working with hospitalized older adults with the aim of increasing the proportion of restorative care delivered.

METHODS

Context

This project was conducted at a UK National Health Service university teaching hospital trust at 3 acute hospital wards (patient minimum age 65 years) and 2 community subacute care wards for older patients. Participants consisted of all permanent or long-term temporary (> 3 months continuous employment) NAs working in the target settings (n = 36). The QI project design is summarized in Figure 1. The project applied the 4Es translational approach to regulate the QI intervention: Engage, Educate, Execute, and Evaluate [17]. The reporting of this study follows SQUIRE guidance [18].

Intervention

The QI activity was a holistic educational process for all NA participants.

Didactic Study Day

Each NA attended a study day led by a physical therapist (up to 10 NAs per group). A student-centered training approach was adopted, recognizing variations in adult learning styles [19], and included seminar style theory, video case scenarios, group work, practical skills, open discussion, and reflection. The training package outline was compiled following consensus among the multidisciplinary team working in the target settings and the steering group. Topics covered were theory on the risk of hospitalization and benefits of early mobilization; case scenarios and examples of restorative care; identifying and overcoming barriers to restorative care; identifying appropriate patients for a restorative care approach; practical skills, including assisting patients out of bed, ambulation, and eating/drinking; and challenging, problem-solving scenarios. All participants received a course handbook to facilitate learning.

Ward-Based Practice

The physical therapist co-worked with each NA in ward-based practice sessions for 3 to 4 hours during a typical working shift. This reinforced restorative care principles and enabled NAs to identify restorative care opportunities while overcoming context-dependent, real-life barriers to restorative care, supported by the physical therapist acting as facilitator. The NAs were encouraged to lead the
direction of the ward-based activities so that they could attend to their usual duties.

**Measures**

**Type of Care Event**

The quantity and nature of all NA-patient functional task-related care events was established by independent systematic observation pre- and post-intervention. Observers rated the type of care for observed patients as either custodial or restorative events using a tool described below. In addition, the numbers of patients receiving no restorative care events at all during observation was calculated to capture changes in rates between patients observed. The observational tool used was adapted from that utilized in a North American study of a long-term care facility [20], which demonstrated favorable intra-rater reliability (person separation reliability of 0.77), inter-rater reliability (80% to 100% agreement on each of the care behaviors), and validity (evidence of unidimensionality and good fit of the items). Adaptations accommodated for data collection in a hospital environment and alteration to UK nomenclature.

Three blinded volunteer assessors undertook observations. The observers monitored for activity in any 1 of 8 functional domains: bed mobility, transfers, mobility, washing and dressing, exercise, hygiene (mouth care/shaving/hair/nail care), toileting, and eating. Patient activity observed within these domains was identified as either a restorative or custodial care event. For example: “asks or encourages patient to walk/independently propel wheelchair to bathroom/toilet/day room/activities and gives them time to perform activity” was identified as a restorative care event, while “utilizes wheelchair instead of encourages ambulation and does not encourage patient to self-propel” was considered a custodial care event. All observations were carried out by student physical therapists in training or physical therapy assistants, all of whom were familiar in working in the acute facility with hospitalized older people. In an attempt to optimize

---

**Figure 1.** QI project design. The 4Es approach was completed over a total of 26 weeks. The scale reflects the ranges of time in weeks for each component of the approach. The dual educational components (Educate and Execute phases) were developed in parallel with the initial practice observation (Engage phase), which was repeated over the final weeks (Evaluate phase).
internal consistency, observer skill was quality-controlled by ensuring observers were trained and their competency assessed in the use of the evaluation measurement tool.

Bays of 3 to 6 beds comprised each observation space. Three 90-minute time epochs were selected for observation—awakening (early morning), lunchtime (middle of the day), and afternoon (before evening meal)—with the aim that each time frame be observed on a minimum of 1 occasion on each of the 5 wards to generate a minimum of 15 observation sessions. Resources dictated observational periods to be 90-minutes maximum, per epoch, on weekdays only. The mean (range) time between the didactic study day and the ward-based practice day was 4 (1–8) weeks, and between the ward-based practice day and the second observational period was 6 (1–14) weeks.

Patient Characteristics
Differences in the acuity of patients between pre- and post-QI activity in the observational environments could influence care demands. Therefore, patient characteristics before and after the QI activity were measured to assess for stability. Prior to each session, observers recorded patient demographic details and current STRATIFY score, a predictive tool used at the time to segment fall risk [21], from patients’ clinical records. Two measures were used to offer contemporaneous representation of the observed population in the observation environment: a modified Barthel index [22], which provides a measure of activities of daily living [23], and the Abbreviated Mental Test Score [24], a simple diagnostic screen for cognitive impairment. All patients were considered as recuperating and thus eligible for observation except those with a “Patient-At-Risk” score ≥ 4, indicating physiological factors associated with established or impending critical illness [25], or if an end of life care plan was clearly detailed in the clinical record.

Data Analysis
Patient demographics are reported descriptively. Ordinal data are summarized using median and inter-quartile ranges (IQR), interval/ratio data using mean and standard deviation (SD) unless otherwise stated. Categorical data are reported as percentages. Comparison of observed patient samples before and after the QI period were compared with the Mann-Whitney U-test for ordinal data, 2 sample t-tests for interval/ratio data, and chi squared tests of proportions for other variables.

Analyses were carried out using STATA 11 ME (StataCorp, College Station, TX) and SPSS v17 (SPSS, Chicago). Statistical significance was set at $P \leq 0.05$.

Ethical Issues
This study was approved by the local UK NHS Trust clinical audit committee (Quality Improvement project 2038).

RESULTS

Care Events by NAs
Observations were undertaken across the 5 wards on 14 workdays (Monday–Friday) over 6 weeks in the pre-QI period, and on 16 workdays over 4 weeks in the post-QI period, yielding a total of 51 hours of observation.

Overall, across all care environments, there was a statistically significant proportional increase in restorative care from 74% to 92% [$\chi^2(1) 9.53$, $P = 0.002$] (Figure 2). This represents an increase in restorative care events from 40 to 94. Observed custodial care events decreased from 14 to 8, a 43% reduction in custodial care events overall, a difference which remained irrespective of the environment (acute or subacute care), pre- and post-QI activity ($P = 0.538$ and $P = 0.695$, respectively).

There was a marked decrease in the number of patients receiving no NA-led restorative care events from 59 (74%) to 32 (48%) before and after QI activity respectively, [$\chi^2(1) 10.63$, $P = 0.001$].

Patients Observed
Patient population characteristics remained stable during the course of the QI activity; there were no significant differences in the observed patient characteristics pre- and post-QI activity (Table). In 51 hours of observation undertaken by 3 independent observers there were 80 and 71 occupied beds before and after QI activity, respectively, representing a stable bed occupancy rate of 94% and 83% ($P = 0.074$). Of the occupied beds, 98.7% and 98.6% of patients (pre- and post-QI activity, respectively) were considered recuperating and therefore appropriate for a restorative care approach.

DISCUSSION
We have shown an increase in the proportion of restorative care delivered by NAs working with hospitalized older adults following the delivery of a holistic training package for NAs. While the proportion of restorative care
within patients observed was high pre-intervention (74%), it significantly increased post-QI (92%). In contrast, the between-patient proportion failing to receive any NA-led restorative care remained substantial post-QI, (48%), although significantly decreased from pre-QI proportions (74%). We therefore conclude that a meaningful decrease across patients receiving no restorative care and a meaningful increase in within-patient restorative care events post-QI intervention occurred.

Our study furthers research in methods of increasing restorative care events delivered by NAs. In a randomized controlled trial by Resnick et al [16], a structured 6-week restorative care program incorporating teaching NAs restorative care philosophies (tier 1) and facilitating NAs to motivate residents to engage in functional activities (tier 2) was compared to placebo (a single 30-minute educational session in managing residents’ behavioral symptoms) [16]. Results showed the 6-week program led to more restorative care, with NAs demonstrating enhanced knowledge and expectations of restorative care outcomes and better job satisfaction. Our educational package (1 day) and ward-based-learning session (3–4 hours) was much shorter than Resnick et al’s 6-week intervention [16], and the optimal dose of educational packages for NAs is yet to be determined and needs to be addressed in future studies. Furthermore, while we found education increased restorative care across multiple environments, it is yet to be determined whether more restorative care has a positive impact on patient function downstream of an acute inpatient stay. In fact, determination of restorative care’s influence on augmenting rehabilitation outcomes is a neglected aspect of nursing-AHP practice that we aim to define and investigate in ongoing studies.

The patient population characteristics within the target wards were stable over the course of the QI project. Observed patients’ median Barthel (11) and Abbreviated Mental Test (6) scores remained stable and are indicative of high levels of day-to-day activity dependence [24,26–28]. Over the QI activity period it was therefore unsurprising that modest proportions of patients directed their own care (28% and 33% pre and post-QI, respectively). Subsequently, demands on staff to lead patient care were substantial, leading to high risks of social or clinical iatrogenesis and hospital-associated deconditioning.

In a previous observational study, substantial patient inactivity was found in a highly dependent cohort of patients [29]. Fear of falling and insignificant emphasis on ambulation were cited as patient and organizational-centric reasons, respectively. Furthermore, in a selective observational study, patients receiving function-focused care (FFC; synonymous to restorative care) in an acute hospital environment developed less physical functional decline compared to those receiving custodial care [30]. However, patients who had fallen during their hospital stay received less FFC. The authors suggest limited FFC in fallers was deployed to minimize further risk but concluded there is need for nursing and therapy interventions that manage fall risks through endorsing functional activities instead of mobility restriction [30].

The interpretations from these 2 studies calls on whether organizational cultures are unintentionally risk averse in promoting physical function [31]. During this
RESTORATIVE CARE

Table. Characteristics of Patients Occupying Beds During Observation

<table>
<thead>
<tr>
<th></th>
<th>Before QI Activity (n = 80)</th>
<th>After QI Activity (n = 71)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographic characteristics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean age (SD), years</td>
<td>84.3 (7.6)</td>
<td>83.6 (7.3)</td>
<td>0.724</td>
</tr>
<tr>
<td>Gender (% female)</td>
<td>60</td>
<td>75</td>
<td>0.056</td>
</tr>
<tr>
<td>Function/morbidity characteristics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STRATIFY score, median (IQR)</td>
<td>1 (0–2)</td>
<td>1 (1–2)</td>
<td>0.256</td>
</tr>
<tr>
<td>Recuperating (%)</td>
<td>98.7</td>
<td>98.6</td>
<td>0.945</td>
</tr>
<tr>
<td>Barthel score, median (IQR)</td>
<td>11 (7–15)</td>
<td>11 (7–13)</td>
<td>0.421</td>
</tr>
<tr>
<td>Abbreviated Mental Test Score, median (IQR)</td>
<td>6 (3–9)</td>
<td>6 (2–8)</td>
<td>0.504</td>
</tr>
<tr>
<td>Hospital outcome</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Length of stay,* median (IQR), days</td>
<td>27.5 (13–41)</td>
<td>25.5 (13–46)</td>
<td>0.612</td>
</tr>
<tr>
<td>Readmission rate,† (%)</td>
<td>20</td>
<td>22</td>
<td>0.819</td>
</tr>
</tbody>
</table>

IQR = interquartile range; SD = standard deviation.

*Defined as number of consecutive nights stay on acute older persons unit or subacute care facility when observed in the study (NB. 3 subacute care facility patients ongoing at time of data collection post QI activity).

†Readmission to acute hospital within 1 month of discharge, inclusive of those who returned to acute site from subacute care facility.

project, we encountered instances in which NAs unwittingly emphasized restriction of movement function to manage risk at the expense of movement enablement. We perceived this to be the result of a top-down directive which NAs could not be expected to challenge. In addition, NAs interpreted acute ward rest periods to mean restriction of functional movement unless specifically requested by the patient. Rest periods are based on sensible conjecture and some evidence that systematic restriction of intrusion counters the effects of constrained rest and sleep [32,33]. An unintended consequence is an imperfect clinical environment in which to recover from acute illness. It is also conceivable that an older patient exposed to an environment sponsoring such cultures might experience detrimental effects, or social iatrogenesis. We consider that investment in restorative care in acute medical environments is justified as part of a solution.

Limitations

While observational studies are more robust for measuring behavioral activities compared to self or proxy reporting [34], they are exposed to observer judgment and drift. An attempt was made to minimize this with the binary measurement of restorative versus custodial care and by random sampling of wards and time frames to capture an entire healthcare environment.

The observational study tool was based on one previously developed where acceptable reliability and validity was established and where observations were based on what individual care staff were practicing regardless of their operational environment [20]. In contrast, our observations were based in predetermined environmental spaces regardless of what care practice occurred within it. We consider our approach justifiable in minimizing observer influence on an individual’s practice by emphasizing to them that observers were interested in what happened in an environment [35,36]. However, we acknowledge the risk of under representation of care by observers not following the care delivery, and that local validity and reliability of our methods was not undertaken. Lastly, whilst training for observers was undertaken in this study to standardize the observations undertaken, validation of this method would be a feature required of any future experimental work.

Conclusions

Our findings support the current understanding of restorative care [14–16] and provides proof of concept that dedicating resources in a previously under-invested part of the workforce is feasible, well-accepted, and meaningful. The results are in keeping with the concept that the NA staff group is ready and able to fulfil their roles as direct caregivers, supporting and relieving other trained staff [11].
Corresponding author: Gareth D. Jones, MSc, Physiotherapy Dept, 3rd Fl Lambeth Wing, St Thomas’ Hospital, Westminster Bridge Rd, London SE1 7EH, UK, gareth.jones@gstt.nhs.uk.

Funding/support: This work was supported by a small grants application to the Guy’s and St Thomas’ Charity, project code S100414.

Financial disclosures: No conflicts of interest to declare.

Acknowledgment: The authors acknowledge members of the steering group for their input: Rebekah Schiff, Carrie-Ann Wood, Judith Centolanti, Judith Hall, and Richard Page; Anne Bisset-Smith and Claudia Jacob for their initial pilot work; Amanda Buttery, Lottie Prowse, and Ryan Mackie for practical assistance; Siobhan Crichton for her statistical help; and Jacky Jones, Michael Thacker, Tisha Pryor, and Sarah Ritchie for helping review the manuscript.

References
6. Covinsky KE, Pierluissi E, Johnston CB. Hospitalization-associated disability: 'She was probably able to ambulate, but I’m not sure'. JAMA 2011;306:1782–93.
29. Callen BL, Mahoney JE, Grieves CB, et al. Frequency of hall-