Cost-Effectiveness of a Barcelona Home Care Program for Individuals with Multimorbidity

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To improve the efficiency and effectiveness of care and optimize healthcare resources, a home healthcare program was created for individuals with multiple chronic conditions. Demographic and clinical characteristics of the 261 individuals (mean age 84) included in the program from its inception in 2011 through 2013 (mean stay in the program 203 ± 192 days) were prospectively analyzed. The number of hospital admissions, length of stay, and costs for individuals admitted to the program were compared for two time periods: the 6 months before admission to the program and their stay in the program. After admission to the program, the number of hospital admissions and the hospital length of stay per person per month decreased from 0.36 ± 0.21 to 0.19 ± 0.52 (P < .001) and from 3.5 to 1 day (P < .001), respectively. Surveys of randomly selected patients and caregivers showed high satisfaction with the program. Costs per person per day decreased from €54.65 (US$73.12) to €17.91 (US$23.96), a reduction of 67.1%. Fewer admissions and shorter hospital stays enabled the hospital to eliminate one acute bed for every 50 individuals admitted to the program. In conclusion, home care for individuals with chronic illness with multimorbidity reduced the number of hospital admissions and length of stay, resulting in good patient satisfaction and lower costs. J Am Geriatr Soc 63:1017–1024, 2015.

Key words: home care for individuals with chronic illness; cost-effectiveness; hospital at home

In 2040, one in five Spaniards will be aged 65 and older. As the population grows older, the prevalence of potentially disabling diseases increases. According to the Spanish National Statistics Institute, individuals aged 65 to 74 have an average of 2.8 chronic conditions, increasing to 3.2 in individuals aged 75 and older.

Having multiple chronic conditions (multimorbidity) is associated with more hospital admissions, nosocomial complications, disability, institutionalization, polypharmacy, and adverse drug events, which together worsen quality of life and increase mortality and healthcare costs.

Individuals with chronic illness vary widely in their status (e.g., functional and cognitive status, social situation, personal priorities) and the characteristics of their disease (number of chronic conditions, severity, prognosis). The clinical management of these individuals is complex, and because of the lack of clinical guidelines adapted to vulnerable older adults, management is often based on recommendations for acute disease.

In recent years, programs have been developed in many countries to care for individuals with chronic illness at home, including programs aimed at treating a single chronic disease without taking into consideration the overall condition of individuals with multimorbidity and those aimed at meeting the complex medical and psychosocial needs of an increasingly frail and ill population. These programs are usually based on education and prevention of decompensation, as well as early attention after hospital admissions, but they do not usually include home hospital care. Sometimes these programs are integrated into the country’s public healthcare system. Healthcare management organizations in the private sector have undertaken other initiatives. Although these programs aim to improve quality of life and avoid hospitalization, their results are controversial, and insufficient data are available to determine their clinical benefits and economic effect. Nevertheless, some experiences in home
treatment of exacerbations of the most prevalent chronic conditions have achieved outcomes similar to conventional hospitalization and good satisfaction in several countries, including the United States.\textsuperscript{2,28–31} However, little information is available about programs that combine follow-up of stable individuals with multimorbidity with early detection and treatment of exacerbation of disease in the individual’s home.

To improve the efficiency and effectiveness of care, guarantee continuity of care, and optimize healthcare resources, a home healthcare program was created for individuals with multiple chronic conditions. It was hypothesized that this program would lower healthcare costs.

\textbf{PARTICIPANTS AND METHODS}

Reference Population

In Spain, the National Health Service provides universal healthcare coverage for all residents; this system is financed through general taxes and involves some copayments for drug prescriptions. Approximately 24\% of the population also has private medical insurance.

Assistència Sanitària (AS) is a private insurance company owned by a physicians’ cooperative; AS insures approximately 200,000 people in the province of Barcelona. Upon contracting insurance with AS, insured individuals become members of a users’ cooperative, the Societat Coopèrativa d’Instal-lacions Sanitàries (SCIAS), which owns the Hospital de Barcelona. This hospital covers approximately 70\% of the hospitalization needs of the population that AS insures. AS and SCIAS are nonprofit organizations. Members are free to choose their physicians.

The Hospital de Barcelona works on a mixed plan; there is a fixed staff of physicians for central services, but the hospital is open to external consultants from AS’s medical staff for most medical and surgical specialties. The hospital has 290 beds for individuals with acute conditions. Apart from attending individuals insured by AS who require in-hospital or emergency department (ED) treatment, the hospital has also provided emergency house calls (EHCs) 24 hours a day, 365 days a year, since 1988.

To evaluate the home healthcare program, all individuals admitted to the program from its inception in May 2011 to May 2013 were prospectively studied.

Inclusion Criteria

Adults with one or more severe, progressive, potentially disabling chronic conditions and limited longevity who had been admitted to the hospital for one of these conditions at least twice in the preceding year resulting in at least 25 days’ hospitalization were included. On admission to the home healthcare program, individuals were clinically stable or were terminal and able to receive palliative treatment at home. Preference was given to individuals with heart failure (New York Heart Association Class III–IV), chronic obstructive pulmonary disease (COPD; Gold Criteria III–IV), dementia (Geriatric Depression Scale score 5–7), chronic kidney disease (Kidney Disease Outcomes Quality Initiative Stage IV–V), or multimorbidity because these conditions were considered to result in repeated hospitalizations. Individuals without telephones or caregivers, those residing outside the city of Barcelona, and those whose primary disease was cancer were excluded because AS has a specific team to care for individuals with terminal cancer. Individuals or their legal representatives had to provide written informed consent to participate in the program.

All people who fulfilled the clinical inclusion criteria but were not admitted to the program because they lived outside the city limits of Barcelona or did not provide written informed consent were assigned to the control group.

Development of the Program

The home healthcare program team consists of one coordinating physician, two geriatricians, two internists, 22 primary care physicians, one coordinating nurse, and 13 nurses.

Individuals were identified proactively while hospitalized or by their primary care physicians. The program’s medical coordinator evaluated all individuals, determined whether the criteria for inclusion in the program were met, and assigned a primary care physician and a nurse to attend the person while his or her condition remained stable (follow-up team).

Within 24 hours after admission to the program, an intervention team consisting of a nurse and an internist or geriatrician visited the individual, performing a complete geriatric evaluation and designing a care plan, which included assessing the need for physiotherapy, caregiver education, social and psychological support, medical and nursing care, changes to drug therapy, and treatment for geriatric syndromes, as well as taking into consideration the individual’s and family’s wishes and expectations. The intervention team’s physician personally informed the person’s family doctor of all clinical aspects and treatment objectives.

The follow-up team assigned to their care, who customized the frequency of visits to each individual based on the care plan and the individual’s status, proactively followed clinically stable individuals. A direct telephone attended by the coordinating nurse was available to patients and caregivers 12 hours a day (8:00 a.m. to 8:00 p.m.). During the time period that the program did not cover (8:00 p.m. to 8:00 a.m.), the EHC team was available for people in the program and for those not in the program.

If an individual’s condition worsened or the family doctor or nurse requested it, the program’s coordinator determined immediately which professional should visit the person at home. Within 1 to 6 hours, depending on the individual’s clinical condition, the intervention team reevaluated the individuals and delivered more-complex treatment (e.g., intravenous drug therapy, oxygen therapy), following standardized criteria and protocols.\textsuperscript{32} These protocols included, if necessary, daily follow-up visits, as well as drug administration and proactive telephone monitoring. Ongoing outpatient attention was provided until the individual’s condition stabilized, at which point the follow-up team resumed control. If the individual fulfilled...
criteria for advanced disease requiring only palliative treatment, palliative treatment was provided at home if the individual desired.

The home healthcare coordinating physician attended individuals admitted to the hospital, and as soon as they were stabilized, they were discharged to home hospital care.

Individuals’ clinical histories, including physicians’ and nurses’ orders, were available to all program physicians online and to the intervention team on paper in the individual’s home.

Variables Evaluated

Information on hospital admissions, length of stay, ED admissions, EHC home visits, and related costs was recorded during the 6 months before admission to the program. Information on age, sex, description of the main chronic conditions, Charlson Comorbidity Index and PROgnostic model and FUNctional prediction Developed for Pluripathologic Patients in Spain (PROFUND) Index for individuals with multimorbidity, and Barthel Index of activities of daily living was recorded at admission to the program based on a detailed clinical history compiled on the intervention team’s first visit. Information on length of stay in the program (days); hospital admissions and length of stay and number of visits to the hospital ED (adjusted for individual and month); number of telephone consultations; home visits of internists, geriatricians, physician family doctor and nurse; death and place of death (home or hospital) was recorded during the stay in the program. Information on hospital admissions, length of stay, ED admissions, EHC home visits, related costs, and Charlson Comorbidity Index was recorded for control group participants.

Satisfaction was evaluated on an analogue scale administered to individuals and caregivers selected randomly from among individuals who stayed in the program for at least 30 days (range 0 (very poor) to 10 (excellent)).

Cost of the Program

To evaluate the cost of the program, the costs for all individuals included from the start of the program to the end of the study period or death of the individuals were analyzed and compared with the costs involved in treating these same individuals in the 6 months before their inclusion in the program and with the costs involved in treating the control group.

In all cases, costs related to hospitalization, ED visits, EHC, physician fees, ambulances, home oxygen therapy, laboratory tests, complementary tests, rehabilitation, and other expenses were analyzed. Other costs associated with the program were also included (e.g., professional fees, administrative costs, healthcare material).

Statistical Analysis

To quantify the effect of the program, the mean number of hospital admissions during the 6 months before admission to the program was compared with the mean number of hospital admissions after incorporation in the program, the mean number of days’ hospital stay during the 6 months before admission to the program was compared with the mean number of days’ hospital stay after incorporation in the program, the mean number of ED visits during the 6 months before admission to the program was compared with the mean number of ED visits after incorporation in the program, and the mean number of EHC home visits during the 6 months before admission to the program was compared with the mean number of EHC home visits after incorporation in the program.

The median number of hospital admissions, days’ hospital stay, ED visits, and EHCs for each day the person was in the program was calculated. The overall medians were calculated from the results for each individual.

A paired-data design was used to compare costs for individuals in the periods before and after their inclusion in the program. Because this design that did not guarantee a normal distribution, the Wilcoxon test for paired samples was used. The Mann–Whitney U test was used to compare the costs for program participants with those for control participants because the populations were independent.

To compare the risk of mortality according to the Charlson and PROFUND scores between surviving participants and those who died, the proportions of participants classified as low-intermediate risk, intermediate-high risk, and high risk were compared using a chi-square test of independence (contingency table). The mean scores of both indices for surviving participants and those that died were also compared.

RESULTS

Four hundred sixty-four people were evaluated during the study period, 261 (56%) of whom fulfilled the inclusion criteria and were incorporated into the program; 203 individuals were excluded, 171 because they did not fulfill the clinical criteria and the other 32 because they resided outside the city of Barcelona or did not provide written informed consent; these 32 individuals constituted the control group (Figure 1).

Mean age was 84.4 ± 7.3; 151 (58%) patients were women. The mean length of stay in the program was 203 ± 192 days; the stay was longer than 180 days in 104 patients (40%) and longer than 360 days in 54 (21%). The mean follow-up period in the control group was 160 ± 218 days.

Two hundred thirty-five individuals (90%) had at least two potentially disabling chronic conditions; the rest had at least one chronic condition (dementia, n = 10 (3.8%); COPD, n = 12 (4.6%); heart failure, n = 2 (0.8%); other, n = 2 (0.8%)). Pressure ulcers or vascular ulcers were present in 64 individuals. The mean Barthel score was 38.9 ± 31.2. Program participants did not differ from those in the control group in age or sex. Table 1 shows the categories of the Charlson and PROFUND index for program participants.

Distribution of all the chronic diseases in individuals with multimorbidity, in program participants, and in control group participants is shown in Table 2. In the healthcare group, 35 (15%) participants had two chronic diseases, 61 (26%) had three, 75 (32%) had four, and 64
(27%) had five or more. In the control group, seven (22%) participants had two chronic diseases, four (13%) had three, 13 (41%) had four, and eight (25%) had five or more. There were no significant differences in comorbidity between the two groups.

Figure 2 provides details about hospital admissions and length of hospital stay during the 6 months before admission to the program and during the program. After admission to the program, the number of hospital admissions adjusted for participant and month decreased from 0.36 ± 0.21 to 0.19 ± 0.52; this difference was significant on the Wilcoxon test for paired samples \((P < .001, 95\% \text{ CI} = 0.24\text{–}0.32)\). Furthermore, the number of days spent in the hospital adjusted for individual and month decreased from 3.5 ± 2.7 to 1.0 ± 3.5; this difference was significant on the Wilcoxon test for paired samples \((P < .001, 95\% \text{ CI} = 0.24\text{–}0.32)\). The number of visits to the ED increased moderately (from 0.1 ± 0.2 to 0.3 ± 0.5; \(P < .001, 95\% \text{ CI} = 0.24\text{–}0.32\)); likewise, the number of EHC visits increased moderately (from 0.5 ± 0.5 to 1.3 ± 0.8; \(P < .001, 95\% \text{ CI} = 0.24\text{–}0.32\)). Program participants had fewer hospital admissions than control group participants (0.19 ± 0.52 vs 0.39 ± 0.39, \(P = .02\)) and shorter hospital stays (1 ± 3.5 days vs 3.2 ± 3.2 days, \(P < .001\)). No significant differences were detected in number of ED visits (from 0.3 ± 0.5 to 0.2 ± 0.3) or EHC (from 0.8 ± 1.3 to 0.7 ± 1).

The mean number of visits per person per month was 3.8 for nurses, 1.4 for intervention team physicians, 1.6 for family doctors, and 0.8 for EHC professionals. The number of days in which intravenous treatments were administered was 709 for antibiotics, 222 for palliative or comfort (morphine, scopolamine, midazolam), 111 for furosemide, 81 for corticoids, and 40 for iron therapy.

One hundred three program participants (40% of the total) died (mean stay in the program before death 141 ± 163 days), 74 (72%) of whom died at home; 18 (56%) control group participants died.

Mean Charlson and PROFUND scores of program participants who died after admission to the program were higher than in those who remained alive at the end of the study (Charlson 3.97 ± 1.57 vs 3.65 ± 1.28, \(P = .04\); PROFUND 17.5 ± 4.3 vs 15.6 ± 4.7, \(P = .03\)).

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**Table 1. Charlson and PROgnostic Model and FUNCTIONal Prediction Developed (PROFUND) for Pluripathologic Patients in Spain Indexes at Admission to Home Healthcare Program**

<table>
<thead>
<tr>
<th>Score</th>
<th>Risk of Mortality (%)</th>
<th>n (%)</th>
<th>Mean ± SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROFUND</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3–6</td>
<td>Low–intermediate (21–31)</td>
<td>8 (3.4)</td>
<td>16.7 ± 4.7</td>
</tr>
<tr>
<td>7–10</td>
<td>Intermediate–high (45–50)</td>
<td>17 (7.2)</td>
<td></td>
</tr>
<tr>
<td>11–30</td>
<td>High (61–68)</td>
<td>210 (89.4)</td>
<td></td>
</tr>
<tr>
<td>Charlson</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1–2</td>
<td>Low (26)</td>
<td>73 (28.0)</td>
<td>3.5 ± 1.6</td>
</tr>
<tr>
<td>3–4</td>
<td>Intermediate (52)</td>
<td>123 (47.1)</td>
<td></td>
</tr>
<tr>
<td>&gt;4</td>
<td>High (85)</td>
<td>65 (24.9)</td>
<td></td>
</tr>
</tbody>
</table>
Forty-eight satisfaction evaluations were completed, and the mean score on the analogue scale (0–10) was 9.3/1.1.

During the study, the program received an average of 35 telephone calls per day from individuals and caregivers.

Results of the Cost Analysis

Costs increased progressively before admission to the program. The mean expenditure per patient was €39.31/d for the year before admission to the program (data not used for the analyses), increasing to €54.65/d during the 6 months before admission.

Participants remained in the program a total of 52,913 days, with a mean stay of 203 days per person. The costs generated in the 6 months before incorporation added up to €947,672 (US$1,267,985) or €73.12 per person per day. The costs generated after these individuals were incorporated into the program added up to €2,891,695 (US$3,869,087) or €54.65 (US$73.12) per person per day. Thus, the cost of caring for these individuals decreased by 67.1% after they were incorporated into the program. Table 3 details the costs associated with different expenses in the periods before and after inclusion in the program.

The mean cost per patient per day was €17.07 (US$22.83) for the 158 participants who remained alive at the end of the study period, €19.72 (US$26.38) for the 103 who died after inclusion in the program, and €52.70 (US$70.51) for the 32 control group participants.

DISCUSSION

A multidisciplinary team was created to implement this home healthcare program for individuals requiring complex management. Most (90%) program participants had multiple chronic conditions (an average of three potentially disabling diseases per person). Before inclusion in the program, they generally saw multiple specialists and in many cases also saw a primary care physician. Most were vulnerable and dependent, with a high risk of hospital readmission and high associated morbidity and mortality, as shown by their Charlson and PROFUND scores (Table 1). Approximately half of the program participants had Charlson scores between 3 and 4, which implies theoretical 3-year mortality of more than 50%. One-quarter had Charlson scores of 5 or higher, with theoretical 3-year mortality of 85%. According to their PROFUND scores, 90% of the participants were in the high-risk group, with theoretical 1-year mortality of nearly 70%. The mean score on both indices was significantly higher in the group of participants who died.

After participants were incorporated into the program, the number of days per person per month spent in the hospital decreased from 3.5 to 1. This adjusted parameter confirmed that the number of days in the hospital decreased because the program was effective rather than because the individuals included in the program died. Various factors contributed to improvements: preventive intervention, early action in the initial phases of exacerbation, and early hospital discharges, which minimize the complications associated with hospitalization that often prolong hospital stays in vulnerable individuals with chronic illness.36,37

Furthermore, the intervention team making the decisions not only knew the participants’ diseases, but also knew their preferences and life directives, family situations, and caregiver resources; this generated a level of

<table>
<thead>
<tr>
<th>Morbidity</th>
<th>Home Healthcare</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atrial fibrillation</td>
<td>154 (66)</td>
<td>15 (47)</td>
</tr>
<tr>
<td>Chronic obstructive pulmonary disease</td>
<td>108 (46)</td>
<td>18 (56)</td>
</tr>
<tr>
<td>Heart failure</td>
<td>108 (46)</td>
<td>18 (56)</td>
</tr>
<tr>
<td>Neurologic disease</td>
<td>82 (35)</td>
<td>12 (38)</td>
</tr>
<tr>
<td>Osteoarticular disease</td>
<td>78 (33)</td>
<td>10 (31)</td>
</tr>
<tr>
<td>Dementia</td>
<td>76 (32)</td>
<td>3 (9)</td>
</tr>
<tr>
<td>Depression</td>
<td>41 (17)</td>
<td>5 (16)</td>
</tr>
<tr>
<td>Ischemic heart disease</td>
<td>49 (21)</td>
<td>10 (31)</td>
</tr>
<tr>
<td>Hematological disease</td>
<td>74 (31)</td>
<td>6 (19)</td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>47 (20)</td>
<td>9 (28)</td>
</tr>
<tr>
<td>Renal failure</td>
<td>55 (23)</td>
<td>7 (22)</td>
</tr>
<tr>
<td>Nonterminal cancer</td>
<td>17 (7)</td>
<td>7 (22)</td>
</tr>
<tr>
<td>Cirrhosis of the liver</td>
<td>8 (3)</td>
<td>3 (9)</td>
</tr>
</tbody>
</table>

Table 2. Distribution of Chronic Diseases in Participants with Multimorbidity Included in Home Healthcare and Control Groups
Another important factor was the availability of telephone consultation during the program’s working hours, which allowed participants and their caregivers to maintain contact with the team responsible for their care. The coordinating nurse, who resolved the problem telephonically or coordinated a home visit with the appropriate professional, attended the telephone. The telephone response often resolved the problem and provided the margin of maneuverability necessary to allow the team to evaluate and treat the complication at home, avoiding admission to the hospital and the inconvenience and risk involved in hospitalization.

This study has clear limitations. Data were not available about participants’ use of public healthcare resources before admission to the program, although use of these resources before admission to the program would most likely have lowered use of the insurer’s healthcare resources during this period, so increases in expenses related to the program would seem greater than they actually are. Only the increase in expenses that the use of the insurer’s healthcare resources generated can be evaluated (e.g., days’ hospitalization, house calls).

Moreover, after admission to hospital, individuals with chronic illness undergo functional deterioration that makes them more dependent and vulnerable, followed by a period of stabilization.\textsuperscript{38,39} Although the improvements documented in participants after admission to the program might be due to the evolution of their disease, early intervention in a preventive care program for individuals with chronic illness can decrease the cost of care.\textsuperscript{40} Comparing healthcare costs 1 year and 6 months before admission to the program showed that expenditures increased progressively to 30%. Furthermore, the mean follow-up period for individuals admitted to the program was 203 days, long enough to enable new episodes of decomposition in their chronic diseases to be observed. Early detection and treatment of these episodes, often through home hospitalization, was critical in minimizing healthcare costs. Moreover, the number of hospital admissions and costs were higher in the control group than program participants.

Finally, the results of the program cannot be compared with those of other home healthcare programs for individuals with multimorbidity that are mainly directed at education and prevention in the individual’s home and do not specifically include the complex interventions involved in home hospital care. To the knowledge of the authors, no other programs in Spain or other countries align all healthcare levels under a single line of control, so it is impossible to compare efficiency.

**CONCLUSIONS**

Program participants were attended with resources appropriate for their needs; the program was efficient in managing vulnerable individuals prone to repeated admission. The main features that helped reduce admissions were multidisciplinary teamwork, electronic medical records, and the ability to deliver complex care in participants’ homes.

In the midst of a financial crisis with important repercussions for the healthcare system, measures to reduce

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**Table 3. Cost per Person per Day in the 6 Months Before and After Admission to the Home Healthcare Program According to Expenditure**

<table>
<thead>
<tr>
<th>Expenditure</th>
<th>Before Admission</th>
<th>After Admission</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospitalization</td>
<td>$60.11</td>
<td>$7.52</td>
</tr>
<tr>
<td>Emergency department visits</td>
<td>$2.17</td>
<td>$3.22</td>
</tr>
<tr>
<td>Ambulances</td>
<td>$3.10</td>
<td>$0.90</td>
</tr>
<tr>
<td>Emergency house calls</td>
<td>$1.55</td>
<td>$2.14</td>
</tr>
<tr>
<td>Complementary tests</td>
<td>$2.74</td>
<td>$0.58</td>
</tr>
<tr>
<td>Specialist fees</td>
<td>$0.99</td>
<td>$0.78</td>
</tr>
<tr>
<td>Home oxygen therapy</td>
<td>$0.80</td>
<td>$1.27</td>
</tr>
<tr>
<td>Laboratory tests</td>
<td>$0.56</td>
<td>$0.60</td>
</tr>
<tr>
<td>Primary care physician fees</td>
<td>$0.35</td>
<td>$0.00</td>
</tr>
<tr>
<td>Rehabilitation</td>
<td>$0.23</td>
<td>$0.19</td>
</tr>
<tr>
<td>Other expenses</td>
<td>$0.51</td>
<td>$0.35</td>
</tr>
<tr>
<td>Program expenses</td>
<td>$0.00</td>
<td>$6.42</td>
</tr>
<tr>
<td>Total</td>
<td>$73.12</td>
<td>$23.96</td>
</tr>
</tbody>
</table>

confidence that made it easy to follow the program, as is evident in the results of the satisfaction questionnaire.

When participants’ conditions worsened to the point where they would have been treated in the hospital, the intervention team treated them at home until they became stable. Administering various parenteral treatments at home avoided or reduced hospitalization.

The number of ED and EHC visits increased after incorporation into the program. This increase had two causes. First, the program covered only 36% of the hours in the week. Outside the program’s timetable, these individuals had recourse to EHC and ED visits. Second, participants were advised that, in case of symptoms and signs of exacerbation, they should go to the ED, where they would be seen in the observation area while the necessary complementary tests were done. Although in most cases it was the program team that attended participants and discharged them to their homes, the stay counted as an admission to the ED.

When participants’ disease entered the terminal stage, they were given the choice to continue follow-up and treatment at home. Participants who died were considered candidates for palliative management on admission to the program because their disease was severe and irreversible. Given the option of dying at home with palliative measures, most participants (72% of those who died) and their families chose to remain at home rather than be transferred to the hospital.

It was hypothesized that adapting care to the needs of individuals with chronic illness would lower costs. The cost of caring for these individuals decreased by 54.6%. Furthermore, the decrease in hospital admissions and length of stay enabled the number of beds in the hospital to be reduced; five acute beds were eliminated from the hospital for every 50 program participants.

Sharing clinical information through electronic medical records that ensured confidentiality gave the members of the team access to participants’ history, follow-up information, and test results. Exchanging information by mobile telephone facilitated communication among the program coordinator, the coordinating nurse, the intervention team, and the nurses responsible for each participant.
costs while maintaining effectiveness and quality are especially opportune. Health economics studies have found that the way professionals treat patients is the main determinant of growing healthcare costs in developed countries, more important than aging, population growth, or healthcare inflation.41,42 Treating vulnerable individuals with chronic illness at home yields good outcomes and patient satisfaction at a lower cost.

LEARNING POINTS
A program based on multidisciplinary care and continued monitoring of individuals with multiple chronic conditions that combines follow-up of stable individuals with early detection and treatment of exacerbation of disease in the individual’s home is efficient and effective and individuals and caregivers appreciate it.

This home healthcare program reduced the number of hospital admissions and length of stays, resulting in a 67.1% decrease in the cost of caring for participants.

ACKNOWLEDGMENTS
We thank Mrs. Esperanza Fernández and Mrs. Laura Facerrías for help during the drafting of the manuscript. We are grateful to Mr. John Giba for editorial assistance and Dr. Rafel Campo for his help.

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Pharmaceutical staff: Ana Ayestaran, Carmen Lacasa, Mª del Mar Montes, Lourdes Estorch, Rosa García, Marta Guardino, Isabel Romero, Montserrat Santillana.

Psychology staff: Marta Romero.

Statistical staff: Ferran Reverter.

Conflict of Interest: The editor in chief has reviewed the conflict of interest checklist provided by the authors and has determined that the authors have no financial or any other kind of personal conflicts with this paper.


Sponsor’s Role: No sponsor.

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