



## Medication Review

### PCNE Working group on medication review

Dublin, 18 October. 2011

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**Second PCNE Medication Review Working Symposium**

## The Spanish approach to cognitive services: Medication Review with Follow-up (MRF-up)

Dr. Miguel Angel Gastelurrutia, Spain

**Spanish approach to Cognitive Services: Medication Review with Follow-up**  
 Gastelurrutia MA, Alvarez de Toledo F, Varas R, on behalf of the Forum on  
 Pharmaceutical Care Consensus Committee (Spain).





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2004



2008

## Spanish Forum on Pharmaceutical Care Consensus Committee.

A national consensus was reached defining three Cognitive Pharmaceutical Services (CPS) that should be incorporated into the usual practice by Community Pharmacies in Spain:

- (1) Dispensing Service,
- (2) Minor Illness Service,
- (3) Medication Review with follow-up (MRF-up).













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2009





**FORO DE ATENCIÓN FARMACÉUTICA**  
Farmacia Comunitaria

**Spanish Forum on Pharmaceutical Care Consensus Committee. Community Pharmacy**







Implement, disseminate and make sustainable these three Cognitive Pharmaceutical Services (CPS) in Community Pharmacies in Spain:

- (1) Dispensing, (2) Minor Illness Service,
- (3) Medication Review with follow-up (MRF-up).





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## Medication Review: PCNE Definition.

Medication review is an evaluation of patient's medicines with the aim of managing the risk and optimizing the outcome of medicine therapy by detecting, solving and preventing drug-related problems.

**Aims:**

- Managing risks
- Optimizing outcomes



Process oriented approach



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#### **Randomised controlled trial of clinical medication review by a pharmacist of elderly patients receiving repeat prescriptions in general practice**

Arnold G Zermansky, Duncan R Petty, David K Raynor, Nick Freemantle, Andy Vail, Cath

*BMJ* 2001;323:1–5

There was no evidence that review of treatment by the pharmacist affected practice consultation rates, outpatient consultations, hospital admissions, or death rate.



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BJCP British Journal of Clinical Pharmacology

DOI:10.1111/j.1365-2125.2007.03071.x

#### Does pharmacist-led medication review help to reduce hospital admissions and deaths in older people? A systematic review and meta-analysis

Richard Holland,<sup>1</sup> James Desborough,<sup>1</sup> Larry Goodyer,<sup>2</sup> Sandra Hall,<sup>2</sup> David Wright<sup>1</sup> & Yoon K. Loke

<sup>1</sup>School of Medicine, Health Policy and Practice and <sup>2</sup>School of Chemical Sciences and Pharmacy, University of East Anglia, Norwich, and <sup>3</sup>Leicester School of Pharmacy, De Montfort University, Leicester, UK

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**Keywords**  
medication review, meta-analysis,  
pharmacist, systematic review

**Received**

2 July 2007

**Accepted**

29 October 2007

**Published Online Early**

18 December 2007

*Br J Clin Pharmacol* 2007; 65(3): 303-316

Pharmacist-led medication review interventions do not have any effect on reducing mortality or hospital admission in older people, and can not be assumed to provide substantial clinical benefit. Such interventions may improve drug knowledge and adherence, but there are insufficient data to know whether quality of life is improved.



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**IJPP**  
International Journal of  
Pharmacy Practice

UJP 2008, 16: 55-56  
© 2008 Int J Pharm Pract  
DOI 10.1211/ijpp.16.2.0001  
ISSN 0961-7671

Editorial

Where is the evidence?

There has already been some early research published on MURs but how nice it would be if we could obtain really hard evidence of their benefit, rather than **just seeing reports that 'pharmacists find it rewarding', or 'patients like it'**. Hopefully someone is doing that research right now. If so please do send your paper to us!

Christine Bond  
February 2008

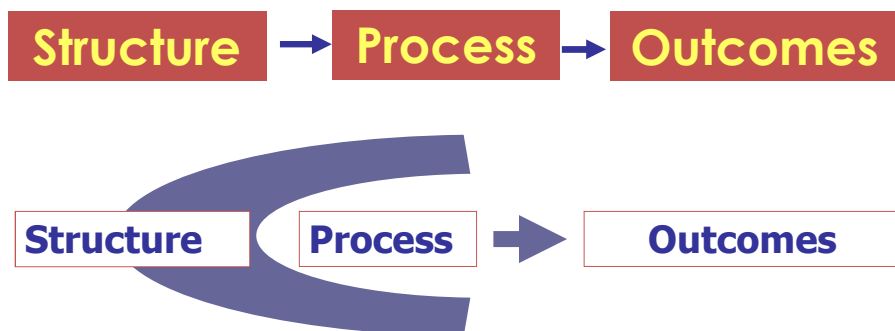


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### SPO Paradigm (Donabedian -1966)





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## Definitions

### **DRUG RELATED PROBLEMS (DRP)**

are situations that lead or can lead to a Negative health Outcome associated with the use of Medication (NOM). DRP are process elements and put medicine users at a greater risk of suffering a NOM.



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### **DRP list**

That can be the cause of a NOM:

- Error in the administration of the drug
- Personal characteristics
- No appropriate conservation
- Contraindication
- Non adequate dose, dosing regime and/or duration
- Duplications
- Dispensing errors
- Prescription errors
- Non compliance
- Interactions
- Other health problems that can interfere with the treatment.
- High risk of an adverse reaction
- Health problem(s) with suboptimal treatment
- Other



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## Definitions

**NEGATIVE HEALTH OUTCOMES ASSOCIATED with THE USE OF MEDICINES (NOM)** are negative health outcomes suffered by the patient, where the drug-therapy objective is not achieved, related or possibly related to the use of medicines.

A risk of a NOM is the situation in which a patient is at a risk of suffering a health problem related to the use of medicines.



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## Definitions

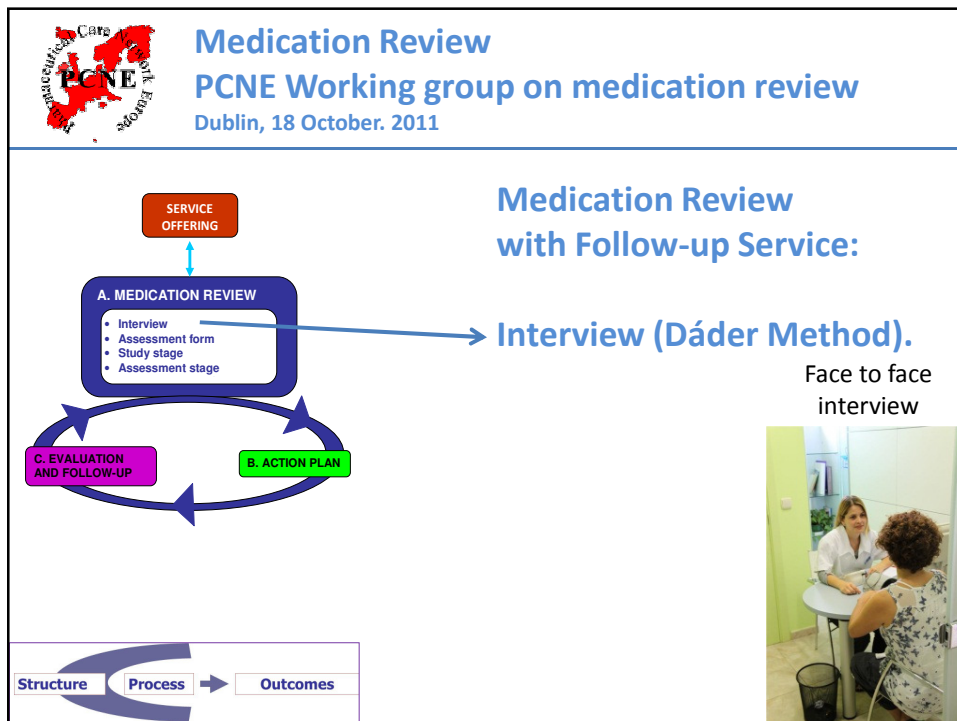
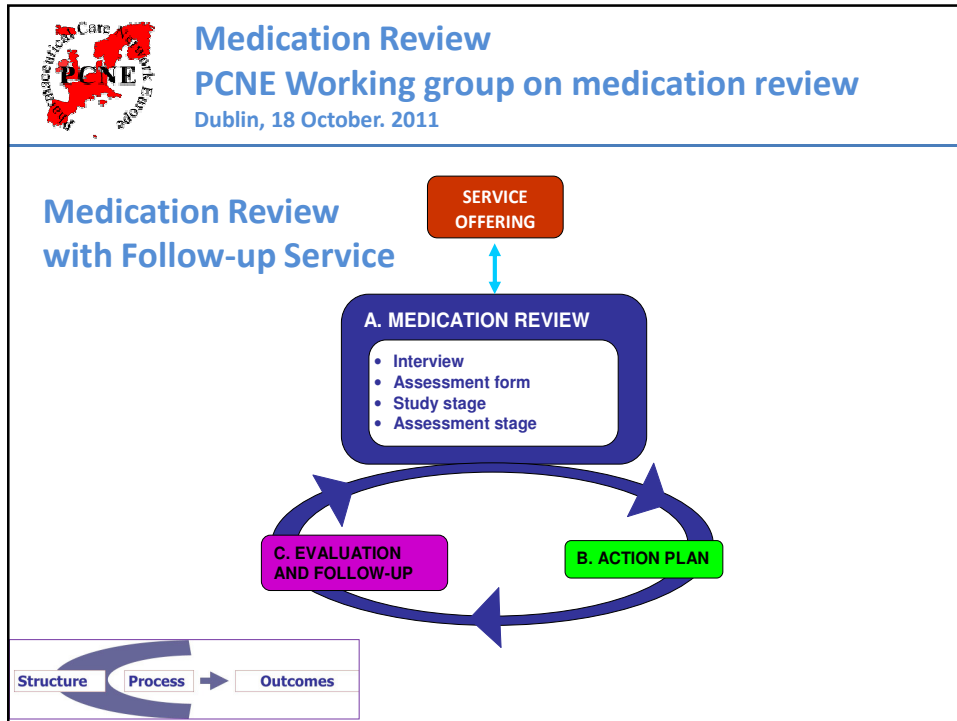
Forum divides the NOM categories:

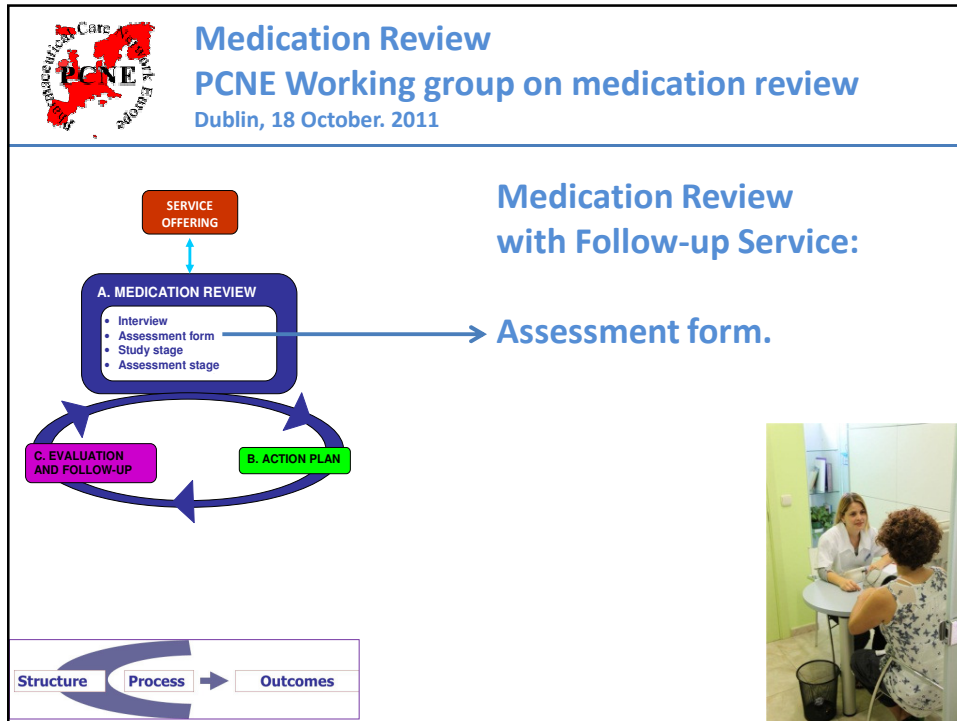
- **Necessity**
- **Effectiveness**
- **Safety**

Each category is divided in two other:

- Medicine requirement (health problem not treated)
- Non-necessity medicine (an effect of an unnecessary medicine)
- Not quantitative ineffectiveness
- Quantitative ineffectiveness
- Not quantitative unsafety
- Quantitative unsafety







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**ASSESSMENT FORM**


GENDER: AGE: Patient's code: DATE:

ASSESSMENT FORM							ASSESSMENT				P.I.
MEDICAL CONDITIONS			DRUG-THERAPY				N	E	S	NCO	P.I. (date)
Since	Medical Conditions	Worries	Starting date	Drug (generic name)	Dosage	Co/Kw					

NOTES:

DATE	MEASUREMENTS



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**Assessment form**

Medical condition	Drug-therapy	N	E	S	NCO

Medicines must be: Necessaries, effectives and safe.

### Example- I.

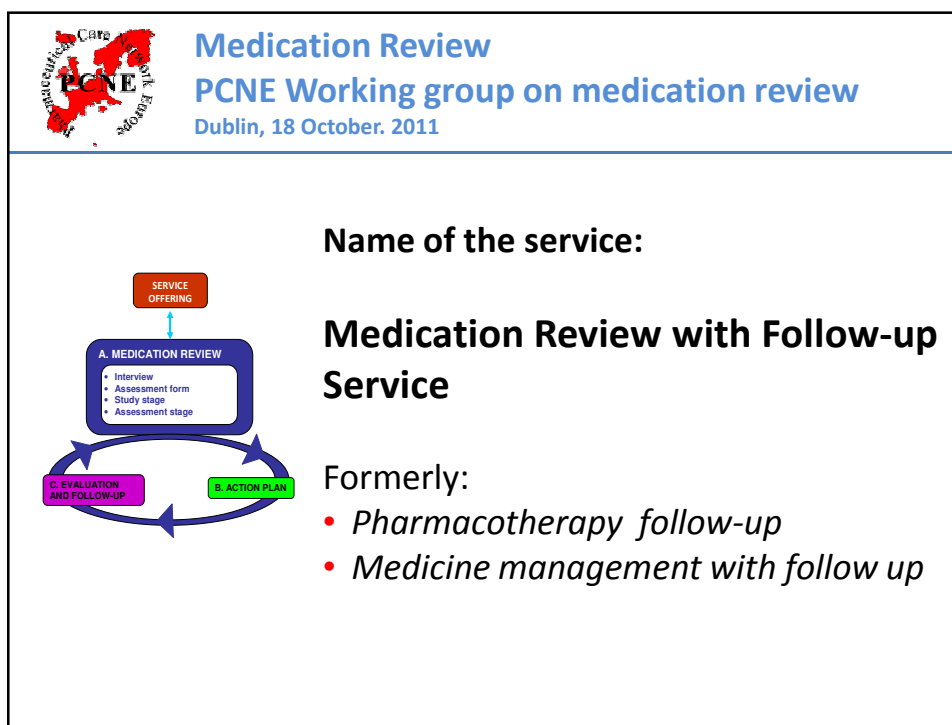
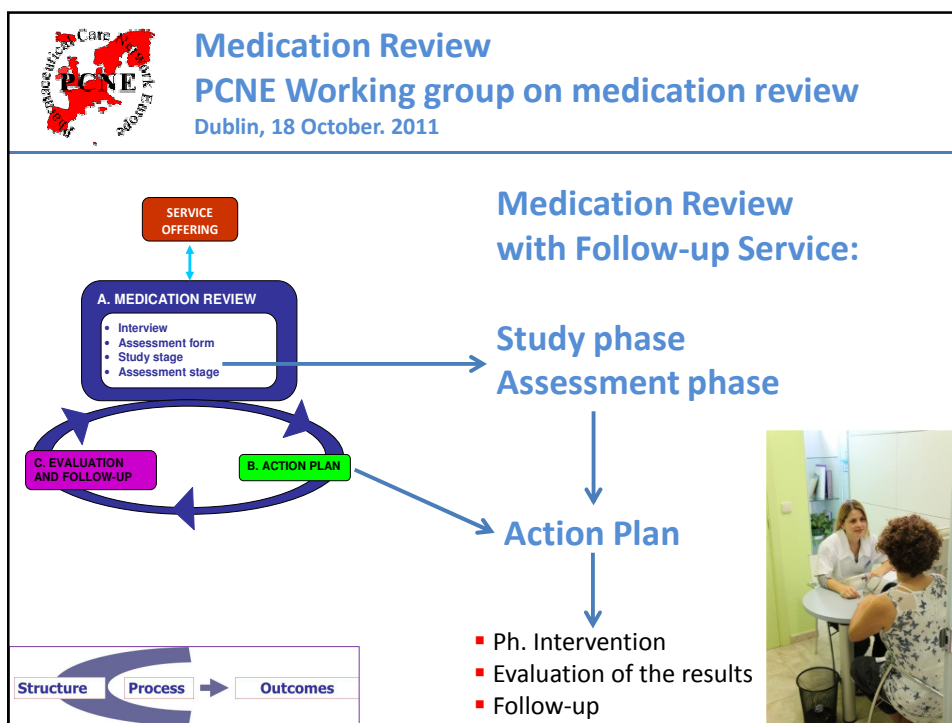
Medical condition	Drug-therapy	N	E	S	NCO
No	Bisacodyl 0-0-1	N			Unnec. drug
Hypertension (uncontrolled)	Enalapril 5 mg (1-0-1)	Y	N	Y	Quant Inef
Pain in the knee (Osteoarthritis)					Untreated condition

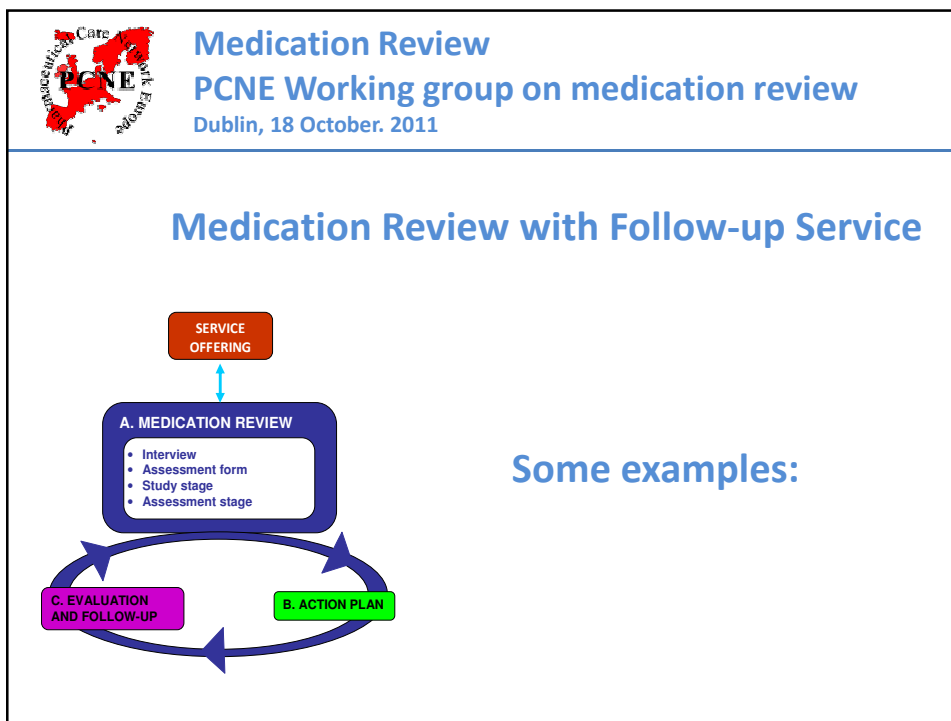
## Example- II.

Medical condition	Drug-therapy	N	E	S	NCO
Hypertension (controlled)	HCT 12.5 mg (1-0-0)	Y	Y	Y	
	Captopril 50 mg (1-1-1)			N	US Non Quant.
Dry cough					

## Example III.

Medical condition	Drug-therapy	N	E	S	NCO
Hypertension (uncontrolled)	Enalapril 5 mg (1-0-1) ( <i>lack of adherence</i> )	Y	N	Y	Quant Inef.







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Fornos JA, Andrés NF, Andrés JC, Guerra MM, Egea B.

A pharmacotherapy follow-up program in patients with type-2 diabetes in community pharmacies in Spain.

Pharm World Sci 2006; 28: 65-72

Randomized controlled trial [in 14 CP in Pontevedra (Spain)]  
112 patients between February 2003 and March 2004 (Control:  
usual care; Intervention: MRF-up)

*Changes from baseline. Final values:*

	Intervention	Control	p
DRPs	1,7 ± 1.2	3,1±1.2	<0.0001
Knowledge	17.9±3,7	11,4±6,7	<0.0001
HbA <sub>1c</sub>	7.9±1.7	8.5±1,9	<0.0001
FBG	154±61.3	168±57.8	<0.0004
TChol.	202±41.5	217±43.5	=0.0054
SBP	135±16.4	150±19.9	=0.0006



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### CONCLUSIONS:

A substantial number of patients showed an **improvement in their outcomes** for the chosen metabolic indicators.

MRF-up can play an important role in achieving therapeutic goals in patients with type 2 diabetes.

This study shows that the incorporation of type 2 diabetic patients in a MRF-up program may contribute to achieve positive clinical outcomes and will contribute to the implementation and progress of this service in CP

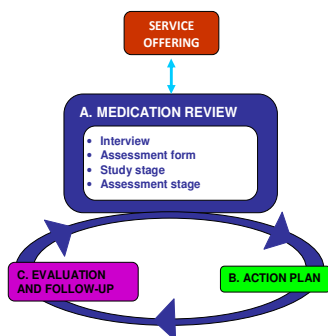


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## Medication Review with Follow-up Service



### Some examples:

Castrillon C (Doctoral thesis)

**Implementation of a Medication Review with Follow-up Service in a Community Pharmacy, and evaluation of their health outcomes (Economic, Clinical and Humanistic).**



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Castrillon C (Doctoral thesis): Implementation of the Medication Review with Follow-up service in a Community Pharmacy and evaluation of their health outcomes (Economic, Clinical and Humanistic )

**132 patients on MRF-up  
for 18 months**



 <b>Medication Review</b> <b>PCNE Working group on medication review</b> Dublin, 18 October. 2011	
<b>DRP (Causes of NOM):</b>	<b>615 DRP; 4.39/pt.</b>
Wrong administration of medicine	13,5%
Personal characteristics	3,7%
Inadequate preservation	0,3%
Contraindication	1,1%
Non adequate dose, dosing regime and/or duration	15,0%
Duplications	2,9%
Dispensing errors	0,2%
Prescription errors	3,1%
Non compliance	15,8%
Interactions	3,7%
Not needed medication	4,2%
Other health problems that affects the treatment	3,1%
High probability of adverse effects	21,5%
Health problem with suboptimal treatment	10,1%
Other	1,8%

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Castrillon C (Doctoral thesis): Implementation of the Medication Review with Follow-up service in a Community Pharmacy and evaluation of their health outcomes (Economic, Clinical and Humanistic )

#### RESULTS:

- 420 NOM [average = 3,0 NOM per patient]
- 194 rNOM [average = 1,5 rNOM per patient]

614 rNOM/NOM  
[4,6 rNOM/NOM per patient]

Negative outcomes related to medicines (NOM)

Type of NOM	N=420	%
Necessity	66	15,8%
Effectiveness	201	47,8%
Safety	153	36,4%

Risk of negative outcomes related to medicines (rNOM)

Type of rNOM	N=194	%
Necessity	27	13,9%
Effectiveness	69	35,6%
Safety	98	50,5%



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#### Pharmacist interventions on 612 rNOM / NOM.

649 interventions (IF)

238 (36,7%) pharmacist – patient

411 (63,3%) pharmacist – patient – physician



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# of encounters:  $2219 / 132 = 16.8$  visits/patient

Month average:  $16.8 / 18 = 0.9$  visits/month/patient

**9.5 minutes:** average time of visits.

#### **ADHERENCE** using Haynes-Sackett method.


(132 patients;18 months):

Baseline (68 noncompliant) 51.52%

Final ( 1 noncompliant) 0.76%

[OR=0,007 (IC95%: 0,001 a 0,053)  $p < 0,001$ ]





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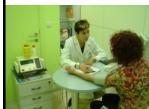

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**Castrillon C (Doctoral thesis): Implementation of the Medication Review with Follow-up service in a Community Pharmacy and evaluation of their health outcomes (Economic, Clinical and Humanistic )**

### NUMBER OF MEDICINES

Nº of drugs	Baseline visit	Last visit
Number	808	446
Average	6,12	3,34
Mode	4	2
Median	5	3
S.D.	2,86	2,16
Minimum	1	0
Maximum	19	11

p<0.0001



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### HOSPITALIZATION (at least one day):


- 6 months previous to the baseline: 9.10% (n=12)
- 6 months previous to the end of the study (18 months) 3.03% (n=04)

[OR=0,31 (IC95%= 0,10 – 0,99); p=0,039]

### EMERGENCY UNITS (at least one time):

- 6 months previous to the baseline: 12.87% (n=17)
- 6 months previous to the end of the study (18 months) 2.27% (n=03)

[OR=0,16 (IC95%= 0,05 – 0,55); p=0,001]





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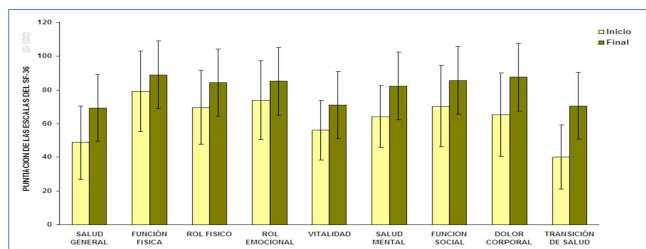
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### SF-36 Quality of Life Questionnaire

(Baseline vs. 18 months  $p < 0,001$ )



Physical health (PCS) and Mental health (MCS) summaries.

	INICIO:		FINAL:		Diferencia		P
	Media	(±DT)	Media	(±DT)	Media	(±DT)	
Salud física (PCS)	65,8	20,2	82,7	17,6	-16,9	18,5	<0,001
Salud mental (MCS)	66,2	18,8	81,1	16,4	-14,9	16,7	<0,001

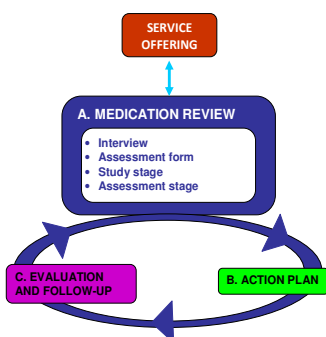


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### Medication Review with Follow-up Service



### Some examples:

conSIGUE Programme (conSIGUE = *Achieve*)

#### Objective:

- Phase 01: Assess the impact of the MRF-up on ECH-Outcomes
- Phase 02: After achieving a pay for the service, implementation of MRF-up in Spanish CP.

conSIGUE



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**PILOT: 1 month**, in Cádiz (15 CP intervention group and 15 CP comparison group)

#### MRF-up

- improved the control of health problems (12%)
- reduced the number of medicines taken (-0.39 average),
- saved 7 euro/patient/month,
- increased quality of life
- allowed the identification, prevention and solving of DTP (average 0,2/patient) and NOM (average: 1,5/patient),
- through the collaboration of patients and physicians.



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#### Intervention group:

#### Negative Outcomes related to Medicines (NOM) and DRP per patient

	Number of patients	Average	SD
NOMs	105	1.45	1.26
Risk of NOMs	41	0.53	0.87
DRPs	125	2.05	1.45
Interventions	123	1.85	1.23



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- Using two different measurement systems of Quality of Life we found the same result: in one month, in the intervention group, QoL improved while it decreased in the comparison group.



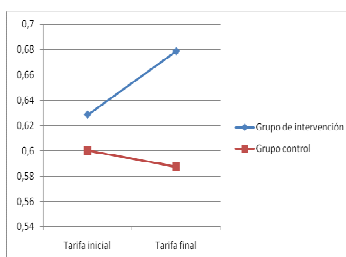
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#### QUALITY OF LIFE. Two methods: QALYs and a visual scale

	Grupo Intervención			Grupo Comparación		
	Media	(DE)	Min-Max	Media	(DE)	Min-Max
Tarifa inicial	0,6285	0,25	0,035-1,00	0,6003	0,26	-0,076-1,00
Tarifa final	0,6786	0,24	0,035-1,00	0,5873	0,27	-0,076-1,00
AVAC (QALY)	0,6446	0,23	0,035-1,00	0,5938	0,26	-0,76-1,00





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	Average Cost (DE)	Incremental Cost	QALY* average	Incremental QALY	RCEI**
Intervention Group	310,05 (266,95)	158,95	0,6446	0,0508	3.128,94
Comparison Group	151,10 (171,65)		0,5938		

\*quality-adjusted life year, QALY

\*\*incremental cost-effectiveness ratio



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