CONSULTENOS: hospital discharge information programmes. Development and results from the first year of operation in 5 hospitals

M.Á. Pardo López,[a] M.T. Aznar Saliente,[a] and E. Soler Company[a,b]

*Coordinadores GRUPO CONSULTENOS**

[a]Servicio de Farmacia, Hospital Univertsitari San Joan d'Alacant, Alicante, Spain

[b]Presidente de la Sociedad Valenciana de Farmacia Hospitalaria (SVFH)

Abstract

Introduction: The increased number of adverse effects from medicines occurring due to various discrepancies and medication errors at the time of a patient's discharge from hospital has lead us to develop measures to resolve these issues. The aim of this study is to present the methodology and design of a hospital discharge information programme and to describe the most representative findings.

Methods: A common methodology was established and patients from 5 different hospitals were included in a hospital discharge information programme. An informative interview was carried out at the time of discharge and oral and written information was given regarding the patient's complete treatment at that point. After 7 days a follow up telephone call was made to assess our intervention. The information was collated and the patients' satisfaction with the programme was measured.

Results: Six thousand hundred ninety-eight patients were included in the programme, 4955 (79.86%) were informed. Six thousand four hundred fifty-four interventions were carried out (980 to improve the efficiency of treatment, 531 the efficiency of safety, 4770 informative interventions, and 107 directed at other levels of care). Seven days later 4174 patients were contacted. Fourteen point fifty-three percent presented a problem with their medications, 8.96% had solved the problem by the time the call was made and 4.4% found that the instructions given to them at the time of being discharged from hospital helped them to solve the problem. There was a high level of satisfaction with the service (4.64 points out of 5).

Conclusions: It is possible to develop a hospital discharge information programme as a care service. A high level of satisfaction has been achieved and safety has improved with regards the use of medication.

Key words: Conciliation. Hospital discharge information. Chronic medication. DRP. Safety.

CONSULTENOS: programa de información hospitalaria. Desarrollo y resultados del primer de funcionamiento en 5 hospitales

Introducción: El elevado número de acontecimientos adversos por medicamentos que ocurren debido a discrepancias y errores de medicación al alta hospitalaria, nos obliga a establecer medidas para resolverlos. El objetivo de este trabajo es exponer la metodología y el diseño de un programa de información al alta hospitalaria asistencial, y describir los hallazgos más representativos.

Método: Se estableció una metodología común para que pacientes de 5 hospitales fueran incluidos en un programa de información al alta hospitalaria. Se realizó una entrevista educativa al alta y se entregó información oral y escrita de su tratamiento completo en ese momento. A los 7 días se realizó un seguimiento telefónico para valorar nuestra intervención. Se recogieron las intervenciones realizadas y se midió la satisfacción del paciente con el programa.

Resultados: Se incluyeron en el programa 6.198 pacientes, se informó a 4.955 (79,86%). Se realizaron 6.454 intervenciones (980 para mejorar la eficiencia del tratamiento, 531 de seguridad, 4.770 educativas, y 107 dirigidas a otros niveles asistenciales). A los 7 días postalta se contactó con 4.174 pacientes. Presentaron algún problema relacionado con los medicamentos un 14,53%, el 8,96% lo había solucionado en el momento de la llamada y un 4,4% refirió que las instrucciones recibidas al alta le ayudaron a solucionarlo. La satisfacción con el servicio fue muy alta (4,64 sobre 5 puntos).

Conclusiones: Es posible establecer un programa de información al alta como servicio asistencial. Se ha conseguido un alto nivel de satisfacción y mejorado la seguridad en el uso de medicamentos.

Palabras clave: Conciliación. Información al alta. Medicación crónica. PRM. Seguridad.

*The members of CONSULTENOS group are listed at the end of the article.

Correspondence: M. Ángeles Pardo López.
Servicio de Farmacia. Hospital Universitari San Joan d'Alacant.
Ctra. Alicante-Valencia, s/n. 03550 Alicante. España.
E-mail: pardo_man@gva.es

Received: February 4, 2008. *Accepted for publication:* October 9, 2008.

INTRODUCTION

Concerns about the adverse effects derived from the inadequate use of medications and medication errors make it necessary to establish systems and programmes that increase the safety of drug management, for the wellbeing of our patients.

The fact that the transition between different care levels frequently produces medication errors is well known, due to the lack of integration of the information coming from primary care, during hospital stays, or from specialised care, when patients are discharged.[1-4]

Also recognised, but undoubtedly less described, is the feeling of insecurity and danger that patients feel when at a hospital and they receive contradictory messages concerning the continuity of their chronic medications. When discharged from the hospital, changes are made in their habitual medication, which is frequently accompanied by poor information directed at the patients and a lack of care continuity. As a consequence, there are discrepancies, inappropriate prescriptions, poor adherence, and inadequate treatment for the patients considered as a whole and not as an accumulation of illnesses. This all leads to an increase in preventable adverse effects and of the use of health services.[5]

Different interventions carried out by pharmacists have shown that they have a positive impact in the prevention of preventable adverse effects related to medication.[6]

A key process to prevent adverse effects related with medication is the conciliation of the medication of the patient, a systematised procedure where the complete and exact list of previous medications of the patient is evaluated with the medical prescription after a transition of care (when admitted to hospital, transfers within the hospital or when discharged from the hospital). If discrepancies, duplications or interactions are found, they should be reported to the physician and, if necessary, the medical prescription modified.[7]

The transcendence of implementing programmes on the conciliation of medications in hospitals has been recognised by the JCAHO, and is mandatory for the accreditation by said organism since 2005.[8,9]

In Spain, diverse hospital experiments,[10] usually promoted by pharmacists, centred on the evaluation of the incidence of conciliation errors and the efficiency of the hospital pharmacist in the prevention of adverse effects due to the abovementioned errors. In the same manner, it has been demonstrated that programmes of pharmaceutical attention at the moment of hospital discharge reduce the rate of re-admissions, improve adherence and reduce costs for certain pathologies.[11] These studies prove the importance of the problem in Spain and the importance of intervening, but the infrastructures and lack of human resources make it hard to consolidate any sort of related activity in the hospital pharmacy departments.

The goal is to implement a care programme of pharmaceutical attention at the moment of hospital discharges that could be established in a homogenous manner in the public hospitals in the Community of Valencia.

This article describes the functioning of the programme and evaluates the activity carried out during the first year of implementation.

Taking into account that it is a care program, the quantification of the number of pharmaceutical interventions carried out and the care levels to which they were directed are established as secondary goals along with their percentage of acceptance, the drug related problems (DRP) that appeared in the week after hospital discharge, the contribution of our interventions to resolve them and the satisfaction of the patient with the service.

METHODS

The initial project was presented to the Quality Control General Directorate of the Regional Ministry of Health of the Community of Valencia, which financed the project in 5 hospitals by means of the Valencian Society of Hospital Pharmacy: Hospital Arnau de Vilanova of Valencia, Hospital de Gandía, Hospital General of Castellón, Hospital La Fe, and Hospital San Juan. An intern was assigned to each centre from May of 2006 to April of 2007.

The objectives of the program are:

- Individually inform the patient about their complete treatment to be continued in their home during a personal interview and by giving them written information including an administration plan
- Review, during the interview, when admitted and also at the moment of discharge, duplications and interactions between the prescribed medications and the medications, medicinal plants and food that the patient ingests normally, intervening to solve real or potential DRP
- To establish a reference pharmacist so that discharged patients can clarify their doubts related to their treatment, or adverse effects, once they are in their homes
- To provide written information, at the moment of hospital discharge, concerning the general recommendations related to the use of medications of patients during their hospital stay

A working group was formed that established the definitive structure of the project, they assigned themselves responsibilities and a chronogram was established. The project was named CONSULTENOS.

Data collection sheets were designed along with models of communications with health personnel (physicians, nurses, pharmacists) of other care levels. A database was created in ACCESS to insert the results. The INFOWIN[12] programme was used to provide written information to the patients. A file was designed to hold the information that would be given to the patient (Figure 1). This file includes the corporative image of the programme, general recommendations for the use of medications, and the name and contact telephone number of the pharmacist responsible of the program in the centre. A survey of 9 questions was also designed for the patient, to measure their satisfaction

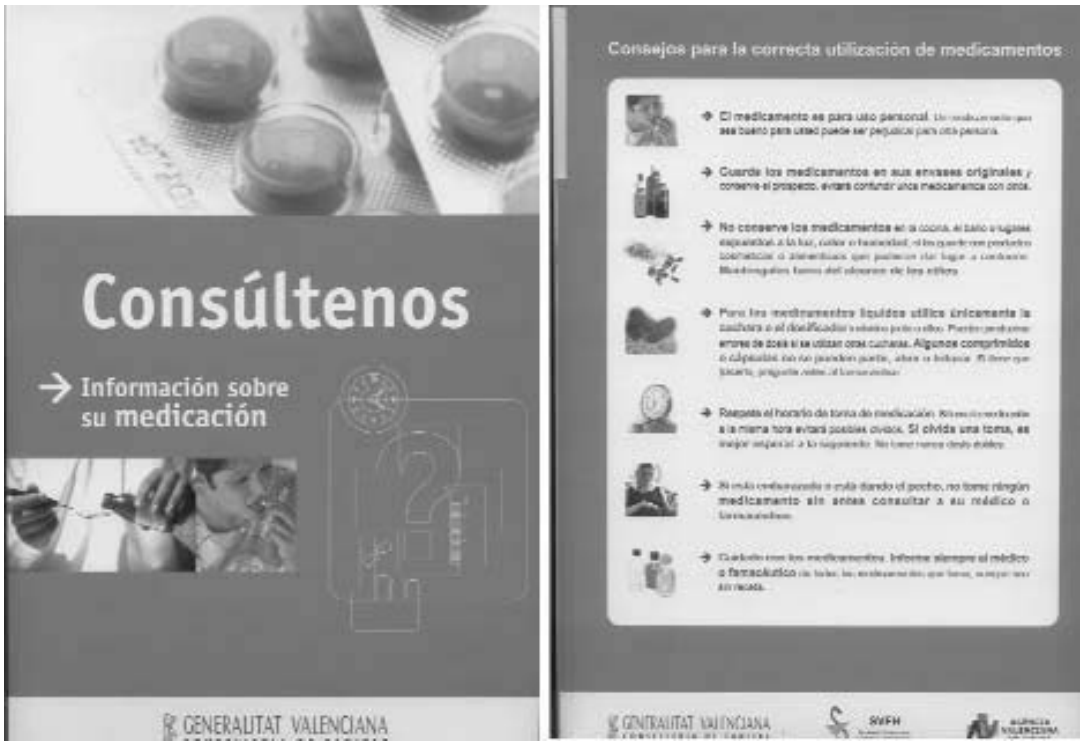

Figure 1. *Documentation presented (in Spanish)*

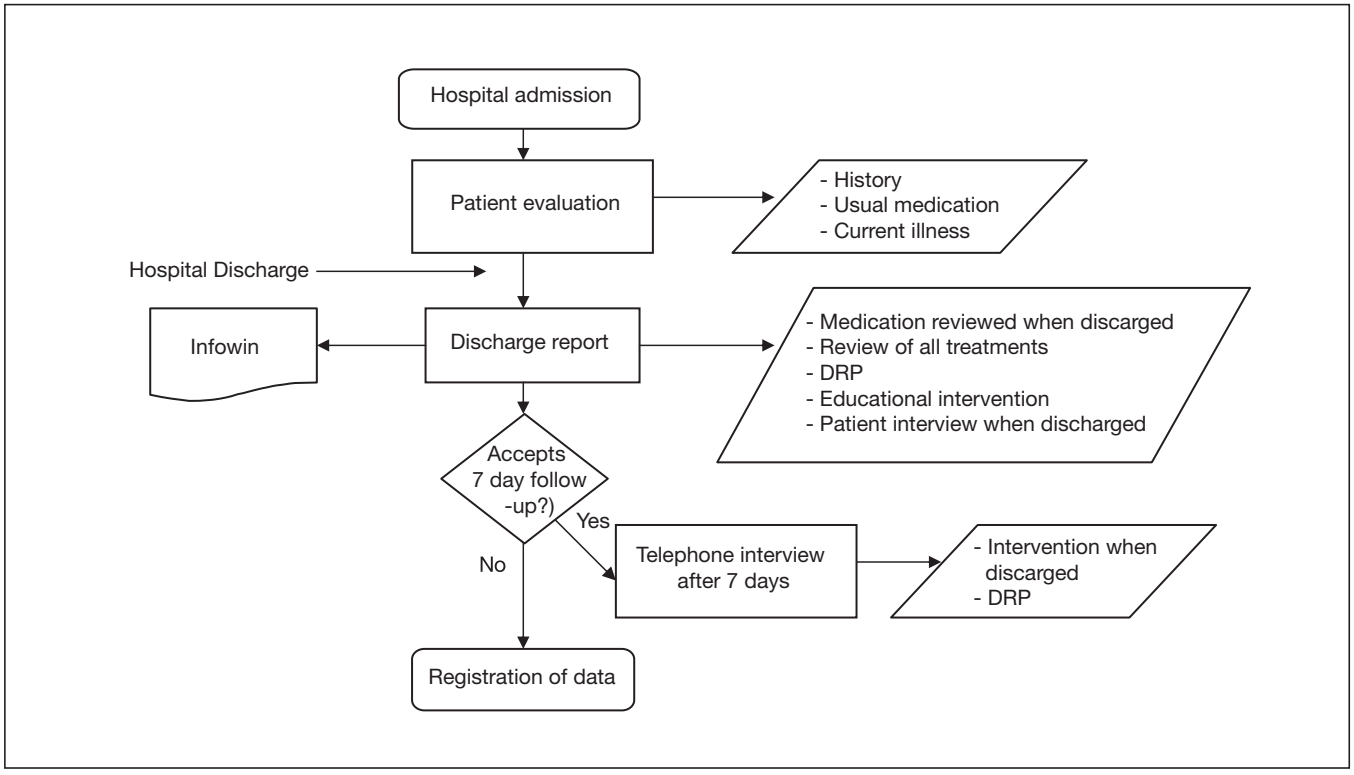

Figure 2. *Flow chart of the working methodology used. DRP indicates drug related problems.*

with the interventions, their level of comprehension and the usefulness of the information provided.

The summary of the methods used is shown in Figure 2. Each one of the hospitals ended up using the methods of pharmaceutical care using in their services, to integrate it as just another activity. Mandatorily, after hospital admission, a patient evaluation was carried out at the foot of the bed by means of a personal interview to collect data concerning antecedents (age, weight, height, sex, chronic pathology, renal and hepatic function, allergies, and intolerances), current illness (clinical and analytical data), usual treatment (prescribed and non-prescribed medications, home remedies and medicinal plants, compliance of previous treatments) and life style, and socio-cultural characteristics. At the moment of hospital discharge, this information was integrated with the collection of the discharge report, in order to clarify the complete treatment of the patient, clearing up any discrepancies with the hospital physician, or by sending a written request of clarification if other care levels were involved (fundamentally, primary care physicians).

Each centre chose a department or clinical departments that would benefit from the programme. Medical and surgical departments were chosen to gain experience in patients of different levels of complexity and problems. Each one of the hospitals established the most convenient circuit depending on the characteristics of the department chosen. Four of the hospitals chose direct care in the department and one of them chose care in a department during the admission process and discharge interview in the consultation of external patients.

Inclusion criteria: all of the patients discharged from the departments selected by each hospital with pharmacological treatment except those that met any 3 of the exclusion criteria.

Exclusion criteria: admitted patients and those discharged in a time frame that is incompatible with the pharmaceutical care (admission and discharge in less than 24 h, during the afternoon or night-time shifts), or discharged without medication or with simple treatments of a limited duration (postsurgical analgesics). Given that the exclusion is produced at the moment of hospital discharge, these patients are interviewed when admitted, although they are not informed at the moment of discharge.

Those patients that are discharged at a moment that is incompatible with pharmaceutical care, that did not meet any other exclusion criteria, the elaborated documentation was sent by mail.

Only the pharmaceutical interventions were quantified, excluding the discrepancies. The interventions carried out at the time of the discharge interview were classified in a loose manner in educational interventions (all of the interviews with patients and consultations that required additional information by phone or in person after discharge were all considered to be educational), efficiency interventions (aimed to optimise the patient's treatment), and safety interventions (directed to prevent possible secondary effects).

The interventions were directed at patients as well as for the health personnel of the hospital and of other care levels.

As a measurement of the satisfaction with the program, a 9 question survey was designed to measure the level of interest towards the information received (questions 1 and 2), the patient's satisfaction with the intervention (questions 4, 5, 7, and 9), and the patient's level of comprehension (questions 6 and 8). The design of the survey corresponds with an number scale where the patients indicate their disagreement or agreement evaluating from 1 to 5, respectively, except in question 3, that dealt with the delay of discharge because of our intervention, where they marked 1 for the most unfavourable situation (long delay) and 5 for the most favourable (no delay). The survey was turned in at discharge to be filled out, in the hospital or at home, in an anonymous manner and to later be deposited in a specific mailbox for this cause or sent by normal mail to the hospital using a pre-paid postage envelope.

The point scales for each question (1-5) were considered as intervals, so that the parametric analysis could be done with the results, expressed as the average value for each questions. The Chronbach's alpha coefficient was calculated for the entire survey to determine its internal consistency. A value for alpha >0.70 suggests that there is a good level of internal consistency between the different questions of each group.[13]

Patient follow-ups were carried out 1 week after hospital discharge using simple questions to identify the appearance of DRP after discharge. The patients were asked during the interview if they accepted the follow-up or not. The acceptance percentage was considered as a second measurement of satisfaction with the intervention. The appearance of DRP was registered, along with if the patient could solve them and if so, if this was due to the indications given in the discharge interview.

The quantity of work and information handles made the modification of the database useful, after the second quarter, to introduce certain qualitative data that were considered as important and that, although they were found in the data collection sheet and could be analysed by each hospital, they were not collected initially with the desired level of breakdown. Data registration was done using the pharmaceutical care method based on the simplified Iaser®[14] method.

Once functioning, follow-up meetings were held every 4 months. The difficulties, discrepancies and the most frequently detected problems were discussed, as were the intermediate analysis of the global results and those divided by hospitals. Said analysis was carried out in a centralised manner with the data in the ACCESS database and using the SPSS version 11.0 package.

The data from the first year of the experiment are presented.

It is important to reiterate that this is not a study, nor a research programme, it is a care programme. There is no hypothesis to compare, nor any sample sizes. The goal is to reach the greatest number of patients possible.

Therefore, activity volume indicators are collected that allow us to form a global image of how the project is going, and to obtain data that enable us to learn from our experience, without collapsing the work of caring for patients.

The number of patients cared for and the number of patients informed are established as the principle variables; and the number of pharmaceutical interventions carried out at the moment of

discharge, the percentage of patients with DRP detected one week after discharge and the percentage of patients that were able to solve said DRP thanks to the pharmacists intervention are the secondary variables.

RESULTS

CONSULTENOS started in 5 hospitals in March 2006. Information was given to patients starting in May of the same year.

From May 2006, to April 2007 (230 working days), 6198 patients were included in the program, 4955 of which were informed (79.97%). Some were not informed due to the fact that they were discharged without medications, outside of the established time periods, or in cases where the intervention was not believed to be necessary. The patients that were evaluated during admission and that could not be interviewed personally when discharged (primarily because of the time that they were discharged) were also included in the number of informed patients, and these patients received information by mail at their homes and they were included in the telephone follow-up programme. The average of patients cared for by hospital per day was 5.38 and the average number of patients informed was 4.02 patients/day.

The characteristics of patients cared for by hospital is shown in Table 1.

The number of interventions carried out at the moment of discharge increased to 6454. The average number of interventions per patient was 1.30. Given that all of the patients received an

Table 1. Characteristics of patients cared for in the CONSULTENOS programme

	Hospital Arnau de Vilanova	Hospital General de Castellón	Hospital Francesc Borja	Hospital Universitario la Fe	Hospital Universitario San Juan	Total
Department	**Surgery**	**Trauma**	**Internal medicine**	**Cardiology transplants**	**Cardiology neumology**	
Number of patients cared for	2178	1106	1018	1109*	1033	6198
Number of patients informed	1451	656	1018	1109	881	4955
Number of patients informed/day	6.30	2.85	3.83	4.33	3.83	21.54
Age, mean (SD), y	62.7 (15.4)	59.4 (20.9)	69.5 (13)	67.0 (14)	71.3 (12)	66.08 (15)
Accepted telephone survey	1240	580	900	1044	867	4631
Percentage of patients with DRP (after 1 week)	5.39	22.8	27.0	7.7	24.8	16.12
Percentage of patients that solved it themselves thanks to our indications	2.27	6.67	2.1	6.1	4.51	4.04

DRP indicates drug related problems.

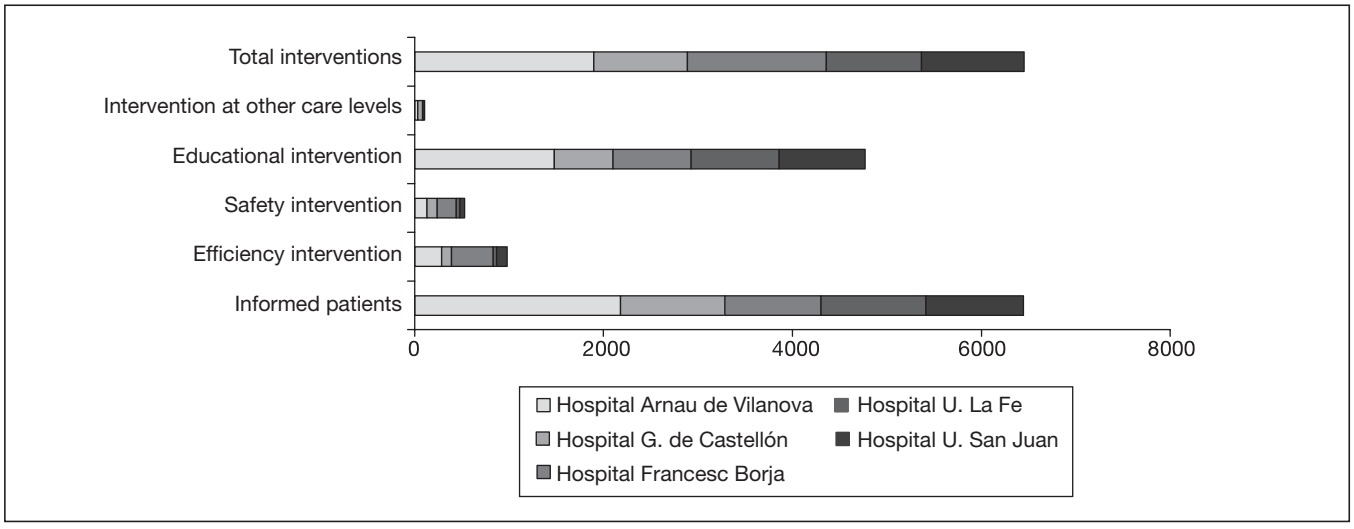

Figure 3. *Interventions performed at the moment of discharge.*

Table 2. Results of the satisfaction survey

	N	5	4	3	2	1	Average (SD)
1. How much does the verbal information interest you?	1717	74.8%	24.24%	0.9%	0.00%	0.01%	4.74 (0.7)
2. How much does the written information interest you?	1713	77.6%	21.3%	0.7%	0.3%	0.1%	4.76 (0.46)
3. Was your discharge delayed because of the pharmacist's intervention?	1692	83.7%	10.5%	3.3%	1.4%	1.2%	4.74 (0.69)
4. If so, do you believe it was worth it?	922	58.8%	34.6%	3.5%	0.4%	2.7%	4.46 (0.81
5. How would you rate the attention that you have received from the pharmacist?	1,713	73.0%	26.6%	0.2%	0.0%	0.0%	4.73 (0.45)
6. Have you understood all of the information given by the pharmacist?	1,711	84.5%	13.7%	0.9%	0.0%	0.9%	4.81 (0.52)
7. Were you able to ask him/her all of your questions?	1,692	61.3%	34.4%	3.1%	0.7%	0.5%	4.55 (0.64)
8. Do you feel like you know more about your medication now?	1708	51.6%	43.1%	4.2%	0.8%	0.2%	4.45 (0.63)
9. What is your level of general satisfaction with the interview?	1713	63.1%	33.4%	3.4%	0.1%	0.0%	4.59 (0.56)
Accept follow-up telephone survey	4631						74.71%

SD indicates standard deviation.

educational intervention, this number indicates that 30% of the patients were, also, the object of another intervention. The most frequent were those regarding efficiency, 980, and treatment safety, 531. Hundred seven other interventions destined to other care levels were carried out, mostly directed by primary care physicians (Figure 3).

The results of the satisfaction survey are shown in Table 2 and they reach a global punctuation of 4.64 points over 5, which implies a very elevated level of satisfaction on behalf of the patients. The interest of the information reached a punctuation of 4.8, the level of comprehension 4.6, and the satisfaction with the care given by the pharmacist 4.5. The Chronbach's alpha consistency coefficient for the entire survey (excluding question number 3) was 0.71, which shows sufficient reproducibility.

Four thousand six hundred thirty one patients (74.7%) accepted the telephone survey and of them 673 (14.53%) reported, at least, one problem related with their medication. At the moment of the call 493 (8.96%) patients had already solved their problem and of these, 169 (4.04% of the total of DRP detected at home) had solved their problem thanks to the pharmacist's intervention.

The first 209 reported DRP were analysed in depth after modifying the codification. Their classification, as well as the interventions carried out, the acceptance rate and the results are shown in Table 3. The elevated number of therapeutic duplications detected should be pointed out in the surgery department as well as the high percentage of patients that needed additional treatment, especially prophylaxis, to alleviate the adverse effects of their treatment.

DISCUSSION

The program has been implanted in 5 hospitals in an acceptably homogenous manner. This is indicated by the results in number of patients cared for, number of interventions and the level of satisfaction, analysed per hospital.

The principle problems of the implementation, that was done rapidly (in 2 months all of the hospitals had implemented the programme), were logistical issues and problems coordinating the clinical departments and nursing units, to establish the most adequate circuit in each hospital. None of the hospitals had electronic prescription systems or computerised clinical histories. A method was designed that was similar to the habitual process prioritising the care in exhaustively collecting data about conciliation errors or errors in the classification of DRP, that require in-depth and homogenous training to reach an acceptable level of correlation. The goal was to not saturate the pharmacist. Therefore, as it is not a rigorous method concerning the documentation requirements (none of the fields of the database were established as mandatory), the data collected does not allow for conclusion making nor answers to specific questions.

The number of patients informed per day seems to depend on many factors, among them the complexity of the circuit followed, the service chosen, the experience of the pharmacist in charge of the project, the number of daily discharges and the moment when these discharges occurred. This last issue is a determinant factor, as it has been observed that in the majority of the hospitals, the discharges are done at the end of the work day, producing a peak of activity that causes waiting periods, and frequently, the patients do not want to wait for the pharmacist to supply them with the information, especially when they are not familiar with the department. On the other hand, given the scheduling limitation of this activity, having a pharmacist available and dedicated exclusively to this task, is not very efficient. With the same resources, organised in a manner that various pharmacists would dedicate 2 h of their time during the maximum affluence of discharges, the process would be more efficient, but in any case,

Table 3. Analysis of the 209 drug related problems (DRP) detected in 3 of the hospitals

	Total	Percentage
DRP number	209	
Where?		
Discharge	160	77
Patient's home	36	17
Hospital	11	5
Unknown	2	1
Classification		
Indication		
Additional treatment needed	57	27
Unnecessary medication	81	39
Effectiveness		
Inadequate medication	18	9
Sub-doses	10	12
Safety		
Adverse reaction	30	14
Overdose	10	5
Adherence		
Non-compliance	3	1
Pharmaceutical performance (PP)		
Pharmaco-therapeutic recommendation		
Suspend medication	54	26
Consider therapeutic alternative	53	26
Start medication	28	14
Preventive PP		
Prevent adverse effects	21	10
Prevent treatment errors	24	12
Clarify/confirm prescription	12	6
Educational PP		
Provide information to the patient/family member	12	6
Total	204	
Accepted	190	93
Results		
Not valuable/not documented	19	9
Without significant changes in the patient's evolution	8	4
(+) result reducing risks of PTM without possibility to document	178	85
(–) result reducing risks of documented PTM	4	2

PTM indicates pharmaco-therapeutic morbidity.

the elevated consumption of human resources will obligate each hospital to select the patients in the future.

The interview at the moment of discharge with the patient is a relatively new practice in our field. There are different initiatives where information is given to the patients when they are discharges,[15] however, some studies show that the fact that the patient has a list of medications, or that they bring the packaging of their medications when admitted to the hospital, does not affect the number of errors and discrepancies found in the patient. Therefore, it is important that the patient not only has written information about their medications but that an expert in said medications clarifies and conciliates all of their medications.[1]

The number of detected DRP, at discharge as well as at patient's homes, varies greatly from one hospital to another. After 1 year of experience, and although there are no objective data that supports it, the consensus group attributed the differences to the fact that the target population presented different illnesses, the pharmacists had different levels of training and experience which determined the number of detected DRP as well as their interpretation at the moment that the data was reported, an activity that was assigned to pharmaceutical interns, in many cases not specialists, contracted for the project. In any case, the global value of 16.12% is near the 19% reported by Foster et al.[1]

Our performance during admission and at the moment of the discharge interview allowed us to solve all of the detected DRP except for those that required the concurrence of health professionals from other care levels, that thanks to our interventions could consider themselves "on the way to being solved," and our indications helped to solve 25% of the problems that took place in the patients homes, for which the global rate was reduced to 12.08 %, which greatly improved the results of Foster et al, and which our interventions probably reduced the number of DRP that appeared after discharge. Once more, the limitations of the program, without the existence of a control group, did not allow us to establish this conclusion with complete certainty.

The methods also did not allow for the evaluation of the quality of the performance of the pharmacist, knowing the percentage of preventable adverse effects truly avoided with their performance. The difficulty of obtaining of this indicator is obvious, and therefore references were not found in the bibliography that was consulted. However, there are studies that proves that a pharmaceutical intervention aimed to detect DRP and discrepancies, and to educate the patient about their illness and its treatment decreases the number of discrepancies and the percentage of preventable adverse effects.[16]

One limitation of the programme is the difficulty to know for sure what medication the patient is taking in their home, due to the fact that the source is, in the majority of the cases, the patient. This limitation has been set apart in other studies.[17] In our study, if necessary, the information collection period can be lengthened for all hospital admissions, asking family members to bring the packaging of the medications from home.

The interest and satisfaction of the patients regarding the programme were very high, and similar in all of the hospitals, which proves the positive adoption of this service. The patients contacted the pharmacy department in numerous occasions to solve doubts or consultations, although this data has not been registered in the first period of the study.

All of the experts recommended the evaluation of the patient when discharged, educating patients about their medications,

especially concerning side effects and establishing strategies to prevent them, and implementing an effective patient follow-up system to monitor possible problems.[1,2,5,9] The CONSULTENOS programme satisfies these requirements and, as a conclusion, we can say that it has been implemented successfully and it presents a methodology to be spread in a fast and simple manner to other hospitals that are interested (6 more hospitals of the Community of Valencia joined the group in June of 2007, and all 11 continue with the programme in 2008). The transformation of the interns to pharmaceutical specialists would allow for the integration of the programme in the global pharmaceutical care of our patients, as noted previously, and a greater number of them can be reached through a redistribution of the workload that would simultaneously ensure the continuity over time making this the horizon contemplated by our group.

We have obtained a high level of satisfaction on behalf of the patients and the accumulated experience has enabled us to improve the work system in order to detect, categorise and solve DRP in future projects.

The realisation of studies that allow us to evaluate the adequateness of our intervention is necessary as well as to determine which patient might benefit more from them, as we cannot expect more resources to spread the programme in the short term.

Acknowledgments

This project is the result of the collaboration between the Valencian Society of Hospital Pharmacy (SVFH in Spanish) and the Valencia Health Agency.

CONSULTENOS GROUP

Amparo Rocher Mira and Santiago Montesinos Ortí (Hospital Arnau de Vilanova); Carmen Carrión Carrión and Beatriz Rodríguez Llansola (Hospital General de Castellón); José Luis Marco Garbayo and Elisa Sastre Calabuig (Hospital Francesc Borja); José Luis Poveda Andrés and Mónica Montero Hernández (Hospital Universitario La Fe); Arancha Castelao Buxó and Rosa Pardo (Hospital Universitario San Joan d'Alacant).

References

1. Forster AJ, Murff HJ, Peterson JF, Gandhi TK, Bates DW. Adverse drug events occurring following hospital discharge. J Gen Intern Med. 2005; 20:317-23.
2. Forster AJ, Clark HD, Menard A, Dupuis N, Chernish R, Chandok N, et al. Adverse events affecting medical patients following discharge from hospital [published erratum in CMAJ. 2004;170:771]. CMAJ. 2004;170:345-9.
3. Gandhi TK, Weingart SN, Borus J, Seger AC, Peterson J, Burdick E, et al. Adverse drug events in ambulatory care. N Engl J Med. 2003;348: 1556-64.
4. Cornish PL,Knowles SR, Marchesano R, Tam V, Shadowitz S, Juurlink DN, et al. Unintended medication discrepancies at the time of hospital admission. Arch Intern Med. 2005;165:424-42.
5. Schnipper JL, Kirwin JL, Cotugno MC, Wahlstrom SA, Brown BA, Tarvin E, et al. Role of pharmacist counseling in preventing adverse drug events after hospitalization. Arch Intern Med. 2006;166: 565-71.
6. Royal S, Smeaton L, Avery AJ, Hurwitz B, Sheik A. Interventions in Primary Care to reduce medication related adverse events and hospital admissions: systematic review and meta-analysis. Quality & Safety in Health Care. 2006;15:23-31.
7. Delgado Sánchez O, Anoz Jiménez L, Serrano Fabiá A, Nicolás Pico J; Grupo de Investigación de la I Beca Joaquim Bonal 2006. Conciliación de la medicación. Med Clin (Barc). 2007;129:343-8.
8. Joint Commission on Accreditation of Healthcare Organizations (JCAHO). Comprehensive Accreditation Manual for Hospitals (CAMH): The Official Handbook. Oakbrook Terrace: Joint Commisssion Resources; 2006.
9. Rogers G. Reconciling medications at admission: safe practice recommendations and implementation strategies. Joint Commission Journal on Quality and Patient Safety. 2006;32:37-50.
10. Delgado O, Serra G, Martínez-López I, do Pazo F, Fernández F, Serra J, et al. Errores de conciliación al ingreso y al alta hospitalaria en un servicio quirúrgico. Comunicación póster. Barcelona: XII Jornada Catalana de Farmacia Clínica; Juny 20, 2006.
11. López Cabezas C, Falces Salvador C, Cubi Cuadrada D, Arnau Bartés A, Ylla Boré M, Muro Perea M, et al. Randomized clinical trial of a post-discharge pharmaceutical care program vs regular follow up in patients with heart failure. Farm Hosp. 2006;30:328-42.
12. Infowin® Programa informático versión 3.0. Grupo Grifols.
13. Ventura JM, Sanfelix G, Monte E, Fernández E, Alós M. Satisfacción percibida por pacientes infectados por el VIH con la atención farmacéutica a pacientes externos (UFPE). Farm Hosp. 2005;29:134-9.
14. Climente Martí M, Jiménez Torres NV. Manual para la Atención Farmacéutica. 3rt ed. Valencia: Edita AFAHPE. Hospital Universitario Dr. Peset; 2005.
15. Alós M. Continuidad de la atención farmacéutica. Correo farmacéutico. Available from: http://www.correofarmaceutico.com/documentos /alos160204.pdf
16. Schnipper JL, Kirwin JL, Cotungo MC, Wahlstrom SA, Brown BA, Tarwin E, et al. Role of pharmacist counseling in preventing adverse drug events after hospitalization. Arch Intern Med. 2006;166:565-71.
17. Vik SA, Maxwell CJ, Hogan DB. Measurements correlates and health outcomes of medication adherence among seniors. Ann Pharmacother. 2004;38;303-12.