EVALUATION OF SHORT-TERM EFFECTIVENESS OF
THE DISEASE MANAGEMENT PROGRAM
“DI.PRO.DI.” ON CONTINUITY OF CARE OF
PATIENTS WITH CONGESTIVE HEART FAILURE

To the Editor: This study aimed to assess the early effectiveness of a disease management program (DMP), called “Dimissione Protetta Difficile” (Di.Pro.Di) conducted by personnel from the intensive care unit (ICU) of Public Hospital S. Paolo, Naples, Italy. This hospital serves an area of 31 km² with 211,000 inhabitants (20.6% aged ≥ 65). This controlled nonrandomized trial aimed to stabilize patients fully with three home visits in the 3 months after discharge. Rehospitalizations and hospital length of stay of patients suffering from congestive heart failure (CHF) after discharge from the ICU were focused on, because reducing these outcomes is a crucial challenge for developed countries because of their increasing elderly population. The literature shows that DMPs improve care.1–3 Comparing these outcomes in treatment and control groups, using conventional statistic tests, it was observed, albeit in small numbers, that Di.Pro.Di significantly reduces the number and risk of rehospitalizations and total hospital length of stay.

METHODS

Multidisciplinary teams evaluate patients and educate their families. Patients receive up to three domiciliary visits in the 3 months after discharge. Telephone communication integrates these visits. A physician evaluates the patient’s condition and, if there is mild deterioration, modulates the therapy or orders further investigations. If there is major deterioration, the patient is rehospitalized. If the patient’s health condition is stable, the patient is fully discharged.4 The group of patients enrolled in the program (treatment group, TG) were benchmarked with a group of patients hospitalized in the same structure but not enrolled in the program (control group, CG). The outcomes of a subset of patients enrolled in the TG were retrospectively analyzed. A t-test and a chi-square test with Yates’s correction were performed to assess the statistical significance of the results and the homogeneity between groups.

Protocol

Two hundred fifty patients were involved in the Di.Pro.Di, approximately 20 at any one time. Sixteen patients met the inclusion criteria: aged 65 and older, New York Heart Association classification II or III, high risk of rehospitalization, and adequate family support.

The hospital provides the required predosed drugs. During each visit, a gerontologist or cardiologist and a nurse, supported by a car driver or orderly, perform and electrocardiogram, oximetry, blood-gas analysis, capillary blood glucose, and urinalysis.

Oxygen therapy or pulmonary ventilation might also be required. After the third visit, the patient is discharged from the Di.Pro.Di and, according to the stability criteria, rehospitalized or transferred to local health services.

RESULTS

The results of this study are summarized in Table 1.

Outcomes

**TG After Di.Pro.Di**

The TG included 16 patients with a mean age of 81.0 ± 8.8. Four patients (25%) were rehospitalized, for a total of four rehospitalizations, (mean 0.3, maximum of one patient). The total hospital length of stay was 17 days (mean total 1.1 ± 2.1 days per patient).

**TG Before Di.Pro.Di**

Six patients in the TG were investigated retrospectively for the year before the Di.Pro.Di. Five of them (83%) were rehospitalized, for a total of 11 rehospitalizations (mean 1.8 hospitalizations; maximum 4 per patient). Total hospital length of stay for these patients was 69 days (mean total 11.5 ± 7.2 days per patient).

**Control Group**

The CG included 18 patients with a mean age of 79.5 ± 9.6. Eleven (61.1%) were rehospitalized, for a total of 17 rehospitalizations (mean 0.9, maximum 3 per patient). Total hospital length of stay was 234 days (mean total 13.0 ± 7.7 days per patient).

Homogeneity of TG and CG

No statistically significant difference was observed between the CG and TG before Di.Pro.Di in terms of mean age, number of rehospitalizations, and hospital length of stay. In both groups, the number of rehospitalizations and hospital lengths of stay were slightly higher than reported in previous studies,7,6 possibly because the mean age was slightly higher.

Table 1. Rehospitalizations and Hospital Length of Stay According to Group in the 3 Months After Discharge

| Outcome                      | Control Group (n = 18) | Before Di.Pro.Di* (n = 6) | After Di.Pro.Di (n = 16) |
|------------------------------|-----------------------|--------------------------|--------------------------|
| Rehospitalizations, n        |                       |                          |                          |
| Patients rehospitalized      | 11                    | 5                        | 4                        |
| Rehospitalizations           | 17                    | 11                       | 4                        |
| Length of hospital stay      |                       |                          |                          |
| Days per group, n            | 234                   | 69                       | 17                       |
| Days per patient, mean ± standard deviation | 13.0 ± 7.7 | 11.5 ± 7.2 | 1.1 ± 2.1 |

*Disease management program “Dimissione Protetta Difficile” (Di.Pro.Di).
Hospitalizations
The risk of rehospitalization in the TG was 40% lower ($P = .03$) than in the CG. The ratio of the risk of rehospitalization, after the Di.Pro.Di and before, was 0.30 ($P = .009$).

Length of Stay
The duration of hospital stay was 10.4 days shorter in the TG ($P < .001$) than in the CG. The duration of hospital stay was in the TG was 11.9 days shorter after the Di.Pro.Di than before ($P < .001$).

CONCLUSION
Di.Pro.Di significantly reduced number of rehospitalizations and hospital length of stay. A possible reason is that Di.Pro.Di allows patients to be fully stabilized before complete discharge. As in other DMPs, Di.Pro.Di improved the education of patients and families, improving adherence to therapy and lifestyle after discharge. These preliminary results suggest that Di.Pro.Di improves the effectiveness of care for elderly patients with CHF.

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FUNCTIONAL ASSESSMENT OF OLDER ADULTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE LIVING AT HOME

To the Editor: Chronic obstructive pulmonary disease (COPD) is a common cause of morbidity in older adults.1 The national economic burden of COPD is enormous, with an estimated $37 billion spent annually caring for patients with COPD in the United States (U.S.).2 By receiving specific services in the home, including oxygen therapy and physical exercise instruction, older adults living with COPD may remain at home, rather than requiring placement in an institutionalized setting.3 Even in the absence of any improvement in lung function and quality of life, pulmonary rehabilitation has been shown to be effective in improving exercise capacity and reducing symptoms.4 This article will discuss an exploratory project testing an exercise intervention that was developed to help seniors with respiratory and mobility impairment improve their ability to perform activities of daily living (ADLs) as measured by the Manchester Respiratory Activities of Daily Living Questionnaire (MRADL), an instrument that assesses four functional domains in older community-dwelling individuals with COPD.

This pilot study investigated the importance of daily low-impact exercise training as a way to optimize functional ADLs. The following research questions were addressed in this study:

- Was there a significant difference in the oxygen saturation of participants in this study before and after the intervention as measured using a finger-probe pulse oximeter?
- Was there a significant difference in the reported functional ADLs before and after the intervention as measured using the MRADL?
- Was there a difference in the performance of ADLs in participants classified as having moderate or severe COPD after the intervention?