

# Integrated Disease Management: A Critical Review of Foreign and Portuguese Experience



## Gestão Integrada da Doença: Revisão Crítica das Experiências Estrangeiras e Portuguesa

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*Acta Med Port* 2014 Jan-Feb;27(1):116-125

### ABSTRACT

**Introduction:** The present article reviews findings from empirical evaluations of integrated disease management programmes. The objective is to provide insights on integration levels, priority interventions and their effect on patient outcomes.

**Material and Methods:** The literature review identified 1 251 articles, published from 2006 to 2011. Upon a detailed screening 61 articles were selected for bibliometric analysis and critical discussion.

**Results:** Among several findings, it can be noted that United States of America is the country with the highest amount of published evidence on the subject under study. The most frequently referred disease is diabetes *mellitus* and the main reported issue of integrated disease management is self-management support. The majority of the studies were developed and exclusively managed by managed care organizations, organized family doctors or hospitals. From a total of 360 interventions reported in studies, patient interventions are the most frequently used across all disease groups, followed by professional interventions. To monitor the effectiveness of the disease programmes, the most frequently used outcomes are patient physiological measures, service use and patient health status.

**Discussion:** Every country has its own way to implement the integrated disease management strategy. The focus of practice lies on patient empowerment, particularly through self-management. Physiological measures and service use are the outcomes with the highest rate of assessment, which are also the indicators that show higher impact among all integrated disease management programmes.

**Conclusion:** The Portuguese health care system still faces challenges in the coordination and integration of care for patients with chronic disease thus improvements at integrated disease management programmes should be incorporate.

**Keywords:** Case Management; Chronic disease; Delivery of Health Care, Integrated; Disease Management; Portugal.

### RESUMO

**Introdução:** O artigo faz uma revisão de literatura sobre os programas de gestão integrada da doença, apresentando resultados sobre o nível de integração dos cuidados, as intervenções prioritárias utilizadas nos programas e o seu efeito, nomeadamente, nos doentes.

**Material e Métodos:** A revisão de literatura identificou 1 251 artigos, publicados entre 2006 e 2011. Depois de uma criteriosa seleção identificaram-se para a análise bibliométrica e discussão crítica, 61 artigos.

**Resultados:** Realçamos o facto de serem os Estados Unidos da América o país que mais publica sobre esta matéria; A doença mais reportada é a diabetes *mellitus* e o domínio de intervenção da gestão integrada da doença, predominante, é o 'apoio ao auto-cuidado'. A maioria dos estudos foram implementados por *managed care organizations*, médicos de medicina geral e familiar organizados para o efeito ou hospitais. Das 360 intervenções reportadas, as mais utilizadas são as dirigidas aos doentes e aos profissionais. Os resultados mais observados nos doentes, aquando da monitorização dos programas, são: resposta clínica, utilização de serviços e estado de saúde.

**Discussão:** Cada país tem a sua própria forma de implementar a estratégia de gestão integrada da doença. O foco de atenção da prática clínica é o empoderamento dos doentes, particularmente através da promoção da auto-gestão. Os resultados clínicos e os de utilização dos serviços para além de serem os mais utilizados, são também, aqueles com maior impacto nos programas de gestão integrada da doença.

**Conclusão:** O sistema de saúde Português ainda enfrenta sérios desafios no tocante à coordenação e integração de cuidados dirigidos à pessoa com doença crónica pelo que se sugere a atualização do programa.

**Palavras-chave:** Doença Crónica; Gestão de Caso; Gestão da Doença; Portugal; Prestação Integrada de Cuidados de Saúde.

### INTRODUCTION

This article reviews findings from empirical evaluations of integrated disease management (IDM) programmes. The aim was to describe the integration levels, identify the most frequent interventions and outcomes and to synthesise knowledge about their implementation and performance. The article focuses on discussing the documented good practices in the international literature that could improve the IDM Portuguese model implemented in 2008.

The article starts with a brief description of the most re-

cent developments and the context of IDM programmes; then the results of the literature search conducted in 2011 are presented; and finally, the evidence is synthesised in order to identify lessons that can be learned from international experiences.

### Context

Chronic Disease Management (CDM) initiatives were originally developed in the United States (USA) in line with

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Recebido: 19 de Agosto de 2013 - Aceite: 06 de Fevereiro de 2014 | Copyright © Ordem dos Médicos 2014



the recommendation of Centers for Disease Control and Prevention, which state that the health care system should target diseases where effective public health preventive strategies exist, or are the subject of promising research.<sup>1</sup> CDM programmes aim to enable health care systems to be more supportive to patient-provider interactions,<sup>2</sup> to improve overall health status and to reduce healthcare costs generated by chronic conditions.

In 2012, the European Commission encouraged the replication of CDM models through an integrated care methodology known to improve the quality and accessibility of care to patients with a chronic condition (Opening speech on the European Year for Active Ageing and Solidarity between Generations, January 18, 2012 by Dalli J). In order to reduce deficiencies such as inadequate care transitions, inefficient information flow between different levels of care and low patient engagement,<sup>3</sup> several European countries have, also, moved in that direction.<sup>4</sup> In the case of Portugal, a national CDM project named Integrated Disease Management (IDM) was launched in 2008, endorsed by the Ministry of Health. The introduction of the concept of integration was proposed as an alternative to fragmentation, duplication and inefficient use of resources in chronic disease management.<sup>5</sup>

The development of an IDM model became the main chronic disease strategy and decision-making tool in clinical management. It was perceived as a quality-driven approach to lead the reorganization of the Portuguese healthcare delivery structure<sup>6</sup> and to rationalize service provision to improve productivity, quality and price control.<sup>7,8</sup>

In the context of great economic restraint this initiative increased the responsibility of patients (as self managers), providers (as clinical managers) and policy makers (as regulatory managers) involved in all phases of chronic diseases.<sup>6</sup>

The Ministry of Health regulates health care delivery through a national online data base of patient's records, included in all IMD programmes, together with a set of clinical guidelines and auditing practices. This online system is an important tool for the follow-up of patients, the monitoring of quality of care, as well as the monitoring of the epidemiological evolution of the disease.<sup>6</sup>

One of the key and most innovative components of this program was the introduction of a funding model, similar to 'pay for performance', in which providers receive a lump sum per patient if they achieve some performance targets. Expected results are risk sharing with providers, patient-centred care practices, coordination of care, population risk stratification and the implementation of a direct relationship between funding and quality and safety clinical parameters.<sup>6</sup>

### Analytical Framework

In many countries the coordination and integration of care remains a major challenge.<sup>3</sup> In the literature there is no formal or consensual definition of integration of care. In non English-speaking countries the different concepts to describe integrated care are even more diverse.<sup>9</sup> For the

purpose of this review, Curry and Ham's<sup>5</sup> definition and classification was used: "integration is concerned with the processes of bringing organizations and professionals together, with the aim of improving outcomes for patients and service users through the delivery of integrated care".

Several countries have adapted IDM programmes to their own health care systems.<sup>4</sup> However, for the purpose of the present study, programmes were classified through the Chronic Care Model (CCM) conceptual framework. The six essential and interrelated elements of the CCM<sup>2</sup> are:

- Delivery System Design - A clear division of multi-professional labour, separating the acute from the programmed care, in order to support process and structures through an effective patient care.
- Self-management Support - Collaborative strategies from education to support services based on self-management principles, in a variety of formats that help patients and their families to acquire the skills to manage their condition.
- Decision Support - Integration of evidence based clinical guidelines into practice, reminder systems, continuing medical education and inter-provider communications.
- Clinical Information Systems - Availability and comprehensiveness of clinical data during patient visits with reminder system to improve compliance with guidelines, performance measures and planning of care.
- Community Resources - Link with community based resources (hospitals, home care agencies, self help groups and senior homes).
- Health Care Organization - changes at the larger organizational level, from structure, goals to values improved by a strong leadership.

Interventions described in the reviewed articles were also classified according to the Cochrane Effective Practice and Organization of Care (EPOC) taxonomy<sup>10</sup> ([Appendix 1](#)), considering whether they were organizational, professional, regulatory or financial interventions. The item 'patient interventions' was also included in the present study to encompass interventions related with the following: distribution of educational materials, education sessions, reminders, etc.

Patient outcomes and other results were classified using the approach proposed by Zwar et al<sup>11</sup>: professional adherence to guidelines; patient adherence to treatment; patient health service use; patient physiological measure of disease; patient risk behavior; patient quality of life; patient health status; patient functional status; patient satisfaction. Two additional items were added: 'patient education' and 'costs'.

### MATERIAL AND METHODS

In 2011, a literature search in both Medline and Cochrane databases was undertaken to identify documents published on IDM, between January 2006 to end of June 2011.

We used keywords and Medical Subject Headings (MeSH) descriptors (Table 1) associated them with the following diseases: 'chronic kidney failure, multiple sclerosis, obesity, pulmonary hypertension, diabetes

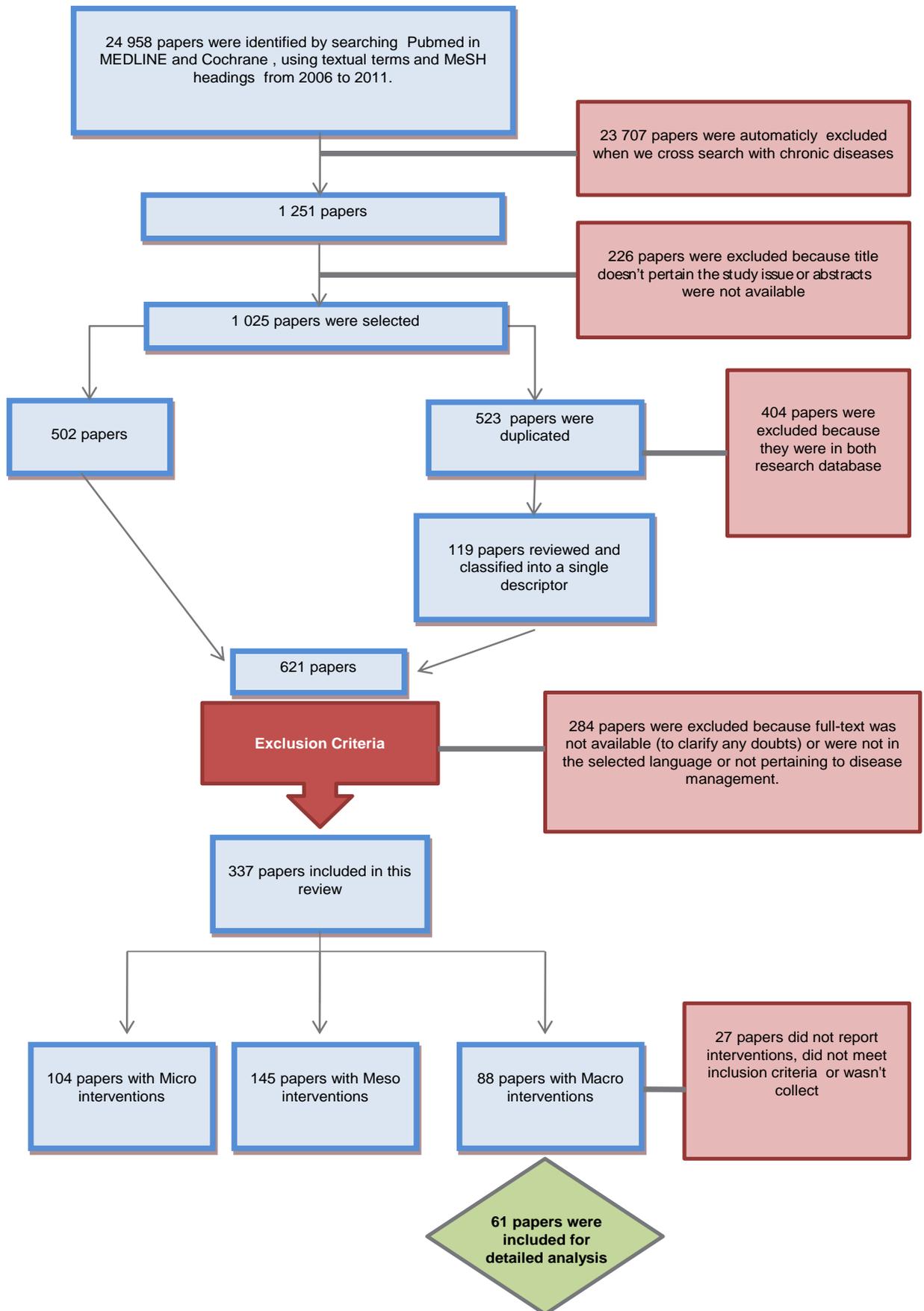


Figure 1 - Article selection process

*mellitus*, asthma, chronic obstructive pulmonary disease, heart failure, coronary disease and arterial hypertension'. This selection corresponded to the health profile of Portugal at the time the IDM programme was developed in 2008 and to the results of a Delphi survey, conducted in 2009 by the Directorate-General of Health to identify diseases which had a stronger impact in the health care system.<sup>12</sup>

Inclusion criteria were: 1) publications in English, French, Spanish or Portuguese; 2) about diseases in human beings; 3) covering populations aged over 19 with one or more of the above-mentioned diseases.

Articles were classified according to the three areas of coverage considered in the integration level category: 'macro', 'meso' or 'micro'. The review focused on evidence of lessons useful to informing policy at national level, and therefore, only the full text studies under the 'macro' dimension were included in the analysis.

sion were included in the analysis.

We excluded documents consisting a study of one or two patients or which did not describe specific interventions. Fig.1 details the steps in the identification of the articles and the number excluded at each stage.

Data was extracted and introduced directly into an 'Excel' database by a researcher and reviewed by a second one. All disagreements were resolved through discussion and consensus within the research team.

All articles retrieved ( $N = 61$ ) were grouped according to the CCM main focus using Wagner et al's definition.<sup>2</sup> Interventions were classified according to the EPOC taxonomy<sup>10</sup> and results were classified using the approach proposed by Zwar et al.<sup>11</sup>

Overall results were discussed considering the Portuguese experience as a benchmark.

Table 1 - Keywords and MeSH Terms used in the review

Keywords and MeSH Terms	PUBMED N	COCHRANE N
Case management (MeSH)	102	39
Disease management (MeSH)	268	103
Chronic disease (MeSH)	0	429
Chronic disease management	80	16
Chronic disease self-management	16	8
Integrated disease management	5	3
Integrated chronic disease management	90	0
Integrated care	34	16
Integrated chronic disease	3	0
Integrated service management	39	0
	<b>637</b>	<b>614</b>
<b>TOTAL</b>		<b>1 251</b>

Table 2 - Number of studies per disease and percent with statistically significant improvements

Diseases	N*	Studies with documented outcomes‡	Studies with statistically significant improvements§	% of Effective Studies
Diabetes Mellitus	31	29	26	90%
Multiple Diseases	16	15	12	80%
Asthma	4	4	4	100%
Coronary disease	4	3	3	100%
Chronic obstructive pulmonary disease	3	3	2	67%
Heart failure	2	2	1	50%
Chronic kidney failure	1	1	1	100%
<b>Total</b>	<b>61</b>	<b>58</b>	<b>49</b>	<b>84%</b>

\* Number of studies included in the review per disease; ‡ Number of studies with documented outcomes per disease; § Number of studies with statistically significant improvements per disease.

## RESULTS

The initial search identified 1 251 articles, of which 621 were retained after an initial screening. After the exclusion of duplicates, this number fell to 337 articles. Articles on the 'Macro' dimension ( $N = 88$ ) were extracted by one investigator and checked by a second one. Only the 61 full text studies under the 'macro' dimension were selected for analysis.

Data was first characterized according to the main bibliometric components. Programmes were then characterized according to their integration level, CCM elements, IDM intervention using the EPOC taxonomy and finally according to their outcomes and effectiveness.

Supplementary material is available for more detailed information about the results (Synthesis of Results in [Appendix 2](#)).

### Bibliometric approach

72% of total articles ( $n = 44$ ) were identified in Medline (PubMed), 10% ( $n = 6$ ) in Cochrane Database of Systematic Reviews and 18% ( $n = 11$ ) were found in both of databases. All articles were in English; 51% had diabetes *mellitus* as the key disease-focus, followed by asthma and coronary disease (Table 2). 52% of the articles ( $n = 32$ ) presented studies were conducted in the USA; other studies were from the Netherlands, the United Kingdom, Germany and Australia; none referred Portugal.

Classification identified 15 studies as 'research support', 12 as 'randomized controlled trials', nine as 'evaluation studies', eight as comparative studies and 17 were classified in categories such as 'review' ( $n = 3$ ), 'controlled clinical trial' ( $n = 3$ ), 'cohort study' ( $n = 3$ ), 'quasi-experimental design' ( $n = 2$ ), 'case study' ( $n = 2$ ), 'multicenter study' ( $n = 1$ ) and 'meta-analysis' ( $n = 1$ ).

'Population Health Management' published six articles, 'The American Journal of Managed Care' four, 'BMC Health Services Research', 'Diabetes care' and 'Medical Care' three each.

### Integration Level

Of the 61 articles classified as 'macro' interventions, 25 were implemented by managed care organizations (19 in USA and 2 in Germany), 22 by organized groups of family doctors, e.g. GP's (6 in USA, 4 in the Netherlands and 3 in UK and 3 in Australia); and the other 10 by hospitals specifically organized to respond to disease management challenges.

Four articles described IDM programmes developed in the context of primary health care settings in collaboration with hospitals or managed care organizations; two in USA and one in the Netherlands and the United Kingdom.

### CCM Elements

At least two or more CCM elements were described in 56% of the studies ( $n = 34$ ), with multiple combinations between them. In order to facilitate the analysis, the predominant CCM element was identified and articles were classified accordingly. Further categorization allowed to identify 19 studies as self-management support, 15 as health care organization, 11 as delivery system design, 11 as decision support and 4 as clinical information system.

As regards programme effectiveness, 58 studies presented improvements and in 49 of them these were considered statistically significant (Table 3). 'Self-management support' and 'health care organizations' were the two CCM elements with a higher number of IDM interventions and a higher number of studies reporting statistically significant improvements (16 of a total of 19 and 13 of a total of 14 articles respectively).

As far as IDM programmes are concerned, 29 of them focused on Diabetes Mellitus, with 26 reporting statistically significant improvements (Table 2). There was only one study about obesity and it didn't report any improvements.

### IDM Interventions

From a total of 360 IDM interventions, the most frequent

Table 3 - Number of EPOC interventions per CCM elements and percent with statistically significant improvements per disease

CCM Elements	EPOC Interventions (N)*	Studies with documented outcomes (N)†	Studies with statistically significant improvements‡	% of Effective Studies
Clinical information system	10	4	4	100%
Decision support	39	10	8	80%
Delivery system design	93	10	7	70%
Health care organisation	86	14	13	93%
Self management support	128	19	16	84%
Community Resources	0	0	0	0
Not applicable	4	1	1	100%
<b>Total</b>	<b>360</b>	<b>58</b>	<b>49</b>	<b>84%</b>

\* Number of EPOC interventions identified per CCM elements; † Number of studies with documented outcomes per CCM elements; ‡ Number of studies with statistically significant improvements per CCM elements.

Table 4 - IDM Interventions classified according to the EPOC Taxonomy (N)

IDM Interventions by EPOC Taxonomy		N
Patient interventions (N = 110)	Self management	26
	Education sessions	25
	Distribution of educational materials	23
	Call back reminder notice	17
	Motivational counselling	12
	Brief intervention	7
	Community programmes	3
Professional interventions (N = 105)	Audit and feedback	25
	Distribution of educational materials	24
	Educational meetings	21
	Educational outreach visits	10
	Reminders	10
	Patient mediated interventions	9
	Local consensus processes	3
	Local opinion leaders	3
Organisational interventions (N = 63)	Other	1
	Revision of professional roles	7
	Clinical multidisciplinary teams	21
	Formal integration of services	1
	Skill mix changes	3
	Continuity of care	16
	Communication and case discussion between distant health professionals	5
	Other provider oriented intervention	2
	Presence and functioning of adequate mechanisms for dealing with patients' suggestions and complaints	2
Other patient oriented intervention	6	
Structural interventions (N = 58)	Changes to the setting/site of service delivery	13
	Changes in physical structure, facilities and equipment	6
	Changes in medical records systems	11
	Changes in scope and nature of benefits and services	11
	Presence and organisation of quality monitoring mechanisms	11
	Ownership, accreditation, and affiliation status of hospitals and other facilities	1
	Staff organization	5
Financial interventions (N = 19)	Fee-for-service	2
	Capitation	2
	Provider salaried service	1
	Provider incentives	6
	Institution incentives	1
	Institution grant/allowance	1
	Other (p4p)	4
Regulatory interventions (N = 5)	Other Patient financial interventions	2
	Changes in medical liability	3
	Management of patient complaints	2
<b>Total</b>		<b>360</b>

Table 5 - Analysis of the total number of outcomes reported in articles (N)

Outcomes	N
Patient physiological measure of disease	38
Patient service use	22
Patient health status	21
Patient risk behaviour	18
Costs	14
Patient education	8
Patient quality of life	8
Patient adherence to treatment	7
Professional adherence to guideline	4
Patient functional status	2
Patient satisfaction	1

across all the disease groups were 'patient interventions' and 'professional interventions' (Table 4).

Among the former, the most frequent were:

- Self management (Supermarket tours and cooking classes; Training with life coach; Self-management group training program; Self-care initiatives led by care managers);
- Education sessions (Informal and formal education sessions; Periodic educational mailings);
- Distribution of educational materials (Educational book/manual or booklet; Videocassette; Training devices, ie blood pressure and glucose monitoring tools; Self-management guidelines; Action plan);
- Reminder notice (Reminders for medication compliance and vaccination; Reminder calls and text message; Telephone appointment reminders).

Among the latter, the most frequent interventions were:

- Audit and feedback (Monitorization of indicators/standards of process and outcomes; Quality audit; Monitorization of guidelines accomplishment; Computerized/Web based decision support system, Notification of gaps between patient-reported practice and guideline recommendations);
- Distribution of educational materials (Therapeutic protocols; Clinical management guidelines; Guidance on implementing standards of care);
- Educational meetings (Periodic fora, courses, workshops; Training for nurses and GP's about chronic diseases and lifestyles; Conference calls with collaborative leaders).

### Measuring intervention Outcomes

The most common health outcomes used to monitor the IDM programmes were (Table 5):

- Physiological measures such as blood tests (HbA1c, cholesterol and triglyceride, micro-albuminuria, creati-

nine, proteinuria), blood pressure, nephropathy screening, eye and foot examination, immunizations;

- Service use, evaluated through some organizational outcomes such as: length of stay, hospitalization rates, readmissions, visits to health offices or emergency department; and
- Patient health status, monitored by rates, scores and scales such as: anxiety level, depression score, vaccination rate, the 10-year coronary heart disease risk and self-rated health self-care behaviour.

### DISCUSSION

The principal aim of this study was to identify documented good practices in the international literature which could inspire lessons to improve the Portuguese IDM model. Since the end of our literature search no new systematic reviews has been published which suggest some level of consensus about the effectiveness of disease management programmes.<sup>13,14</sup>

The chronic diseases, which were included in this search (diabetes mellitus, asthma, coronary disease, etc.) reflect the 'burden of disease' of countries with the highest income and the most commonly managed at primary health care level.<sup>15</sup>

We were able to identify several types of studies, using different methods and levels of rigour. The three most common types of evaluation designs applied to IDM program evaluation: were experimental designs, quasi-experimental designs, e.g. pre-post intervention studies with comparison group, and pre-experimental designs, e.g. pre-post studies without comparison group.<sup>16</sup>

### Integration Level

In general, findings show that countries developed their IDM strategies as part of a national or regional policy<sup>17</sup> in order to improve patient outcomes and reduce wastefulness.<sup>5</sup>

A collaborative intervention between primary and secondary care was found only in four articles, which evidences that the interface between primary and secondary care still presents challenges in most countries.<sup>17</sup> It also shows that IDM programmes, as discussed by other authors,<sup>15</sup> have their main focus on primary health care rather than on secondary health care as IDM programmes were mainly found to be developed within the context of managed care organizations or organized general or family practices.<sup>17</sup>

The highest number of IDM programmes was reported in the USA.<sup>15</sup> In 2005 UK established the National Health Service and Social Care Model, which based on the 'pyramid of care' adapted from Kaiser Permanente, helped introducing teams in primary care and creating a network of community providers.<sup>17</sup> Other European countries such as Spain, Italy, Ireland and Portugal, progressively moved towards the same approach.<sup>18</sup>

### CCM Elements and IDM Interventions

More than half of studies reported two or more components from CCM and no country had all six components

been implemented.<sup>19</sup>

Better outcomes are associated with the presence and implementation of multiple CCM elements.<sup>20</sup> Portugal is one of the few countries where the IDM program includes all six components at different levels of development.<sup>6</sup> 'Delivery System Design' separates the acute from the programmed care by offering an effective patient care through treatment units and reference centres; 'Decision Support' and 'Self-management Support' integrate evidence-based clinical guidelines into professional practice and patients day life through a web base decision support system namely platform 'Dados de Saúde'.

Programmes with 'self-management support', 'clinical information system', 'delivery system design' and 'decision support'<sup>21</sup> as predominant CCM elements, were considered effective. The Portuguese IDM program for the End Stage Renal Disease was evaluated as an efficient initiative of coordination<sup>22-24</sup> in which the empowerment of patients, the use of evidence-based clinical practices, the prospective payment and the involvement of all the stakeholders contributed to control health spending without compromising quality of care.<sup>7</sup>

In general, the methodology for implementing disease management and for measuring its effects, in the perspective of the CDM, is still in its infancy.<sup>16,25</sup> The lack of quality data represents a major challenge for informed planning, health policies development, implementation and evaluation, and programmes and community-based intervention oriented to patients with chronic diseases.<sup>1,21</sup> The difficulty in assessing the effect of this model through experimental studies probably explains why such studies are rare<sup>21</sup> and that no stronger evidence is available.

Even though most of studies reported improvements with statistical significance, evidence on the cost-effectiveness of the CCM is still scarce, and more research is needed to understand the implications for practices, payers, and patients.<sup>20</sup> There is also little quantitative evidence documenting the relative importance<sup>1</sup> and effectiveness<sup>25</sup> of each component separately. Further research is also required to explore the most effective combinations of CCM elements and the different implementation processes in order to increase the likelihood of improvements.<sup>20,26</sup>

Despite the scarcity of evidence regarding the effectiveness of IDM intervention in general, there is a growing body of studies showing that when compared to standard health care, self-management approaches provide benefits to participants, particularly in terms of knowledge, impact of self-management behaviours and health status.<sup>27</sup> The Care Continuum Alliance defends that the successful self-management of a chronic disease can slow down disease progression, improve quality of life and save money.<sup>16</sup>

Other authors<sup>4</sup> conclude that most disease management programmes give more emphasis to the compliance with medical prescriptions than to other self-management components, such as the involvement of the family and community, limiting self-management interventions in favour of self-monitoring of some clinical parameters and life-

style changes.

Educational sessions and distribution of educational material seem to be highly valued interventions by patients and professionals. The empowerment of patients and the increase of their knowledge are *sine qua non* conditions in all disease management programmes; but to have patients better informed, proactive and more involved in decision-making processes, the personalization of education sessions and materials is needed, as well as continuing access to relevant information.<sup>4</sup>

In Portugal as in other European countries, the development of a patient portal is under implementation and some services that improved CDM and continuity of care, are already offered.<sup>28</sup>

IDM programmes that incorporate provider education, feedback and reminders, are associated with improvements in disease control.<sup>5</sup> The production, distribution and impact of guidelines vary among countries, for instance, in England, for instance, the Health Department NICE produces evidence-based guidelines and tools,<sup>25</sup> and in the USA, most activities in CDM are found in health plans, such as those implemented by the National Committee for Quality Assurance, Kaiser Permanente and similar organizations.<sup>25</sup> Portugal, like other European countries, has a tradition of regulating health care at central level, through guidelines, clinical auditing and inspections and believe that under the IDM model, health professionals become more involved in cost-effective guidance and in clinical governance.<sup>6</sup>

The CCM provides a useful conceptual framework for understanding some of the elements considered essential for the management of chronic disease and the interplay between its elements.<sup>11</sup> But when it comes to their effectiveness show that interventions applied to diabetes and coronary disease tend to concentrate the highest number of statistically significant improvements.<sup>21</sup>

While the literature and the findings of the present study identified some evidence of improvements in patient outcomes, an objective evaluation requires to consider the health care context, whether it is of public or private provision, and the beliefs and attitudes of the patients.<sup>26</sup>

### Measuring Intervention Outcomes

Quantitative data about 'physiological measure of disease', 'service use', 'health status' and 'risk behavior', were more frequently used than qualitative outcomes like 'satisfaction', 'adherence to treatment' and 'quality of life'.

There is evidence that clinical outcomes are easier to measure through standard tests and procedures, e.g. annual retinal examination or screening of diabetic nephropathy, which explains their frequent use.<sup>16,21,29</sup> Service utilization is commonly measured by calculating inpatient admission rate and emergency room attendance.<sup>16,21,29</sup> A review of literature in 2006 concluded that there is some evidence that disease management programmes can reduce unplanned admissions.<sup>5</sup>

A survey conducted in ten European countries in 2010 shows that clinical parameters, hospital admissions and life-

style changes are the most commonly used progress indicators in terms of implementation of disease programmes.<sup>4</sup> We identified only one programme, the Netherlands, that monitors changes on patient satisfaction, even though, this is widely recognized, as an important dimension of health care.<sup>4,9</sup> In Portugal all patients included in the national IDM programme periodically report their satisfaction level.<sup>6</sup>

Different countries are at different stages in the implementation and development IDM programmes. Countries also use different types of intervention, monitor results with different follow up periods and even use diverse concepts and models to refer to their approach to manage chronic diseases.<sup>5</sup> As a result, good practices are not easily replicated and different measures of performance and impact evaluation are not standardized.<sup>11,16</sup>

## CONCLUSION

The present article provides insights on the response of different countries' to the challenges of CDM, by analyzing different interventions of IDM programmes implemented at the political, management and health care levels.

In the case of Portugal, IDM programmes incorporate all the CCM elements, each at different stages of development. Like other European countries,<sup>8</sup> Portugal also developed incentives to manage chronic diseases and hence reduce the fragmentation of care and improve cost control and quality.<sup>6,7</sup>

This review highlights the CCM elements and EPOC interventions related with self-management support and patient interventions, which are the less developed components in Portugal. The Portuguese experience is more focused in professional interventions, such as monitorization of standards, guidelines adoption, quality audit, financial interventions (payment for performance) and organisational interventions (formal integration of services with the identification of a chronic disease reference network). In the near future more attention should be given to the patient/community empowerment.

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There is little robust evidence of what works or not at IDM, particularly in the CCM,<sup>20</sup> and how health care systems should be organized. This appears to be country and context specific: countries have their own institutional arrangements, economic conditions, level of political commitment, planning tradition, as well as capacity and dynamics in the relationship among the numerous stakeholders,<sup>1,19,21</sup> no standard indicators are used to measure outcomes,<sup>5,11,16</sup> and there is no monitoring culture.<sup>30,31</sup>

In Portugal the most frequently used mechanisms to measure outcomes are 'physiological measures' and 'service use'. The Portuguese programme is one of the few that's applies initiatives to measure 'patient satisfaction' systematically but others parameters could also be incorporated such as 'health status' and 'risk behaviour'.

It remains a challenge to draw overall conclusions, because of the heterogeneity of disease management interventions<sup>29</sup> and of the population selection criteria to evaluate chronic care management programmes.<sup>16</sup> Conclusions of the present literature search must be treated with caution, avoiding generalizations and judgements based on the analysis of interventions in a single field or in a single country.<sup>19</sup> To better understand whether policy reforms in the management of chronic diseases deliver the promising results, more attention should be paid to monitoring the design, implementation and outcomes of each intervention.<sup>30-32</sup>

## CONFLICTS OF INTEREST

Anabela Coelho is employed by the Directorate-General of Health and was involved in the implementation of the IDM Project. There were no conflicts of interest declared by the authors.

## FUNDING SOURCES

Involvement of Anabela Coelho in the implementation of the IDM Project was free of financial incentives. No funding sources were declared by the remaining authors.

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Acta Med Port 2014;27:116-125

Publicado pela **Acta Médica Portuguesa**, a Revista Científica da Ordem dos Médicos

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ISSN:0870-399X | e-ISSN: 1646-0758



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