

## Case management method applied to older adults in the primary care centres in Burjassot (Valencian Region, Spain)

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**Abstract** This research determines if the case management for health primary care means changes in: (a) frequency of use of social and health care resources, (b) number of patients visiting a doctor or social worker in the primary care centre, and visits that these professionals receive, (c) number of drugs consumed, (d) urgent hospital admittances which did not need significant intervention and (e) patients' and caregivers' satisfaction towards the social and health care resources received. The data were gathered with a questionnaire elaborated by the Administration and supervised by researchers. One hundred and fifty-two older dependent patients receiving home care in 2004, in a health department of the Valencia Region (Spain) collaborated. Results show: (a) Increase in the use of combined health and social resources in the intervention group; (b) number of patients visiting a practitioner or a social worker is lower in the intervention group, with a significant difference in both cases; (c) 33.3% of the patients in the intervention group versus 60.0% in the control group were admitted by the emergency room service for treatment that did not require surgery, but the difference is not significant; (d) 55.5% of these patients were very much satisfied with the care received and the benefits of the health care resources they had used versus 29.4% in the control group, showing a significant difference, 56.5% of the informal caregivers of patients in the intervention group were satisfied with the health care resources received by their family members, against 31.9% in control group.

**Keywords** Older adults · Dependency · Case management · Primary care

### Introduction

In the European welfare states the coordination between different social and health care resources is not as effective as expected in covering the wide variety of needs of dependent older adults, and has evidenced the lack of adaptation of supply and of service planning to meet these needs (Carpenter et al. 1999; Garcés et al. 2003; Fine and Glendinning 2005). The adjustments made as a result of proposals to reduce or control public spending (Comas et al. 2006) have led to an absence of growth in the supply of public resources and a shift to private supply and/or family or informal care (Field and Peck 2003; Knapp et al. 2001).

Case management has been identified as an effective care and service integration strategy, as well as an appropriate coordination method for practitioners and care levels delivering long-term care to the older adults. As stated by the PROCARE European Project and authors such as Scharlach et al. (2001), case management aims at matching supply and demand for persons in complex situations—with functional impairment and a high risk of institutionalisation, through the building up of a network of services over time and across services, and to empower patients and their relatives to use them self-reliantly. The coordination of the care delivery would avoid or reduce the loss of information and double treatments and a decrease in the use of care services (Leichsenring 2003; Scharlach et al. 2001).

The use of case management applied to social and health care for older adults has increased greatly in recent decades in Europe and at an international level (Scharlach et al. 2001). In fact, case management has become one of the

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basic strategies in care integration processes, together with collocation of services. For example, the localities of Quebec (Canada) and Flint (United States) have developed local care agencies for older people with social and health care needs, Norway has carried out care networks that provide care 24 h a day (WHO 2002), and countries such as UK, The Netherlands, Germany, Austria, Italy and France are using this procedure (Leichsenring 2003; Challis et al. 2001; Engel and Engels 2000; Davies 1994).

Case management has also been introduced in Spain in order to reduce the care load of older patients in hospitals, due to the high pressure that the Spanish health system suffers, generated by its universalistic and free character (Glasby et al. 2004; Applebaum et al. 2002; Garcés 2000). Nowadays, there are few experiences of case management programmes and their development has been very different (MTAS 2005) and, in fact, patients who need long-term care may still receive a variety of types of aid without the coordination of a single management team carrying out overall evaluation, determining which services are more necessary and appropriate and supervising the care itinerary (Garcés et al. 2006).

Optimisation of hospital resources, which are highly necessary but saturated as in Spain where there are long waiting lists, requires precise control of bed-occupancy rates (Garcés et al. 2004). This control could be exercised by case management teams in primary care, which can use patients' clinical and social data to match consensus and expert decisions to come to an agreement on the appropriateness and timeliness of admission and/or referral to other resources (Walsh and Clark 2002; Smith et al. 2000).

In regions like the Valencian Autonomous Region, where the study has been carried out, the case management has been used as a method to achieve health care and social services continuum for older adults with social and health care problems, locating teams at primary health services to act as a gateway to the healthcare and social systems. The development of case management is important for the sustainability, the welfare and the quality of life of the citizens of this region. Data show that in 2004 the Valencian Administration's health department estimated that there were 65,000 patients aged over 65 years, who required home social and health care services in this Spanish Region (Generalitat Valenciana 2004).

Regarding this, the aim of this study is to assess the effect of a case management programme applied in primary care in the frequency of use of social and health care resources; number of patients visiting a doctor or social worker in the primary care centre, and visits that these professionals receive; number of drugs consumed; urgent hospital admittances which did not need significant intervention and patients' and caregivers' satisfaction regarding the social and health care resources received. The authors set up a pilot

case management unit in two primary care centres of the town of Burjassot within the health department number 6 of the Valencian Autonomous Region (Spain). Both public and private healthcare and social services took part in the study.

## Methods

### Recruitment

The case management project was developed in 2004 in the two primary health care centres in Burjassot, health area 06 (Valencia, Spain). Burjassot was selected mainly due to: (a) its high percentage of dependent older adults who need long-term care, almost the 8.9% of their older adults were impaired for carrying out the activities of daily life and required home care in 2004 (Generalitat Valenciana 2004) while 7.1% of the older adults were in this situation in the Valencia Autonomous Region (Generalitat Valenciana 2002); (b) its complete network of long-term care resources; (c) its closeness to the Central Service of the Government Health Department; (d) the availability of several professionals and (e) the availability of long-term care resources from the social welfare department.

### Participants

The sample was composed by a total of 152 older dependent patients of home care; 101 patients were randomly assigned to the intervention group (receiving case management) and 51 to the control group, and a random intervention-comparison group design with only a post-intervention assessment was used. The participation of the health and social care professionals in the research project was voluntary and considered as extra health care work by the Health Department authority. Regarding this a maximum number of patients who could be attended by the case management team without overburdening them was fixed. Once the patients were included in the study, they signed an informed consent letter allowing the use of the confidential data for health information.

In a population with 65,000 dependent older patients who required home care in the Valencian Autonomous Region in 2004, the sample selected (152 older adults patients) would have a sampling error of  $e = 7.95$  (this is the potential maximum difference between the estimation of a parameter in the sample and the real parameter value in the total population), with  $P = q = 0.5$ , confidence level 95% and sampling fraction 0.234%. Table 1 shows a compared profile of the total population ( $N$ ) and the sample ( $n$ ). There are only minor differences between the variables assessed (gender, age, number of chronic pathologies, level

**Table 1** Profile of the population (*N*) requiring home care in the Valencia Autonomous Region (2004) and profile of the sample (*n*) included in the case management project (2004)

Indicators	Population ( <i>N</i> = 65,000) <sup>a</sup>	Sample ( <i>n</i> = 152)
Patient gender		
Male	29.1% (18,915)	29.6% (45)
Age: mean (SD)	81.9 (7.3)	78.8 (6.7)
Female	70.9% (46,085)	70.4% (107)
Age: mean (SD)	83.7 (7.4)	81.0 (6.9)
Chronic multi-disease patients	79.1% (51,415)	78.9% (120)
Moderate, severe or total dependency for instrumental activities of daily living—Lawton	89.3% (58,045)	86.2% (131)
Moderate, severe or total dependency for basic activities of daily living—Barthel Index	47.5% (30,875)	52.6% (80)
Patients with an informal caregiver	82.4% (53,560)	82.2% (125)
Caregiver's gender and age		
Male	22.3% (11,944)	24.8% (31)
Age: mean (SD)	60.4 (26.0)	59.7 (17.9)
Female	77.7% (41,616)	75.2% (94)
Age: mean (SD)	54.3 (22.2)	57.2 (14.0)
High burden of caregivers (Zarit)	47.7% (25,548)	42.4% (53)

Description of the indicators can be found in the variables and instrument subsection

<sup>a</sup> They are data calculated for this study from the data from the Valencian Administration Health Department, IMAD Pilot Scheme, 2005

of dependency for ADL, having or not having an informal caregiver and level of caregiver burden), supporting the notion that the sample represents the reference universe.

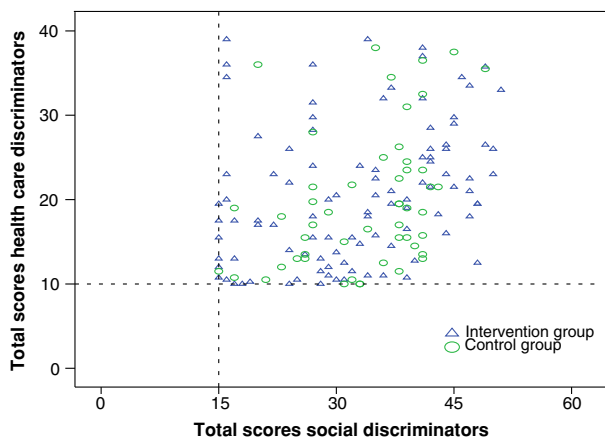
The assignation criteria for the selection of the patients in the study were done using a *referral protocol of social and health cases*. This referral protocol is a standardised and general procedure used in the health care centres of the Autonomous Valencian Region for assessing the risk of institutional admittance in a nursing home of the patients and, for this reason, it was considered useful for detecting the home care older patients at risk to be institutionalised. This protocol was done by the patients of the general practitioners who directly referred the older patients in this risky situation to the case management team.

This referral protocol includes the following information: (a) the patient provenance details; (b) the patient identification details; (c) the reason for referral to the case management team and (d) a prior patient assessment questionnaire which assesses 19 health and social variables. There are 13 health items (maximum score 43 points): communication, mobility, continence, emotional status, dressing, visual limitation, behavioural disorders, grooming, hearing limitations, memory disorders, feeding, spatio-temporal orientation and stability of health status—and six social items (maximum score 56 points): coverage of primary needs, performance of household chores, communication with their environment, social support, family status and housing. A health score above 10 points and a social score above 15 points are the criteria used by the Administration to establish that a patient is at risk to be

institutionalised in a nursing home. This interpretation standard was used as the inclusion criteria of the patients in the study, that is, all the patients who rose up to this mark or higher were included as participants and formed the study sample.

Once the patients reached the inclusion criteria for being part of the study, they were randomly assigned to the intervention or to the control group until both groups were up to the maximum number of patients fixed. The process was made at random with the simple random sampling method, in it, each individual who voluntarily collaborated in the research, was assigned a number (between 0 and 9999) by a statistic programme (Argimón and Jiménez 2004). If the number assigned was between 0 and 5549 the patient was assigned to the intervention group, the other patients (between 5550 and 9999) to the control group. Data shown in Fig. 1 indicate that all the patients included in the intervention and the control groups of the study reached the following inclusion criteria: either 15 points or higher in social discriminators and 10 points or higher in the health discriminators.

The data obtained from the referral protocol showed that 45.4% of the sample scored over 20 in the health discriminators and 61.8% of them scored over 30 in social discriminators and that there were no significant differences in age ( $t = -1.8$ ;  $df = 150$ ); gender variable ( $\chi^2 = 0.3$ ;  $df = 1$ ); health status ( $t = 0.6$ ;  $df = 150$ ) and other social variables ( $t = -0.7$ ;  $df = 150$ ) between the intervention and control groups. The specific social and health data of both patients obtained from the patient assessment



**Fig. 1** Placement of the patients included in the study according to the social and health discriminators cut-off

questionnaire of the referral protocol are described in Table 2 in terms of number and percentage of patients with a moderate or high deterioration in each of the indicators used. It can be highlighted from Table 2 that some of these patients were completely dependent for coverage of their primary needs (36.2% are totally dependent for carrying out the activities of daily life) and the majority required daily external support to perform household chores (68.4% are

totally dependent for these tasks). In addition, even if they had a caregiver, they perceived very little or no social support (77.6%). Their housing or access to the housing had architectural barriers (77.0%) and inappropriate facilities and equipment for their dependent status (60.5%).

### Intervention

The direct interaction with the patients participating in the project was carried out by a multidisciplinary team; comprising a physician, a nurse and a social worker, motivated by the topic of the research and voluntarily engaged and trained for the purpose. The primary care case management team took charge of: (a) assessing individual needs, (b) designing and starting individual care itineraries, (c) benefit quality assurance and (d) monitoring and on-going review of the strategy used. All the study protocols were approved by the Ethic Committee of the Health Valencian Regional Government.

Patients potentially eligible to be included in the study were first detected by a doctor, a nurse or a social worker of the primary care centres of Burjassot and later referred to the case management team. At this step, the case management team decided if the case would be included, reviewing the

**Table 2** Social and health impairment indicators at pre-intervention stage

Indicators	Intervention group (n = 101)	Control group (n = 51)	Total (N = 152)
Severe communication incoherence	31.7% (32)	27.5% (14)	30.3% (46)
Reduced mobility: wheelchair or bed confinement	29.7% (30)	21.6% (11)	27.0% (41)
Total urine and bowel incontinence	25.7% (26)	15.7% (8)	22.4% (34)
Severe visual limitation	28.7% (29)	35.3% (18)	30.9% (47)
Severe hearing limitation	14.9% (15)	15.7% (8)	15.1% (23)
Unable to dress without help	42.6% (43)	29.4% (15)	38.2% (58)
Unable to groom him/herself without help	57.4% (58)	37.3% (19)	50.7% (77)
Unable to feed him/herself or always requires help	14.9% (15)	7.8% (4)	12.5% (19)
Depressive emotional status	49.5% (50)	66.7% (34)	55.3% (84)
Severe memory disorders	23.8% (24)	25.5% (13)	24.3% (37)
Severe behavioural disorders	11.9% (12)	15.7% (8)	13.2% (20)
Total spatio-temporal disorientation	9.9% (10)	13.7% (7)	11.2% (17)
Gradual moderate or fast health status impairment	76.2% (77)	86.3% (44)	79.6% (121)
Totally dependent for BADL	43.6% (44)	21.6% (11)	36.2% (55)
Totally dependent for household chores	71.3% (72)	62.7% (32)	68.4% (104)
Totally dependent for communication and social relations activities	44.6% (45)	31.4% (16)	40.1% (61)
Insufficient or non-existent social support	72.3% (73)	88.2% (45)	77.6% (118)
Family conflicts arising from dependency caregiving	22.8% (23)	11.8% (6)	19.1% (29)
Overall housing assessment: inappropriate	82.2% (83)	84.3% (43)	82.9% (126)
Habitability: inappropriate	13.9% (14)	5.9% (3)	11.2% (17)
Housing facilities and equipment: inappropriate	57.4% (58)	66.7% (34)	60.5% (92)
Architectural barriers at home	76.2% (77)	78.4% (40)	77.0% (117)

These data for each group only refers to the number and percentage of patients with a moderate or high level of these indicators

total points obtained in the health and social indicators of the derivation protocol. If the patient obtained the values previously established (see the inclusion criteria at the participants section), he/she was included in the research and randomly assigned either to the control group or to the intervention. The patients in the control group continued to use the same resources until then (usual care), while new care itineraries were designed for each patient in the intervention group. For this last group—intervention group, the case management team contacted the patient and his/her main carer and value both cases as well as their home by visiting it and with interviews. After this evaluation, a care itinerary was defined and a report including the health and social data and a proposal plan for each individual case was elaborated.

The following health and social resources were available for the intervention groups in order to define the care itinerary: (a) Health care resources: primary care centre; speciality care centre; one home hospitalisation unit (at the public hospital Arnau de Vilanova in Valencia); one palliative care unit at the Dr Moliner Long-Term Care Public Hospital; one Public Mental Health Unit; ambulance service (health care adapted transport), non-pharmaceutical complementary benefits and (2) Social resources: two long-term public placements in the Velluters nursing home for the older adults (placed in Valencia); ten temporary placements in the Velluters nursing home for the older adults (placed in Valencia); six placements at the Day Centre for the older in Burjassot; remote care, technical aids and removal of architectural barriers. For further information on these resources consult Garcés et al. (2006).

After that, the case management team informed of the research to the doctor/nurse/social worker who previously enrolled the patient, to the patient and to the main carer, with the itinerary proposal to be agreed. Following the agreement of the plan of integral care with the patient and the main carer, the resources were activated and the intervention started. The team monitored the process and they became the referent for both, the patient and carer, for all the administrative purposes. The team also monitored the satisfaction of the patient and the main carer with the process.

At the last step, the patient was discharged of the programme of case management after a determined period of time, when the patient was admitted in a nursing home for the older adults, when the patient moved to another house or passed away. The procedure until this phase lasted for about 6–9 months.

#### Variables and instruments

A pilot study was conducted in 2003 using 51 patients with the aim of adjusting the protocols for interaction between

inter-disciplinary professionals and patient care, as well as healthcare and social assessment instruments. An instrument called “Orientación Multidimensional Gerontológica-OMG” (Generalitat de Catalunya 1996), which is used to assess the needs of older adults in another Spanish region (Cataluña) and which also has resource and programme management applications, was used in this stage. The experience and results obtained in this pilot study led to new protocols with the agreement between the professionals. The new protocols were finally applied during 2004 with the sample of this study.

#### *Social and health records*

Patient’s identification details and sociodemographic data—age and gender; patients’ current diseases and dependency for the activities of daily life; the availability of an informal caregiver, his/her age and gender and his/her level of burden were evaluated at this stage.

The current diseases were collected according to the International Classification of Diseases (ICD-10), the dependency for carrying out the basic and instrumental activities of daily living was assessed through the Barthel (Mahoney and Barthel 1965) and Lawton and Brody Indexes (Lawton and Brody 1969). For the interpretation of the results the total score was taken into account for both cases, which oscillate between 0 (dependent) and 100 (independent), and between 0 points (maximum dependency) and 8 points (total independence), respectively. Both indexes showed good internal consistencies (Cronbach’s  $\alpha = 0.9$  for Barthel Index and KR-20 = 0.9 for Lawton and Brody Index).

The availability of an informal caregiver was ascertained with a yes or no option, and the Informal Caregiver’s Burden was evaluated with the Zarit Burden Interview (Zarit and Zarit 1983; Zarit et al. 1980, 1985), validated and adapted to our setting by Martín et al (1996). This instrument comprises 22 items with five answers ranging from never (0) to nearly always (4), maintaining the scores from the original version. The total score, ranging from 0 to 88, gives rise to a total burden score where a high score is equivalent to a high level of burden (Cronbach’s  $\alpha = 0.95$ ). The scores used for the informal caregiver’s burden level were:  $\leq 46$  (no burden), 47–55 (low level of burden) and  $\geq 56$  (high level of burden).

#### *Use of health care and social resources*

Patients’ social and health care and his/her itinerary of care resources, and his/her satisfaction as well as those of her/his informal caregiver with the health and social

resources received were evaluated at this point of the research.

In the case of the social and health care, patients informed about (a) visits to a doctor, a nurse and/or a social worker in the last 2 weeks, concretely: if any visit to a doctor, a nurse and/or a social worker has taken place (yes/no); the date of the last visit to each of them; the frequency of these visits; the place where the last visit took place and its cause; the doctor speciality and if he/she was a public or private doctor, belonging to an insurance company, (b) patient's drugs consumption in the two previous weeks, in particular: if any medicine has been taken (yes/no) and if yes, what medicines have been taken and if they had been prescribed by a doctor, (c) patients' hospitalisation in the last 2 months, that is: if the person has been hospitalised for at least one night and if so how many times, how long was the last hospitalisation for, the cause of it; the way the person was hospitalised (an urgent service, ordinary hospitalisation...) and who covered the expenses of it (social services, private insurance, mutual insurance company or the own person).

In order to collect information on the itinerary of resources, the patients were asked about the resources they were using when they were enrolled into the case management team, the health and social resources proposed by the case management team and the priority established for the use of these resources.

The patient and the caregiver's satisfaction with the health and social care resources received were evaluated with a Likert scale of 5 points with the following answer options: very satisfactory (5), quite satisfactory (4),

acceptable (3), not satisfactory (2) and very unsatisfactory (1).

### Statistical analysis

Descriptive and bivariate analyses were used in the study. The descriptive statistic focused in the distribution of the number of patients per item—frequencies—and in the calculation of averages and standard deviations. The statistical inference tests were used to study the existence of significant differences between groups. The Student's *t*-test and the  $\chi^2$ -test were, respectively, used to establish the significant relationships among a categorical and a numerical variable and among the different categories of two categorical variables.

## Results

### Use of social and health care resources

The public health system resources used by the referred patients, besides the health centre, were hospital outpatient services (30.9%) and the outpatient consultant centre (14.5%). In addition, they had required social care through the home help service (27.6%) and remote care (14.5%) (Table 3). After the intervention, the first health care resource proposed by the case management team for 94.1% of the intervention group patients continued to be the health centre, and the majority (55.5%) only required a health care

**Table 3** Resources used by patient at the time of referral to the case management team and after the intervention

Resources used	Pre-intervention		Post-intervention	
	Intervention group ( <i>n</i> = 101)	Control group ( <i>n</i> = 51)	Intervention group ( <i>n</i> = 101)	Control group ( <i>n</i> = 51)
<b>Health care</b>				
Acute hospital outpatient service visits	29.7% (30)	33.3% (17)	24.8% (25)	39.2% (20)
Outpatient consultants centre	13.9% (14)	15.7% (8)	7.9% (8)	15.7% (8)
Acute care hospital and short stay unit	5.9% (6)	–	1.0% (1)	–
Mental health unit	3.0% (3)	2.0% (1)	2.0% (2)	2.0% (1)
Home hospitalisation unit	2.0% (2)	–	2.0% (2)	–
Day hospital	2.0% (2)	–	2.0% (2)	–
Chronic care and long-term care hospital	1.0% (1)	–	3.0% (3)	–
<b>Social</b>				
Home help service	28.7% (29)	25.5% (13)	31.7% (32)	29.4% (15)
Remote care	15.8% (16)	11.8% (6)	24.8% (25)	19.6% (10)
Technical aids <sup>a</sup>	3.0% (3)	4.0% (2)	4.0% (4)	4.0% (2)
Day centre	3.0% (3)	2.0% (1)	21.8% (22)	9.8% (5)

The data previous to the intervention (Pre-intervention) were obtained when the patients were derived to the case management team and the data posterior to the intervention (Post-intervention) are the results obtained after 1 year observation

<sup>a</sup> Technical aids: crane, mattress to prevent pressure ulcers, walker and wheelchair

intervention by this team. This intervention was complemented with different in-home social resources (in-home help service, remote care, technical aids), day care resources (day centre) or residential resources (short-term stay—under 2 months or mid-term stay—maximum 6 months at a nursing home for the older adults).

Differences between the intervention group and the control group in relation to the combined or exclusive use of health care and social resources were found. Exclusive use of health care resources was lower in the group of participants in the case management programme than in the control group (33.3 and 68.6% respectively), with a statistically significant difference between the two variables ( $\chi^2 = 11.1$ ;  $P < 0.01$ ;  $df = 1$ ).

Visits to a doctor or social worker in the primary care centre

On the other hand, the case management method reduced the number of patients receiving care and the number of office visits. Thus, the number of patients visiting a medical practitioner (43.6% vs. 74.5%) or a social worker (15.4% vs. 45.1%) was lower in the intervention group than in the control group, with a significant difference in both cases (Table 4). The number of medical visits showed a trend that suggested a reduction in the intervention group but there were no statistically significant differences with the control group.

Drug consumption

Regarding the drug consumption, the care continuum and therapeutic monitoring provided by the case management team, which entails at least one home visit every 2 months, helped to improve pharmaceutical consumption and to stop self-medication in particular, as well as to provide treatment control. Average consumption of medication was

similar in both groups (by both groups of patient was 3.7, SD = 1.8); however, there was a trend towards a reduction in the intervention group but the difference was not statistically significant ( $t = -0.7$ ;  $df = 150$ ). The drugs for pain and/or high temperature (56.6%), for high blood pressure (53.3%) and tranquilisers, relaxants and sleeping pills (42.1%) were those most used by the patients in the study. The main differences were a higher use in the control group of vitamins (19.6% vs. a 10.9%), laxatives (15.7% vs. a 12.9%), brain vasodilators (15.7% vs. 10.9%) and drugs for dementia (13.7% vs. 4.9%). The results also showed that no patients in the intervention group consumed drugs without a doctor’s prescription whereas 7.9% of the patients in the control group medicated themselves, although the difference was not statistically significant ( $\chi^2 = 0.8$ ;  $df = 1$ ).

Urgent hospital admittances

The case management project also enabled to reduce hospital admissions, especially emergency room admissions for medical treatment without surgery. The results did not show a clear tendency towards a reduction in hospital admissions in the group of patients under case management, with 15.8% of these patients being admitted to hospital, considering a 2 month period, and 19.6% of the patients in the control group, and no statistically significant difference was found among these variables ( $\chi^2 = 0.2$ ;  $df = 1$ ) (Table 5).

The hospitalised patients under case management made a more rational use of this resource than those in the control group, since in most cases their admissions were scheduled to perform specific diagnostic tests or surgery. The study data showed that 33.3% of the patients in the intervention group were admitted by the emergency room service for a medical treatment that did not require surgery, and could therefore receive treatment in another less specialised health care resource. The figure was higher in the control group,

**Table 4** Post-intervention use of resources: patients and number of medical and social worker visits in the last 2 weeks

		Intervention Group (n = 101)	Control Group (n = 51)	T	df	P-value
Number of medical visits	$\bar{X}$	1.5	1.6	0.541	53	0.591
	SD	0.6	1.1			
Number of social worker visits	$\bar{X}$	1	1.4	1.622	27	0.116
	SD	0.0	0.9			
				$\chi^2$	df	P-value
Patients visiting doctor	%	43.6	74.5	8.891	1	0.003
Patients visiting social worker	%	15.4	45.1	8.934	1	0.003

**Table 5** Post-intervention hospital admissions in the last 2 months

	Intervention group ( <i>n</i> = 101)	Control group ( <i>n</i> = 51)	$\chi^2$	<i>df</i>	<i>P</i> -value
Hospitalised patients (%)	15.8	19.6	0.215	1	0.643
Hospitalised patients, admitted by the emergency room service, for a medical treatment that did not require surgery (%)	33.3	60.0	1.067	1	0.302

60.0% of patients hospitalised, but the difference was not statistically significant ( $\chi^2 = 1.1$ ; *df* = 1) (Table 5).

#### Patients' and caregivers' satisfaction towards the health and social care resources assigned

Patients in the intervention group were more satisfied, especially with the health care resources. Thus, 55.5% of these patients were very satisfied with the care received and the benefits of the health care resources they had used. The figure was lower in the control group at 29.4%, showing a statistically significant difference ( $\chi^2 = 17.2$ ; *P* < 0.01; *df* = 5). In relation to satisfaction with the social resources, the difference was very small and not statistically significant ( $\chi^2 = 7.2$ ; *df* = 5). In the intervention group 44.2% of the patients were very satisfied with the social resources received, against 43.8% in the control group.

The results were similar for the caregivers, 56.5% of the informal caregivers of patients in the intervention group was very satisfied with the health care resources received by their family members, against 31.9% in the control group ( $\chi^2 = 9.1$ ; *P* < 0.01; *df* = 3).

## Discussion

This study has analysed the effect of a case management programme, applied to frail older patients in a Spanish primary care setting, augmenting the combined use of social and health resources; reducing social and health care consults, hospital admissions and use of more expensive resources; making a more appropriate patients' drug consumption as well as improving the satisfaction of the users and caregivers with the social and health care resources received. The final aim is to go further on the current state of the long-term care provision in Spain, obtaining keys for an efficient, sustainable and coordinated health and social care systems, reducing the overload on the more costly health system.

The results of the project show a tendency to the effectiveness of the case management programme but reach a significant effect in few variables measured. On one hand, the intervention group has fewer office visits and

hospital admissions by the emergency service, and a less drug consumption and self-medication than the control group, but with no significant differences. On the other hand, the case management programme significantly gets to reduce the exclusive use of health care resources, promoting the use of cheaper resources (the social ones).

Similar findings based on the application of a case management methodology have been highlighted in other studies like the Evercare Programme (2004) where the medications and polypharmacy were reduced. These results could have an impact on the reduction of hospital admission rates from adverse drug reactions, on the overall costs of care as well as to improve the patients' quality of life. Nevertheless, in line with the findings of our study, the Evercare programme did not reduce hospital admissions, although they obtain an additional range of services into primary care (Gravelle et al. 2007).

Other studies have also pointed that care programmes failed to demonstrate major effects (Rubenstein et al. 2007). Some reasons are the limited services available and the need of intense interventions as well as a systematic follow-up of the cases (Rubenstein et al. 2007). Regarding this, it has been documented that Mediterranean countries as Spain and Italy have few formal services with a low provision of this kind of care compared to informal care (Carpenter et al. 2004; Carretero et al. 2007). Certainly, our research is a first step in the implementation of case management programmes in Spain and these detractors of the efficiency of the programme need to be considered and studied to be involved in new intervention studies.

The introduction of the social sustainability principle (Garcés 2000) in the development of future services portfolios to meet the growing demand for social and health care benefits and long-term care for older adults (Grundy 2006) (also seen in other groups of the population such as disabled and chronic patients) demands innovation and efficiency, which entails optimising the care network to remove duplications and inefficiency stemming from lack of interaction between the health care and social systems.

The present Spanish welfare model, with separate health care and social services and interventions, has changed under the new national dependency system, which came into force in 2007 and established for the first time specific



rights of dependent people and their caregivers. The challenges facing the new dependency care system include coordinating the decentralised autonomous system and the state system to manage financial benefits, services and programmes, or setting up regional agencies and dependency assessment bodies that will use national criteria. In this new context, the introduction of proximity principles in the regulatory sphere opens a new pathway to attain the necessary coordination. Our project findings suggest that these criteria could be articulated methodologically in the primary care setting using case management (Challis et al. 2002; Hudson 2000); due principally to the tendencies on social and health resources shown and the high satisfaction of the stakeholders with the programme (users, caregivers and case management team). In fact, case management could be incorporated into practice without too much difficulty, has a high level of acceptance, and helps to involve different kinds of professions and to improve communication between them (Leichsenring 2003).

The main guideline for the experience presented herein consisted in advancing in service planning and in covering health care needs on the basis of the existing structures and avoiding unviable proposals.

The case management organisational model described herein, which is closer to other European systems, faces this challenge by reinforcing community and/or in-home social and health services delivery (55.5% of patients can receive in-home care), managing integrated benefits packages and forming specialist management teams, with the resulting changes in professional culture that this entails (Carpenter et al. 2003). These teams are better able to handle the difficulties, subjectively reported by health care practitioners, which prevent access to benefits and services that are available in the system but are not easy to access due to primary health care routines and protocol. Adapted transport or articulated beds are some examples, where the resource exists but is not available or very difficult to access.

Several questions remain, including the process of integrating these teams in the present care system, the resource base and the decision-making capacity in relation to the resources or the costs/benefits of setting them up. Although the answers can be intuited, they cannot be objectively provided at the present time. Once they are available it should be possible to extend this methodology to all the health departments.

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## References

- Applebaum R, Straker J, Mehdizadeh S, Warshaw G, Gothelf E (2002) Using high-intensity care management to integrate acute and long-term care services: substitute for large scale system reform? *Case Manage J* 3(3):113–119
- Argimón JM, Jiménez J (2004) *Métodos de Investigación aplicados a la Atención Primaria de Salud*. Doyma, Barcelona
- Carpenter I, Challis D, Hirdes JP (1999) *Care of older people a comparison of systems in North America, Europe and Japan*. Farrand Press, London
- Carpenter J, Schneider J, Brandon T, Wooff D (2003) Working in multi-disciplinary community mental health teams: the impact on social workers and health professionals of integrated mental health care. *Br J Soc Work* 33:1081–1103
- Carpenter I, Gambassi G, Topinkova E et al (2004) Community care in Europe. The aged in home care project (AdHOC). *Aging Clin Exp Res* 16(4):259–69
- Carretero S, Garcés J, Ródenas (2007) Evaluation of the home help service and its impact on the informal caregiver's burden of dependent elders. *Int J Geriatr Psychiatry* 22(8):738–749
- Challis D, Darton R, Hughes J, Stewart K, Weiner K (2001) Intensive care-management at home: an alternative to institutional care? *Age Ageing* 30:409–413
- Challis D, Chesterman J, Luckett R, Stewart K, Chessum R (2002) Care management in social and primary health care: the Gateshead community care scheme. Ashgate, Aldershot
- Comas A, Wittenberg R, Costa-Font J, Gori C, Di Maio A, Patxot C, Pickard L, Pozzi A, Rothgang H (2006) Future long-term care expenditure in Germany, Spain, Italy and the United Kingdom. *Ageing Soc* 26(2):285–302
- Davies B (1994) Improving the case management process. In: OCDE (ed) *Caring for frail elderly people. New directions in care, social policy studies no. 14*. OECD, Paris
- Engel H, Engels D (2000) Case management in various national elderly assistance systems. Kohlhammer, Köln
- Field J, Peck E (2003) Mergers and acquisitions in the private sector: what are the lessons for health and social services? *Soc Policy Adm* 37:742–755
- Fine M, Glendinning C (2005) Dependence, independence or interdependence? Revisiting the concepts of 'care' and 'dependency'. *Ageing Soc* 25:601–621
- Garcés J (2000) *La nueva sostenibilidad social*. Ariel Sociología, Madrid
- Garcés J, Ródenas F, Sanjosé V (2003) Towards a new welfare state: the social sustainability principle and health care strategies. *Health Policy* 65:201–215
- Garcés J, Ródenas F, Sanjosé V (2004) Care needs among the dependent population in Spain: an empirical approach. *Health Soc Care Community* 12(6):466–474
- Garcés J, Ródenas F, Sanjosé V (2006) Suitability of the health and social care resources for persons requiring long-term care in Spain: an empirical approach. *Health Policy* 76:121–130
- Generalitat de Catalunya (1996) *Solicitud de programas y servicios sociales de atención a personas mayores, basada en la orientación multidimensional gerontológico (OMG)*. Generalitat de Catalunya, Barcelona
- Generalitat Valenciana (2002) *Encuesta de Salud de la Comunidad Valenciana 2000–2001*. Conselleria de Sanidad, Valencia
- Generalitat Valenciana (2004) *Plan para la mejora de la atención domiciliaria en la Comunidad Valenciana (IMAD), 2004–2007*. Conselleria de Sanitat, Valencia
- Glasby J, Littlechild R, Pryce K (2004) Show me the way to go home: a narrative review of the literature on delayed hospital discharges and older people. *Br J Soc Work* 34:1189–1197

- Gravelle H, Dusheiko M, Sheaff R, Sargent P, Boaden R, Pickard S, Parker S, Roland M (2007) Impact of case management (Evercare) on frail elderly patients: controlled before and after analysis of quantitative outcome data. *BMJ* 224:31–34
- Grundy E (2006) Ageing and vulnerable elderly people: European perspectives. *Ageing Soc* 26:105–134
- Hudson B (2000) Social services and primary care groups: a window of collaborative opportunity? *Health Soc Care Community* 8(4):242–250
- Knapp MRJ, Hardy B, Forder J (2001) Commissioning for quality: ten years of social care markets in England. *J Soc Policy* 30(2):283–306
- Lawton MP, Brody EM (1969) Assessment of older people: self-maintaining and instrumental activities of daily living. *Gerontologist* 9:179–186
- Leichsenring K (2003) Providing integrated health and social care for older persons—a European overview. European Centre for Social Welfare Policy and Research, Vienna
- Mahoney FI, Barthel D (1965) Functional evaluation: the Barthel Index. *Md Med J* 14:56–61
- Martín M, Salvadó I, Nadal S, Miji LC, Rico JM, Lanz P, Taussig MI (1996) Adaptación para nuestro medio de la Escala de Sobrecarga del Cuidador (caregiver burden interview) de Zarit. *Rev Esp Geriatr Gerontol* 6:338–346
- Ministerio de Trabajo y Asuntos Sociales (MTAS) (2005) Libro Blanco de la Dependencia. IMSERSO, Madrid
- Rubenstein LZ, Alessi CA, Josephson KR, Hoyl MT, Harper JO, Pietrusza FM (2007) A randomized trial of a screening, case finding, and referral system for older veterans in primary care. *J Am Geriatr Soc* 55:166–174
- Scharlach AE, Giunta NY, Mills-Dick K (2001) Case management in long-term care integration: an overview of current programs and evaluations. Center for the Advanced Study of Aging Services, University of California, Berkeley
- Smith VK, Des Jardins T, Peterson KA (2000) Exemplary practices in primary care case management. Center for Health Care Strategies, Inc., The Robert Wood Johnson Foundation's, Princeton
- Walsh EG, Clark WD (2002) Managed care and dually eligible beneficiaries: challenges in coordination. *Health Care Financ Rev* 24(1):63–82
- WHO (2002) Lessons for long-term care policy. WHO, Geneva
- Zarit SH, Zarit JM (1983) The memory and behavior problem checklist and the burden interview. Technical report, Pennsylvania State University, University Park
- Zarit SH, Reever KE, Bach-Peterson J (1980) Relatives of the impaired elderly: correlates of feelings of burden. *Gerontologist* 20:649–654
- Zarit SH, Orr NK, Zarit JM (1985) The hidden victims of Alzheimer's disease. Families under stress. New York University Press, New York