CHRODIS+
IMPLEMENTING GOOD PRACTICES FOR CHRONIC DISEASES

D7.2 Guide for the implementation of JA CHRODIS Recommendations and Criteria (QCR) to improve the quality of care for people with chronic diseases.

WP7 Fostering quality of care for people with chronic diseases

Task 7. 4. Guide for the implementation of QCR tool

Lessons learnt based on experiences in pilot actions across eight European countries.

Core writing group on behalf of WP7 partners

6th October 2020

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Table of contents

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P a g e | 3

The CHRODIS PLUS Joint Action

CHRODIS PLUS is a three-year initiative (2017-2020) funded by the European Commission and participating organisations. Altogether, 42 beneficiaries representing 20 European countries collaborate on implementing pilot projects and generating practical lessons in the field of chronic diseases.

The very core of the Action includes 21 pilot implementations and 17 policy dialogues:

- The pilot projects focus on the following areas: health promotion & primary prevention, an Integrated Multimorbidity Care Model, fostering the quality of care for people with chronic diseases, ICT-based patient empowerment and employment & chronic diseases.
- The policy dialogues (15 at the national level, and 2 at the EU level) raise awareness and recognition in decision-makers with respect to improved actions for combating chronic diseases.

A heavy price for chronic diseases: Estimates are that chronic diseases cost EU economies €115 billion or 0.8% of GDP annually. Approximately 70% to 80% of healthcare budgets across the EU are spent on treating chronic diseases.

The EU and chronic diseases: Reducing the burden of chronic diseases such as diabetes, cardiovascular disease, cancer and mental disorders is a priority for EU Member States and at the EU Policy level, since they affect 8 out of 10 people aged over 65 in Europe.

A wealth of knowledge exists within EU Member States on effective and efficient ways to prevent and manage cardiovascular disease, strokes and type-2 diabetes. There is also great potential for reducing the burden of chronic disease by using this knowledge in a more effective manner.

The role of CHRODIS PLUS: CHRODIS PLUS, during its 36 months of operation, will contribute to the reduction of this burden by promoting the implementation of policies and practices that have been demonstrated to be successful. The development and sharing of these tested policies and projects across EU countries is the core idea driving this action.

The cornerstones of CHRODIS PLUS: This Joint Action raises awareness of the notion that in a health-promoting Europe, free of preventable chronic diseases, premature death and avoidable disability, initiatives on chronic diseases should build on the following four cornerstones:

- health promotion and primary prevention to reduce the burden of chronic diseases
- patient empowerment
- tackling functional decline and a reduction in the quality of life as the main consequences of chronic diseases
- making health systems sustainable and responsive to the ageing of our populations associated with the epidemiological transition

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Abbreviations

AHA	Active and healthy aging
EHFF	European Health Futures Forum
EU	European Union
NGO	Nongovernmental organization
QCR	Quality Criteria and Recommendations
PDSA	Plan-do-study-act (PDSA) methodology
T2DM	Type 2 Diabetes Mellitus
WP7	Work Package 7: Fostering quality of care for people with chronic diseases (Joint Action CHRODIS +)

Glossary

Term	Definition
Chronic diseases	Diseases that are not passed from person to person. They are of long duration and generally slow in progression. The four main types are cardiovascular diseases (like heart attacks and stroke), cancers, chronic respiratory diseases (such as chronic obstructed pulmonary disease and asthma), and diabetes. [1]
JA CHRODIS Recommendations and Criteria	JA CHRODIS Recommendations and Criteria (sometimes referred to as QCR) constitute a practical analytical framework that can be used by decision-makers, healthcare personnel, and patients to support the implementation of good practices, and to improve, monitor, and evaluate the quality of chronic disease prevention, health promotion and care. The framework was developed in the previous CHRODIS joint action using a DELPHI methodology in collaboration with approximately 200 international experts.
Pilot action	Pilot actions are implementation-related activities dedicated to testing a new approach. In WP7 of the JA CHRODIS PLUS there were eight pilot actions across different countries that implemented and tested the JA CHRODIS Recommendations and Criteria.
Policy dialogue	A policy dialogue is an essential component of the policy and decision-making process. It is intended to contribute to informing, developing or implementing a policy change following a round of evidence-based discussions, workshops, or consultations on a particular subject. It should be seen as an integrated part of the policy-making process, and can be conducted at any level of the health system where a problem is perceived, and a decision, policy, plan or action needs to be made.[2]
Study visit	In Work Package 7 of JA CHRODIS PLUS study visits were performed in pilot actions to support and evaluate the implementation of JA CHRODIS Recommendations and Criteria. The study visits were conducted by the expert groups which consisted of the WP7 leader and co-leader, representatives of EPF and EHFF, and other collaborating partners.

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[1] Source: http://www.who.int/topics/noncommunicable_diseases/en/

[2] Source: http://www.who.int/alliance-hpsr/news/2015/dialoguebrief/en/

Executive summary

Brief description of the subject

The Guide for the implementation of JA CHRODIS Recommendations and Criteria is aimed at supporting the development, implementation, monitoring and evaluation of practices in the field of chronic disease management. The Guide outlines the suggested steps for a successful implementation process and provides insights into practical experiences from which this document was developed. The document also addresses the potential for the applicability and transferability of JA CHRODIS Recommendations and Criteria, implications for practice, for further studies, and suggested next steps.

Context, present situation

The Guide is a deliverable of the Joint Action CHRODIS PLUS, an EU initiative to address the burden of chronic diseases through innovative practices in disease prevention, health promotion and in healthcare. *Work Package 7: Fostering quality of care for people with chronic diseases* developed the Guide using the Recommendations and Criteria, which were an output of the Joint Action CHRODIS (2014-2017). These recommendations were originally designed using Type 2 Diabetes (T2DM) as a model disease, but are subsequently tested and applied in this Guide in a variety of settings through pilot actions in Bulgaria, Croatia, Finland, Germany, Greece, Serbia, Slovenia and Spain. Innovative practices were developed in the fields of disease prevention, health promotion and healthcare, focusing on Type 1 and Type 2 diabetes, tinnitus and complex chronic conditions. The pilots were supported by CHRODIS PLUS leaders and experts who provided oversight and training to the implementers, and conducted on-site assessments of the implementation processes.

Objectives of the Guide and target audience

The Guide aims to provide practical support to those who are going to lead the development, implementation, monitoring and evaluation of the practices in the field of health promotion, disease prevention and care for chronic diseases. It was concluded that it is suited to be used as a 'top-down' framework, when the broad horizon of the implementation is to be taken into account and is therefore most useful for the core leadership group. Nevertheless, as experienced by partners with pilot actions, its use fosters active and meaningful participation of a wide variety of stakeholders who are or will be in any way affected by the practice, and/or are involved in its sustainability and scalability.

Methodology

The Guide was developed with the support of WP7 leaders and co-leaders, partners from the pilot actions and representatives of the European Patients' Forum (EPF) and European Health Futures Forum (EHFF). Monthly teleconferences were organised for all partners of the WP7 from October 2019 to June 2020.

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P a g e |**10**

This Guide was developed based on five key contributions: (1.) The Implementation strategy developed by KRONIKGUNE, adjusted to the objectives of the WP7; (2.) The intermediate evaluation of Pilot action practices against JA CHRODIS Recommendations and Criteria (1); (3.) EPF and EHFF evaluation reports from study visits performed in five pilot action sites from task 7.2.; (4.) A questionnaire on the usability of JA CHRODIS Recommendations and Criteria (1) for partners with pilot actions in task 7.3 where study visits were not performed; (5.) Individual pilot action reports by all partners with pilot actions.

The core writing group prepared initial drafts of the Guide that were revised by the implementers from the pilot actions and discussed at the monthly teleconferences organised by the WP7 leader and co-leader. The Guide was shared with all the WP7 partners at the Consensus meeting in September 2020 to provide final revisions and approval.

Key findings and conclusions

The Guide outlines general and county-specific lessons learnt, key enabling factors and barriers to successful implementation as well as the potential for applicability and transferability of the JA CHRODIS Recommendations and Criteria (1). In terms of usability, while there are a number of improvements that can still be made, based on potential learning inputs from this exercise, there was a consensus among implementers that the recommendations were a positive framework and useful checklist which supported their implementation process.

Even though the framework may still benefit from further testing, it shows the potential for applicability to settings outside T2DM. This Guide was developed in accordance to the actual implementation process and practical experiences of the pilot sites.

Main recommendations

- *Adoption of JA CHRODIS Recommendations and Criteria to other contexts*: the experience suggest that successful implementation of the framework requires expert support, training and guidance to help local implementers interpret and implement criteria and recommendations. A more condensed and easier to understand version with translations into local languages may support the adoption of the framework more easily.

- *Future testing for improvements, applicability and transferability*: In order to further develop the framework and evaluate its applicability and transferability to other contexts, additional testing and validation is needed. Focus groups with the implementers and quality improvement experts would provide in-depth information on how to improve and validate the framework. The patient perspective must be taken on board and integrated into these processes as well.

- *Integration of knowledge and training on quality improvement to foster sustainability*: Upon completion of a particular project, little is normally done to integrate the findings into the corpus of knowledge so far accrued on behalf of the European Commission. An attempt to integrate the knowledge obtained so far with that from other projects dealing with prevention and management of chronic diseases would be beneficial and perhaps set the stage for more

effective future investment. The JA CHRODIS Recommendations and Criteria (1) were originally developed to contribute to the cultural shift needed to redesign health care and social support systems in relation to diabetes. Its impact could be enhanced if accompanied by targeted education modules on the fundamentals of quality improvement.

- *Considering the digital era*: Increasing digitalisation of healthcare and other societal domains advocates for the development of a digital 'field' version which as part of its design (as all Apps e.g. are routinely) would have usability (for Healthcare professionals and citizen/patients) at its heart.

Document orientation visual guide

Findings and results	•Short description of pilot actions •Seven steps of the implementation process
Lessons learnt	•General •Country specific
Enablers and Barriers	•Key enablers and barriers on the implementation of JA CHRODIS Recommendations and Criteria (QCR) based on practical experiences in pilot actions
Potential for applicability and transferability	•General and country specific observations •Reflections in respect to sustainability
Next steps	•Suggestions for improvement and furthuer testing of JA CHRODIS Recommendations and Criteria (QCR)
Appendices	•Description of JA CHRODIS Recommendations and Criteria •Template examples for the seven steps of the implementation process •Descriptions of pilot actions

1. Introduction

The Guide is the result of Joint Action CHRODIS PLUS, an EU initiative to address the burden of chronic diseases by supporting, developing and implementing innovative practices in disease prevention, health promotion and in healthcare. It describes the overall implementation activity including the potential for spread to other contexts, indicates implications for practice, and the suggested next steps for fostering quality of care for people with chronic diseases. The deliverable reports on the key lessons learnt, including enablers and barriers, from the implementation of pilot actions in eight countries.

The efficient, comprehensive and well-managed practices need to consider a number of elements that are associated to the quality. JA CHRODIS PLUS builds on the work of Joint Action CHRODIS (2014-2017), when JA CHRODIS Recommendations and Criteria (or QCR) (1) were developed. JA CHRODIS Recommendations and Criteria (1) were originally designed using type 2 diabetes as a model disease, but were tested and applied to variety of settings in JA CHRODIS PLUS within the Work Package 7 "*Fostering quality of care for people with chronic diseases",* by pilot actions in Bulgaria, Croatia, Finland, Germany, Greece, Serbia, Slovenia and Spain. Even though JA CHRODIS Recommendations and Criteria (1) may still benefit from further testing, they show the potential for applicability to settings outside diabetes. Pilot sites developed practices in the fields of disease prevention, health promotion and healthcare focusing to type 1 and type 2 diabetes, tinnitus and complex chronic conditions, mostly using the diseases to develop approaches and models applicable for other areas. JA CHRODIS Recommendations and Criteria (1) were used as a framework for pilot action development, implementation, monitoring and evaluation. Pilot actions were designed and implemented in different health care systems, in different contexts and were addressing different scopes in a variety of areas (see pilot descriptions in the appendices section). Thus, their usability was tested and evaluated by partners with pilot actions as well as by other JA CHRODIS PLUS experts. This Guide was developed in accordance to the actual implementation process and practical experiences of the pilot sites.

Objectives of the Guide

The Guide aims to provide practical support to those who are going to lead the development, implementation, monitoring and evaluation of the practices in the field of health promotion, disease prevention and care for chronic diseases. Based on the experience, it is suited to be used as a 'top-down' framework, when the broad horizon of the implementation must be taken into account and is therefore most useful for the core leadership group. Nevertheless, as experienced by partners with pilot actions, its use fosters active and meaningful participation of a wide variety of stakeholders who are or will be in any way affected by the practice, and/or are involved in its sustainability and scalability.

Structure of the Guide

Findings and results section of the Guide show the implementation process as experienced by the partners with pilot actions – from establishing the implementation working group, conducting baseline analysis and designing action plan to implementing, monitoring, evaluating and reporting of the pilot action. Each subsection provides a reference to particular criteria that are considered as relevant by the partners and are described in the Appendix 1 in more detail.

Further, the Guide provides insight into the collective experience of using JA CHRODIS Recommendations and Criteria (1). The partners outline the lessons learnt, key enablers and barriers to implementation, and its applicability as well as transferability potential. Last section describes the potential future steps to further develop this approach.

Methods

The Guide was developed with the support of WP7 leaders and co-leaders, partners with pilot actions and representatives of European Patients' Forum and European Health Futures Forum. The writing group with 12 representatives of all respective partners and core writing group with four members were established in October 2019 to draft the Guide and coordinate work. Monthly teleconferences were organised for all partners of the WP7 from October 2019 to June 2020.

This Guide was developed based on five key texts: (1.) The Implementation strategy developed by KRONIKGUNE and adjusted to the objectives of the WP7; (2.) The Intermediate evaluation of Pilot action practices against JA CHRODIS Recommendations and Criteria (1); (3.) The EPF and EHFF evaluation reports from study visits performed at five pilot action sites from task 7.2; (4.) The questionnaire on the usability of JA CHRODIS Recommendations and Criteria (1) for partners with pilot actions in task 7.3 where study visits were not performed; (5.) and Individual pilot action reports by all partners with pilot actions.

The core writing group prepared initial drafts of the Guide that were revised by the implementers from the pilot actions and discussed at the monthly teleconferences organised by the WP7 leader and co-leader. The Guide was shared with all the WP7 partners at the Consensus meeting in September 2020 to provide final revisions and approval.

2. Visual representation of the JA CHRODIS Recommendations and Criteria

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P a g e |15
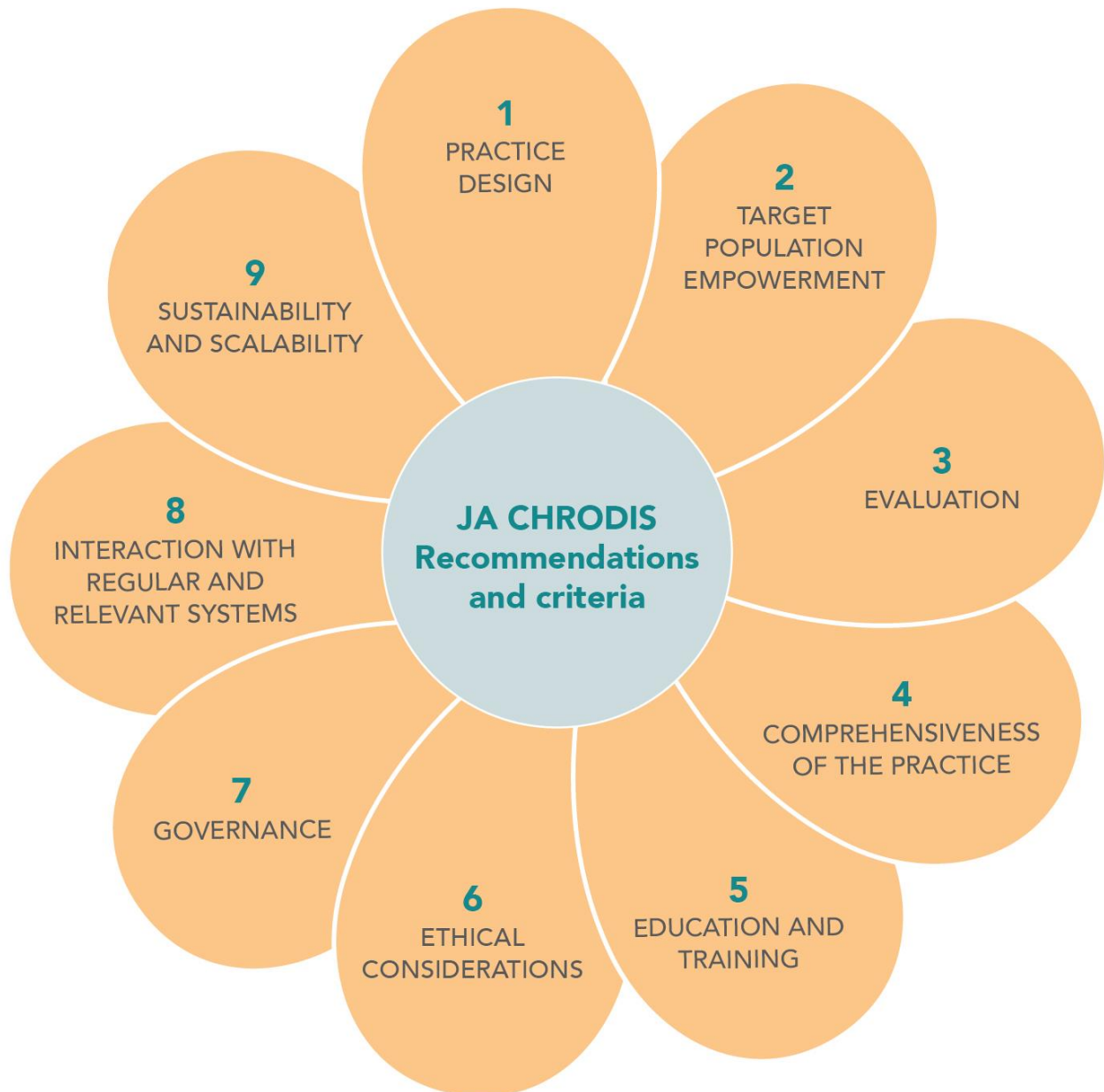
3. Findings and results

This section contains:

- Short descriptions of the eight pilot actions
- Seven essential steps for the implementation of JA CHRODIS Recommendations and Criteria (QCR)
- Graphical representation of the seven steps for the implementation of JA CHRODIS Recommendations and Criteria (QCR)

3.1. The implementation process of JA CHRODIS Recommendations and Criteria based on experiences in eight pilot actions

The efficient, comprehensive and well-managed practices need to consider a number of elements that are associated to quality. JA CHRODIS PLUS builds on the work of Joint Action CHRODIS (2014-2017), when JA CHRODIS Recommendations and Criteria (1) were developed. JA CHRODIS Recommendations and Criteria (1) were originally designed using type 2 diabetes as a model disease, but were tested and applied to a variety of settings in JA CHRODIS PLUS within the Work Package 7 (WP7) "*Fostering quality of care for people with chronic diseases,*" by pilot actions in Bulgaria, Croatia, Finland, Germany, Greece, Serbia, Slovenia and Spain. Pilot sites developed practices in the fields of disease prevention, health promotion and healthcare focusing to type 1 and type 2 diabetes, tinnitus and complex chronic conditions, mostly using the diseases to develop approaches and models applicable for other areas. JA CHRODIS Recommendations and Criteria (1) were used as a framework for pilot action development, implementation, monitoring and evaluation. Pilot actions were designed and implemented in different health care systems, in different contexts and to address different scopes in a variety of areas[3].

In Croatia, the pilot action focused on increasing the reporting of minimum diabetes data set (MDDS) from general practitioners to improve the management of diabetes according to international standards. In addition to improving general practitioners' awareness and practice in diabetes monitoring, the practice aimed to improve patients' understanding regarding the importance of yearly check-ups, and to harmonize diabetes information systems and coordination mechanisms with professional standards at the international level.

The pilot action in Finland created and implemented a culturally sensitive lifestyle intervention model to improve health and wellbeing, prevent type 2 diabetes and increase awareness on T2D risk factors among a hard-to-reach and underserved population segment, specifically people with immigrant background. Despite the practice focusing on people with a Somali immigrant

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[3] Refer to Appendix 3 for more detailed information on pilot action from each collaborating country.

background who reside in Helsinki (Finland), the implementers suggested that the model could be adopted in other settings and by closely collaborating with the respective target population and providing expert training to the local implementers.

The pilot action in Greece focused on improving prevention and self-management of major cardiovascular risk factors by means of continuous education of patients, medical and paramedical staff and relevant stakeholders. The practice included education of participating hypertensive and diabetic patients in self-management of modifiable risk factors by trained experts to prevent cardiovascular complications. The results suggest that properly adjusted interventions could be implemented for other chronic disease groups such as patients with stroke, dementia and renal diseases.

In Serbia, the purpose of the implemented practice was to strengthen the prevention of non-communicable diseases and improve quality of care, taking type 2 diabetes as a model disease. Within the pilot action, the national diabetes centre was established, and diabetes care units (DCUs) were reintroduced at the primary care level. The practice also focused on the comprehensive implementation of the National Program for Prevention and Early Detection of type 2 Diabetes, education of health care professionals and implementation of information technologies.

The Pilot action in Slovenia developed a model to integrate care across levels of healthcare and the community to address the challenges of multidimensional care for people with complex chronic conditions. The model was developed based on a case study of chronic wound by mapping out structures, processes, barriers and enablers to integrated care in close collaboration with patients and relevant stakeholders in health care, social care and within community. The practice focused particularly on enhanced patient participation and on the sustainability of the practice through community partnership and support of the national policy-makers.

The pilot actions in Bulgaria, Germany and Spain jointly investigated the degree to which mHealth technologies can be leveraged to increase patient control over chronic diseases (tinnitus, type 1 and type 2 diabetes). In Spain, the practice aimed to achieve the empowerment of diabetes patients by utilising the TrackYourDiabetes app. In addition, the professionals' satisfaction with the "performance" of their patients was measured while their opinions on the utility of the app was obtained. Similarly, in Bulgaria, the practice investigated whether the app enables people with diabetes to obtain more control over their disease. It also examined the extent to which personalized feedback and a health education module contributes to patients' compliance; and assessed the practitioner's satisfaction on patients' performance. The practice in Germany implemented the education app for chronic tinnitus patients to provide them with high-quality information and tips for dealing with their condition as well as to monitor the temporal dynamics of tinnitus using short app-based questionnaires. The data obtained can be used for medical research and to inform patients about the progress of their condition.

All pilot actions developed and implemented their respective practices by following the same process. In the following sections, the seven essential steps of the implementation process are described which provide practical support to future implementers who are going to lead the

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P a g e |17

development, implementation, monitoring and evaluation of the practices in the field of health promotion, disease prevention and care for chronic diseases.

3.1.1. Establishment of the core leadership group and the implementation working group

Various aspects of governance and leadership have to be addressed prior to design practice and the establishment of a wider group responsible for its implementation. The ***core leadership group*** is central in identifying relevant stakeholders to be involved in the various stages of the process, outlining their roles and responsibilities. It is a group that plans, organises, monitors, shares, reports and provides support during the pursuit of practice objectives. This is where an efficient leadership must be established and foundations are laid to later create shared ownership among the target population and all collaborating stakeholders. That is why this group puts a particular emphasis on sharing the information or enabling an easy access to relevant information and evidence that supports the pilot implementation (e.g. guidelines, documents, protocols etc.). Establishing opportunities for continuous information exchange fosters a multidisciplinary approach and incentivises those involved.

When establishing the ***implementation working group,*** the core leadership group has to identify stakeholders to be included and at which level – individuals, institutions or organizations that are in any way involved or affected by the activity, programme, intervention or policy implemented, or are important for the sustainability or scalability of the implemented action. The stakeholders may represent institutions, organizations or individuals with distinctive knowledge and experiences in health, education, social, employment, research and Information and Communication Technology (ICT) sectors, NGOs, patient associations and civil society. Although teams can vary in size and composition, the implementation would benefit most from the people that can ensure that relevant perspectives are represented. Members may be engaged as organizers, experts, decision-makers, frontline stakeholders, implementers and target group representatives (**see template example 1 – definition of stakeholders' roles**). Other stakeholders identified may not be included in the implementation working group, but can be consulted on specific issues, actively informed and asked for feedback, or only informed.

Depending on the specifics of the practice, new objectives, needs and activities might emerge over time. The core leadership group should be able to identify them in a timely manner, and then adjust the implementation working group according to the situation and context. Usually, patients and other users of healthcare services are the ones who are directly or indirectly affected by health practices the most. If possible (and depending on the context), consider involving vocal target population representatives in the implementation working group. This can substantially influence the group dynamics, make it more constructive with clearer language and more patient-centred. This is also how a focus on target population involvement can be maintained throughout the development and implementation of the practice.

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1. *Practice design*

7

7. *Governance*

3.1.2. Scope of the practice

The next step is to define the scope of the practice (**see template example 2 – Scope definition**). The implementation working group, led by core leadership group, in this phase outlines the problem that the practice will be addressing, defines its purpose and involvement of target population and selects the JA CHRODIS Recommendations and Criteria (1) that are core to the successful implementation.

Problem description: the nature and significance of the local problem is outlined, based on the available knowledge. It summarizes what is currently known about the problem with reference to relevant previous studies. It was experienced by the partners that the published literature in implementation area is scarce.

General purpose: general purpose has to be clear and established together with all members of implementation working group; it should reflect the needs of the target population.

Target population: when defining the target population, relevant dimensions of equity should be adequately taken into consideration and targeted (i.e. gender, socioeconomic status, ethnicity, rural-urban area and vulnerable groups). Their characteristics (i.e. exclusion and inclusion criteria and the estimated number of participants) and roles in the intervention are to be clearly specified.

First implementation outline: the implementation is briefly described, considering each criterion. It is advisable to consider all criteria, but some may not apply to the specific implementation. In that case, it is a good to double-check and try to describe, why some of the criteria may not be addressed.
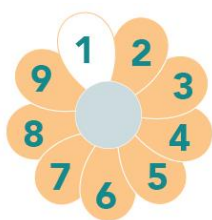
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1. *particular emphasis to Practice design*

3.1.3. Baseline analysis of situation and context

Before the action plan is developed in detail, relevant contextual factors that might affect the implementation should be identified. Quantitative, qualitative or mixed methodology can be used to perform baseline analysis. The same principles can be applied for the monitoring and evaluation of the implementation.

Quantitative methodology: data can be collected from data registries, questionnaires, and forms which produce numeric data. Data analysis includes statistical procedures (descriptive, univariate, multilevel, multivariate) or score construction. Products use inferential statistics, multilevel models

and /or multivariate classification. In many instances secondary data is being used to analyse the context.

*Qualitative methodology*: data is usually collected with open-ended questionnaires, semi-structured interviews, participatory observation and interactive sessions (e.g. workshops, SWOT analysis (2), 'World cafe' (3) or by extraction of data from written sources. Data (mostly in the form of transcripts and researchers' memos) is usually analysed using coding, content analysis or grounded theory (4).

A SWOT analysis is a qualitative method that can be used to describe the context from the perspective of the implementation working group. It engages all group participants and does not require elaborate expert knowledge to perform the analysis. It enables a structured discussion among the group participants which is synthesized in a SWOT diagram (**see template example 3 – SWOT diagram with JA CHRODIS criteria**). It describes strengths, weaknesses, opportunities, and threats of the implementation activity you are trying to develop, change or improve.

A SWOT analysis could be performed from the focus of all the JA CHRODIS Recommendations and Criteria (1), or only considering the selected criteria that are found as most relevant. However, it is advisable to report the arguments, on why other criteria were not seen as relevant.

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1. *Practice design*
4. *Comprehensiveness of the practice*
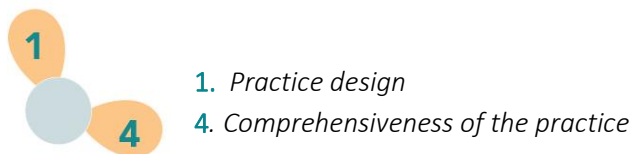
3.1.4. Design of the pilot action plan

The baseline (situation and context) analysis helps to outline the specific local problem in more detail. At this point, it is advisable to check the scope of the intervention again and adjust, based on the information acquired from the analysis.

Next step is to define the pilot action plan. In the pilot action plan, specific objectives, activities, responsibilities, timeline and key performance indicators are defined (**see template example 4 – Pilot action plan**).

Specific objectives: the formulation of specific objectives must be coherent. The practice objectives and strategy have to be transparent to the target population and stakeholders involved.

*Activities*: per each specific objective, one or more activities are defined.

Responsibilities: it should be clear, who is responsible and involved for each activity implementation. The action plan has to create ownership among the target population and several

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P a g e |**20**

stakeholders considering multidisciplinary, multi-/inter-sectorial partnerships and alliances, as appropriate.

Timeline: the implementation of each activity should be realistic in terms of duration. Usually, the activity takes more time than planned.

Key performance indicators: indicators are used to measure processes (implemented activities), outputs (results of the activities) and outcomes (changes obtained by the activity).

The practice should be implemented equitably (i.e. proportional to needs) and efforts should be made to assure the transparency of objectives and strategy to the target population and stakeholders involved. It must consider the potential burdens of the practice (i.e. psychosocial, affordability, accessibility, etc.) and balance between benefit and burden. The target population has the right to be informed (regularly and after the practice has been put in place), to decide about their care and to actively participate. Their rights must be respected and supported, and their confidentiality must be considered.
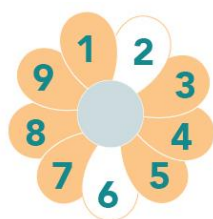
1. - 9. *All, particular emphasis to Target population empowerment*
6*. Ethical consideration*

3.1.5. Monitoring and evaluation of the implementation

Day one of the implementation process has to be defined. Use of Gantt chart (see 5) or other visual methods is advisable to describe the timeline and identify potential failures in planning.

The PDSA (plan-do-study-act) methodology (6) can be adopted to outline one or more implementation cycles. This method supports further changes of the primary plan, based on the information collected and analysed. The PDSA cycle includes the intermediary evaluation of the intervention.

The intermediary evaluation of the intervention can be performed using the JA CHRODIS Recommendations and Criteria (1) (**see template example 5 – Self-assessment against JA CHRODIS criteria**). The partners assessed the implementation of the practice after several months, describing in detail if and how the categories of the criteria were fulfilled at that point in time, providing justification or explanation and later describing the ideas/plans/concrete actions for the changes in the primary action plan. The intermediary evaluation also includes the assessment of key performance indicators, and further results in the adaptation of the plan, if needed. More than one of the PDSA cycles can be rolled out.

The final evaluation at the conclusion of the intervention may have the same structure.

The outcomes of the evaluation should be linked at every point to an action to foster continuous learning and/or improvement and/or to further reshape the practice. They are to be shared among relevant stakeholders, showing the link to the defined goals and objectives. The evaluation should address social and economic aspects from both the target population, and the formal and informal caregiver perspectives, if applicable.

2. *Target population empowerment*
3. *Evaluation*
7. *Governance*

3.1.6. Reporting the results

When the intervention is concluded, it is very useful for the implementation working group to reflect on the job done, and to write a report on the entire implementation process. Reporting also conveys core information and messages to the scientific, professional and lay communities as well as to the decision-makers, and is an essential building element for sustainability and scalability.

The report of the implementation process should be structured and aligned to the guidelines that are used in scientific and professional publications. Partners in JA CHRODOS PLUS used SQUIRE 2.0 Guidelines (7). The following elements are to be included in the report:

- Title
- Abstract
- Short summary
- Introduction *(Why did you start?)*
    - o Problem description
    - o Available knowledge
    - o Rationale
    - o Specific aims
- Methods *(What did you do?)*
    - o Context
    - o Intervention(s)
    - o Study of the Intervention(s)
    - o Measures
    - o Pilot action plan
    - o Analysis
    - o Ethical considerations
- Results *(What did you find?)*
- Discussion *(What does this mean?)*
    - o Implementation process

- o Summary
- o Interpretation
- o Limitations
- Conclusions

3.1.7. Planning for the sustainability of the practice and to increase the potential for scale-up

Sustainability and scalability aspects of the practice should be considered at all stages of the implementation: at the baseline situation and context analysis, at the planning phase of the activities, and during the intermediary and final evaluations, with special emphasis on the reporting. The experiences of our partners with pilot actions show that sometimes major adjustments to the primary planned activities are needed to increase the potential for sustainability.

For achieving sustainability, there should be broad support to the implemented practice amongst those who have implemented it, or by those who intend to. Continuing the practice can be ensured through institutional anchoring and/or ownership by the relevant stakeholders or communities, facilitated by the implementation working group and/or core leadership group. A sustainability strategy should be defined that considers contextual factors (e.g. health and social policies, innovation, cultural trends and general economy, epidemiological trends). The potential impact on the target population (if scaled up) should be assessed.

Establishing and/or fostering connections with decision-makers and the local community is another important mechanism for building sustainability and the potential for scalability. Where possible, those stakeholders have to be involved in the implementation process and the results (meaningful information) should be shared with them. Their reflection on the results can be sought, for example by organising a '*policy dialogue*' – a structured discussion with decision-makers, experts and target population representatives about the intervention. Common expectations have to be identified, support sought among the stakeholders, and the possible next steps should be outlined together. Patient representatives of the target population should be continuously and meaningfully involved. The owner and carer of the future process should be defined and supported by all stakeholders, as experienced by our partners with pilot actions.
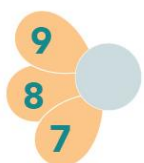
7. *Governance*
8. *Interaction with regular and relevant systems*
9. *Sustainability and scalability*

3.2. Graphic representation of the Guide

"Hey, we should include patient representatives!"

"What are we trying to achieve here? And for who?"

»If only we had some information on what is going on...«

"We could approach the analysis by using qualitative or quantitative approach. Or both!"

"We have the people, we have the ideas, we have the knowledge. So, how will we do this?"

"We should probably define the objectives, activities, responsibilities, timeline and key performance indicators. Anything else?"

1 Establishment of the core leadership group and the implementation working group

2 Scope of the practice

3 Baseline analysis of situation and context

4 Design of pilot action plan

4. Lessons learnt based on experiences from JA CHRODIS PLUS partners with pilot actions

This section contains:

- Description of general lessons learnt
- Description of country specific lessons learnt based on the analysis of study visits in five pilot actions
- Description of country specific lessons learnt based on open-ended questionnaire for three pilot actions where study visits were not performed

This section presents key lessons learnt that originate from the practical experience of partners with pilot actions when applying the JA CHRODIS Recommendations and Criteria (1) and later shared with other WP7 partners. These lessons can provide useful and insightful ideas for future similar initiatives and/or for similar methodological tools for development, assessment and implementation of practices in healthcare.

Lessons learnt were collected during the five study visits of the pilot sites in 2019 for five pilot actions, via the open-ended questionnaire for the coordinator of the implementation, and via the three partners with pilot actions on mHealth.

Based on the study visits, there are **ten main** lessons learnt; some of them are general, and some of them were found to be country specific. In section A, you can find the general lessons learnt valid for most, if not all, five pilot sites, while in section B you will read about the country specific insights.

A. General

(1) **Considering the diversity and specificity of pilot actions** – each pilot site is different, their local environments/settings vary significantly, and in some cases, they simply cannot be directly compared, hence one should take these factors into consideration when applying the JA CHRODIS Recommendations and Criteria (1).

(2) **Experiencing JA CHRODIS Recommendations and Criteria as a valuable framework** – another valuable learning point is that members of all implementation working groups considered the JA CHRODIS Recommendations and Criteria (1) as a valuable framework when it comes to the design, development and implementation of their pilot practices and activities onto their respective sites. On some occasions, it was the JA CHRODIS Recommendations and Criteria (1) itself that triggered representatives from these groups to take new and different pathways.

(3) **Recognising the need for more training and guidance** – before applying or using the JA CHRODIS Recommendations and Criteria (1), expert training and guidance is needed. Both WP7 leaders and EPF representatives were satisfied with the fact that implementers have found using them helpful and have embedded them into their respective work streams. However, it was reported numerous times during the study visits that more training for implementers would be required.

(4) **Adapting the framework to local languages** is very much needed as the members of implementation working group have expressed the need to fully comprehend and feel comfortable with the JA CHRODIS Recommendations and Criteria (1). At the same time, some of them voiced the need to **feel ownership** when applying the JA CHRODIS Recommendations and Criteria (1). Having the JA CHRODIS Recommendations and Criteria (1) translated into their local language would contribute to that sense of ownership.

(5) **Varying degree of patient involvement** – even though patients were not always the target populations of the pilot sites, in the end, the patient voice and preferences were *somehow* embedded into the five visited sites. Still, in some pilot sites, we have seen that this process was better established than in others. Patient/citizen involvement was not always evident; however, the intention to involve and hear out what patients have to say was there. Nevertheless, more efforts are needed in this direction and patients need to be brought on board from the very beginning when introducing the JA CHRODIS Recommendations and Criteria (1) as a matter of good practice.

B. Country specific

When discussing lessons learnt in each of the five countries that organised field visits and the WP7 team (WP7 leaders, EPF and EHFF) visited in 2019 (March to April), the following five key lessons can be highlighted.

In **Croatia**, where the study visit took place in Zagreb, representatives from the implementation working group reported that it was crucially important to have **all relevant stakeholders** around the table when the activities (in connection with the JA CHRODIS Recommendations and Criteria (1)) of the implementation working group began.

In **Finland**, the study visit took place in Helsinki, and representatives from the implementation working group shared that the JA CHRODIS Recommendations and Criteria (1) provided a **holistic approach and mindset** to the implementation process.

In **Greece**, with a study visit in Thessaloniki, despite the initial cultural pushback, the JA CHRODIS Recommendations and Criteria (1) were well perceived, and **were used to narrow down concrete areas that the pilot site needed to focus more efforts on.**

In **Serbia**, the study visit took place in Belgrade, and representatives from the implementation working group confirmed that **more resources/different skills may be needed in order to make full use of the JA CHRODIS Recommendations and Criteria** (1) **potential.**

In **Slovenia,** where the study visit took place in Novo Mesto, representatives from the implementation working group shared that **the JA CHRODIS Recommendations and Criteria** (1) **had potential for use together with other operational tools when designing and implementing new practices**.

Based on an open-ended questionnaire aimed at the three additional partners with pilot actions on mHealth (Bulgaria, Spain and Germany) and a partner institution that assisted with the implementation process in this task, the following lessons learnt were gathered:

OVGU, the partner institution that supported pilot actions in the process of developing the practice, found JA CHRODIS Recommendations and Criteria (1) to be "*Very useful for framing and for ensuring that all pilots work the same way, while capitalizing on the background knowledge, priorities, key performance indicators and governance peculiar to each one. It functions as an excellent coordination tool*". They report that partners with pilot actions accentuated that the framework helped to synchronise otherwise diverse pilot sites and enabled easier transferability of specific experiences between them. "*This was a great help, since the three pilots differed in contexts and background knowledge, had different expectations concerning patient empowerment and dealt with different diseases*". On the other hand, they experienced the terminology used by the framework to be "*very demanding*". Their observation was that the "terminology comes from multiple domains, including management, healthcare and statistics", so the use of the framework implies the need for a broad spectrum of expertise by those who are implementing it".

In **Bulgaria** (Sofia) the implementers positively evaluated the JA CHRODIS Recommendations and Criteria (1) as "clearly defining the structure and the recommended steps towards effective action among health and other groups to reach the aim of empowering people with chronic conditions."

In **Germany** (Regensburg) the implementers similarly stated that criteria represent "a useful tool and can change the way how you think about implementation".

In **Spain** (region of Cantabria) it was observed that its "utility was to be able to follow a similar guideline in all of the teams of the pilot study implementation, and to use the same methodology … in the countries that participated [in the task on the implementation of the mHealth tools]".

Summary of the general Lessons learnt:

- Diversity and specificity of context is to be considered when applying JA CHRODIS Recommendations and Criteria to particular practices
- In JA CHRODIS PLUS partners experienced JA CHRODIS Recommendations and Criteria as a valuable framework for the development, implementation, monitoring and evaluation of their practices
- Training and expert guidance should be provided to the implementers for successful adoption of the framework

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- JA CHRODIS Recommendations and Criteria should be translated to the respective language to create ownership among the implementers and make the framework comprehensive for all
- Patient and target population involvement might differ from practice to practice but their involvement should be considered from the beginning of the implementation process

5. Key enablers and barriers to the implementation of JA CHRODIS Recommendations and Criteria

This section contains:

- Analysis of key enablers to implementation of JA CHRODIS Recommendations and Criteria based on experiences from the pilot actions
- Analysis of key barriers to implementation of JA CHRODIS Recommendations and Criteria based on experiences from the pilot actions

This section describes several enablers and barriers that were experienced by the pilot sites as important when implementing JA CHRODIS Recommendations and Criteria (1) and can provide some insight for future implementation initiatives.

Key enablers to implementation of JA CHRODIS Recommendations and Criteria based on experiences from pilot actions:

Providing external training and expert support: continuous expert support was provided from the task leaders, European Patients' Forum (EPF), European Health Futures Forum (EHFF) and other individual professionals with expertise in health practice development and quality improvement. Training was provided throughout the project with face to face meetings and workshops on practice development, implementation and reporting. Study visits were organised to monitor, evaluate and support the implementation process. In addition, joint monthly teleconferences were a crucial supportive element for the pilot sites. These experiences suggest that expert knowledge and continuous support is a precondition for facilitating successful practice implementation.

Diversifying implementation working group and fostering patient involvement: local practices were primarily developed by implementation working groups that were composed of representatives of health and other relevant stakeholders who are or will ultimately be affected by the practices. They collaborated as implementers, front-line professionals, decision-makers, experts or patient representatives. The European Patients' Forum was especially crucial in facilitating external support for target population involvement in various stages of practice implementation, including participation in the implementation working groups. The interdisciplinary character of these groups is considered as one of the most important enabling factors for the implementation, quality and sustainability of the practice.

Receiving broad support from relevant stakeholders, including target population: pilot sites experienced support differently, depending on their local context. It was generally recognised, that the implementation of some criteria (e.g. sustainability and scalability) was dependent on strong pre-existing networks and support of management, community, patient organisations and national-decision makers (e.g. Ministry of Health). Local 'champions' in many instances proved crucial in establishing valuable links within and across institutions.

Planning to sustain the practice in advance: it proved beneficial for the implementers that sustainability aspects were embedded in the implementation process from the beginning with the support of CHRODIS PLUS leaders and ministries of health in the respective member states. For example, so called policy dialogue at the national level was organised for one of the pilot sites with the intent to sustain and possibly scale up the practice with the support of national decision-makers. JA CHRODIS PLUS provided a strong supportive environment for sustainability, but measures must be enacted to ensure future implementations have a sustainability strategy from the start.

Key barriers to implementation of JA CHRODIS Recommendations and Criteria based on experiences from pilot actions:

The need for translation to the local language: for the implementation groups to fully understand the importance of applying criteria to the local practice, they had to be translated to the local language. The latter proved to be a time consuming and intellectually demanding activity which had to be planned sufficiently in advance. Nevertheless, the process of translating the document to the local languages was the first step where the implementation working groups discussed what criteria implied, in relation to its practice.

Terminology can be overly abstract and hard to understand for all stakeholders involved: the terminology used in JA CHRODIS Recommendations and Criteria (1) proved to be quite troublesome for some members of the implementation working groups to comprehend and identify with. This issue was especially evident with frontline professionals and the target population representatives who might not be used to abstract managerial discourse. Considerable efforts were made to discuss the meaning and applicability of the criteria in practice.

It is not a 'plug in and play' instrument: the criteria needed an introduction with explanations by trained experts. Without the external expert support. its usage would be questionable. Implementers have raised questions as to the meaning of particular criteria and their applicability to their respective context. Without oversight, this creates a problem.

The use of criteria versus flexibility of the practice: in general, implementers considered the criteria as an appropriate framework for structuring practices in a way to foster quality improvement. However, some experienced less flexibility in practice development due to its use.

Weights of the criteria and categories may not be applicable: weights were not used by the implementers in JA CHRODIS PLUS and were challenged as irrelevant for their particular practices. However, certain criteria were noted as higher priority for implementation, namely "Practice design", "Target population empowerment", "Education and training" and "Sustainability and scalability".

Summary of Key enablers and barriers to the implementation of JA CHRODIS Recommendations and Criteria in JA CHRODIS PLUS:
Key enablers

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P a g e |**32**

- Provision of expert support and training to the implementers
- Inclusion of all relevant stakeholders, including the target population/patients in the implementation working groups
- Broad support from relevant stakeholders (local and national-level institutions) to implement practices
- Implementation of activities to foster sustainability of the practices by establishing links with national decision-makers and conducting Policy dialogues

Key barriers
- Translation of JA CHRODIS Recommendations and Criteria to the local languages as a time-consuming and intellectually demanding task
- Abstract terminology of the framework which was hard to understand for some members of the implementation working groups
- The need for expert support and training in utilising the JA CHRODIS Recommendations and Criteria. The framework might not be successfully implemented without this support.
- Rigorousness of the framework might affect flexibility in developing the practice
- Redundancy of weights of criteria and categories.

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P a g e | 33

6. Potential for applicability and transferability

This section contains:

- Analysis of applicability/utility of JA CHRODIS Recommendations and Criteria (QCR) based on individual pilot action reports
- Results of independent assessment by quality experts from EHFF with specific focus on sustainability

Some that participated in WP7 were also involved in WP7 of the original JA CHRODIS, which looked at National Plans for diabetes services. As part of this work, the JA CHRODIS Recommendations and Criteria (1) was developed using the Delphi process involving a group of diabetes experts. The relevant point here is that this was a 'desk-top' exercise which was intellectually sound but was entirely hypothetical. A 'test-drive' of the JA CHRODIS Recommendations and Criteria (1) was needed to see if it delivered in real life conditions. It is for this reason that applicability, transferability and sustainability were looked at in the pilot sites, to see if the Guide proved to be robust in practice.

The more detailed results and critique are given below, but in sum, the Guide proved to have utility (applicability) in all circumstances it was used. Transferability is less clear, as there were not enough cases where it was used for chronic diseases other than diabetes types 1 and 2. However there were positive indicators. As to sustainability, realistically this could not be addressed as assessment of this depends on contextual factors and a time frame which goes beyond the scope of the current project.

The expectations for the Guide are laid out by JA CHRODIS PLUS and should "address the potential for applicability and transferability of the JA CHRODIS Recommendations and Criteria (1), for their spread to other contexts, implications for practice, for further studies, and suggested next steps".

A. Relevant observations extracted from the eight final pilot implementation reports:

Serbia: during the site visit the implementers reported that the JA CHRODIS Recommendations and Criteria (1) represented a useful checklist, felt it was logical and did not find constraints in using it. Having concluded an excellent study in developing diabetes services, transferability and sustainability were not addressed by this group.

Greece: their final report reported that the JA CHRODIS Recommendations and Criteria (1) were perceived as 'a valuable toolkit to guide research in current practice and a great facilitator in monitoring and evaluating a solid work programme.' *There were no conclusions regarding transferability or sustainability per se*, although during the site visit the lack of engagement at a higher level, the need for more investment and a national quality strategy *were all cited as possible determinants of sustainability*.

Croatia: as discussed during the site visit the JA CHRODIS Recommendations and Criteria (1) were considered by the implementers as *'a comprehensive set of indicators that can improve the potential sustainability and scalability of the project* (no further explanation)'. In the final report, the applicability of the JA CHRODIS Recommendations and Criteria (1) mirrored others' experiences: 'it was very helpful in the process of planning and it served as a navigator and check list which ensured that all important elements were covered by the practice. Besides, JA CHRODIS Recommendations and Criteria (1) eased the project tracking in the execution phase.' They acknowledged a weakness of the study in the lack of inclusion of significant stakeholders (nurses and diabetologists) but no other comments were made regarding sustainability or transferability.

Finland: like others, they saw the JA CHRODIS Recommendations and Criteria (1) as 'a feasible and practical framework for the designing and implementing the pilot.' One conclusion was *'Sustainability could not be ensured due to lack of continuous funding and a stakeholder (remaining in situ following the end of the CHRODIS funding) that would manage the intervention model.'* Put another way (in terms of transferability) 'JA CHRODIS Recommendations and Criteria (1) model will present difficulties in implementation in countries that did not have a budget for a site study or are not CHRODIS PLUS participants (for example, lacking mentoring input during implementation). Nevertheless*, scaling and transferability were enthusiastically discussed in terms of building up on the local achievements with respect to international dissemination of JA CHRODIS Recommendations and Criteria model among Somali Associations in different countries.*

Slovenia: the management team agreed that the JA CHRODIS Recommendations and Criteria (1) provided a useful check-list for implementation. In terms of future implementations, sustainability and replicability/transferability of the Quality Criteria, there is room for improvement in respect to all criteria within the tool but an essential suggestion is to include rational planning of human resources and to include other stakeholders in practice management (e.g. local representative of NIJZ, municipality representative). The roles of institutions, not only individuals, should be clearly specified, which fosters institutional anchoring of the practice and makes it less 'champion' dependent. Continuous networking with relevant stakeholders within and outside health care should be in place, to inform practice design and to build capacities and relevance of the practice. They concluded: '*throughout the project links with community stakeholders and national decision-makers (Ministry of Health, National Institute of Public Health) were fostered to facilitate implementation of the practice at the local level, its sustainability and potential scalability.* The model for integration developed was discussed at the policy dialogue with national policy-makers, national and local health and social care experts.'

B. The pilot sites that implemented mHealth tools:

Bulgaria: The implementation framework of the JA CHRODIS Recommendations and Criteria (1) presented in this report served as a tool to support implementation of the practice, and to improve, monitor, and evaluate the quality of diabetes care. As to sustainability and scalability, the implementers assessed in the final implementation report that JA CHRODIS Recommendations and

Criteria (1) provided a comprehensive and purposeful tool for effective implementation that would benefit people with chronic diseases, i.e. there was transferability as it was applied to different conditions in the three sites.

Germany: The JA CHRODIS Recommendations and Criteria (1) have been helpful to the implementers in developing, implementing and improving the practice. They believe that there is a potential to reuse the framework for other contexts as well. As suggested in their final report, the next important step, that builds on the criteria related to sustainability of the practice, would be to integrate a framework for developing a sustainability plan that can work in the health systems at all the European countries. This would require a large amount of effort and time and might be a topic for Joint Actions to come.

Spain: The JA CHRODIS Recommendations and Criteria (1) were used for the development and use of the app TrackYourDiabetes and in the design of the pilot study in Cantabria. The use of the framework in design, implementation, monitoring and evaluation of the pilot has been recognized as fundamental by the implementers for the homogenization of the different steps and processes of the practice among the different participants.

Observations from the EPF interim report conducted after the five study visits took place on the role of patient empowerment:

EPF noted the different stages of readiness and preparation in terms of the pilot action plans. It was well recognised and inevitable that some pilot sites had more advanced healthcare and socio-economic systems than others and the scope, the target populations, the objectives and the interventions in each pilot action plan were different hence it is rather unpractical to compare these unique pilots. Such an observation is consistent with the varied degree to which the different pilot sites were able to implement their agreed objectives in terms of genuinely engaging citizen/patients and in introducing a degree of co-production into their service quality improvement projects. In addition, the report concludes that patient empowerment has been on the agenda of all five pilot sites and the LIWGs have identified and confirmed it as crucially important and needed for successful implementation. Furthermore, EPF representatives recognized the efforts, however at the same time, recommended more work should be done in order to achieve meaningful patient involvement and make sure patients' and patient representatives' views take central position. At the same time, as the study visits were the intermediate phase in the implementation process, EPF provided all implementers with concrete and tailored recommendations on how to further involve patients and citizens.

Independent assessment by quality experts from EHFF:

Terminology: it is necessary to be precise about what is meant by 'improve quality of care'. The JA CHRODIS Recommendations and Criteria (1) are a consensus-based framework designed by experts to ensure good practice in the prevention and management of diabetes. 'Good practice' itself is a consensus-based concept that determines the standard of care and what is generally needed to be done to ensure it. Standards of care are but one facet of healthcare quality, the prime element of

the latter being measurable improvement. Improvement can encompass outcomes of care, while standards are process-based and only indirectly influence the outcome.

Using a small group of disparate actions across different countries as a test of generalisation of a quality tool: the numbers involved in the pilot actions are unfortunately too small to provide sufficient evidence and demonstrate the added value of the JA CHRODIS Recommendations and Criteria (1) as a generic tool. However, these results can provide helpful indicators of further work needed to strengthen the tool's validity.

Conclusions as to applicability: Overview of the pilot actions suggests that the JA CHRODIS Recommendations and Criteria (1) provides a helpful framework, yet has not been adequately tested so far in the field for it to be used as a template to benchmark the process and content of a new practice. Obvious parallels can be drawn between the JA CHRODIS Recommendations and Criteria (1) and the SCIROCCO maturity tool (8), developed within area B3 (integrated care) of the European Innovation Platform (EIP) on Active and Healthy Aging (AHA) to monitor the maturity of organisations in terms of their stage of implementation and the scaling up of integrated care. The latter model uses 12 domains and is scored iteratively via a spider-diagram. This is a top-down model and while engaging stakeholders in the assessment process, is not used for implementing practice.

As the original tool was linked also to a developed consensus regarding the content of national diabetes plans, it must be recognised that although excellent work has been undertaken and the actions embraced with significant enthusiasm in the five pilot sites, transferability to other countries in the current project is limited by the number of pilots that actually tackled chronic diseases other than diabetes. In fact, that amounted to only two (integrated care for multi-morbidity patients in Slovenia, with a very small number of cases engaged), and Greece where again, two quite small cohorts of patients - one with diabetes, one with hypertension - were jointly engaged in educational programmes designed to improve their self-management. However, this comment does not apply to the three mHealth sites, where each tackled a different condition, only one of which was diabetes. On the other hand, the three mHealth sites did each tackle a different disease entity, namely diabetes type 1 and 2 and tinnitus.

Among the key messages from the original deliverable of WP7 from JA CHRODIS was 'use and implementation of the JA CHRODIS Recommendations and Criteria (1) will contribute to the cultural shift needed to redesign health care and social support systems'. Such a cultural shift, as recognised from extensive organisational development work over the last decades, but also illustrated even within the small pilot projects here, requires high quality and sustained leadership, wide engagement and ownership of the process, local champions and (if possible) some protection from disruptive political change. The criteria, useful as it may be as a framework for planning interventions, is not a 'magic bullet' and will prove quite difficult to understand how it may contribute to cultural shifts necessary for improved healthcare services, especially set against the other factors identified above.

Sustainability: To propose that each country should explore the sustainability and scalability of the intended changes seems unrealistic though, as is implied in the comment from the German group. Having participated in the EIP on AHA since 2013, it is evident to us that even well-tested interventions require extensive organisational development to achieve either, as suggested above.

As was discussed in relation to integrated practices shared during the B3 (integrated care) Area of the EIP on AHA, where scalability was very much on the agenda for the project, the WHO concept of 'scalability' is explicitly related to practices that have been demonstrated to be consistently effective across their usage, and not otherwise. The key quality issue here is something slightly different, namely transferability and the latter is well established to be dependent primarily on context. It is context also that is the most powerful determinant of sustainability of a quality improvement process, hence the emphasis on organisational development at the start of this section.

7. Future steps

This section contains:

- Suggestions for improvement of JA CHRODIS Recommendations and Criteria (QCR)
- Suggestions for further evaluation of applicability and transferability of JA CHRODIS Recommendations and Criteria (QCR) to other contexts

- JA CHRODIS Recommendations and Criteria (1) represent a good framework to use in praxis, but there is a need for a slimmer, more condensed and easy to understand version for future implementers to test and use, even though the full recommendations provide a suitable means to benchmark the work done. Virtually every pilot in the present study gave feedback regarding the need to either simplify the language used in each recommendation or to provide more guidance, perhaps as footnotes or similar, to help local implementers interpret them (especially if, in subsequent use of the recommendations, the designers of the original tool are not available to give advice and support directly). Experience suggested that translating the recommendations into the local language was not in itself sufficient to facilitate greater understanding although some saw it as supportive.

- In order to further develop the framework and evaluate its applicability and transferability to other contexts, additional testing is needed. Focus groups with the implementers and quality improvement experts would provide in-depth information on how to improve and validate the framework.

- An alternative view could be that, if a core set of JA CHRODIS Recommendations and Criteria (1) to improve prevention, early detection, and quality of care for people has been established for diabetes and now through a few of the pilots, utilised with other chronic disease groups to some benefit (albeit, qualified), it would be important to take stock. There have been a variety of European Commission initiatives over recent years examining different aspects of the same issue, such as the contribution of integrated care in this important area, effective tools for self-management in chronic diseases, and the relevance of health literacy (to give just a few examples). One aspect of such research and policy related work is that following the completion of a particular project, little is normally done to integrate the findings into the corpus of knowledge so far accrued on behalf of the Commission. Although more pilots using the recommendations might indeed be embarked upon, it could be argued that such an attempt to integrate the knowledge obtained so far with that from other projects dealing with prevention and management of chronic diseases would be beneficial and perhaps set the stage for more effective investment.

- In regard to sustainability, the well-known factors that support the sustainability of quality improvements in healthcare across the board have already been referred to in section 4. These are primarily about local culture and context. When the recommendations were published after the first JA CHRODIS, they suggested that the use and implementation of the recommendations would contribute to the cultural shift needed to redesign health care and social support systems. The question this raises is a challenging one, namely, are there more effective ways of contributing to such a cultural shift, the need for which is not in doubt? The matter of further education was raised at several of the pilot sites in different forms. One possibility is that the impact of the use of the recommendations could be substantially increased if accompanied by targeted education modules on the fundamentals of quality improvement. Quite how this would work requires some deliberation. Nevertheless, it is true that while the fundamentals of healthcare quality improvement are better understood and taught more widely in undergraduate and post-graduate healthcare professional education, the application of these principles in the delivery of clinical services is more problematic especially where such services are operating under various kinds of pressures, resource constraints, increasing demands not previously planned for, and staffing shortages etc.

- We now live in a digital age. Our children and grandchildren are growing up with daily exposure to and use of multimedia forms of communication. While there is still a place for traditional means of training and communication within healthcare, the challenge of chronic diseases now presents in the context of a population which looks on the internet for information, is encouraged to interface with healthcare services wherever possible by electronic means, partly for efficiency and certainly to conserve resources and where digital tools (e.g. mobile phone apps) are increasingly part of day to day management of chronic conditions as the three specimen pilot sites showed, just as use of multi-media approaches is changing health education. As already noted, the recommendations have clear merit as a means of assessing the effectiveness of an intervention in the field of chronic disease management, because they look widely at factors that are relevant to those responsible for overseeing service development, such as financial resources, governance etc. which are often higher order considerations. However, for use in the field, one valuable step might be to look at the possibility of a digital 'field' version which as part of its design (as all Apps e.g. are routinely) would have usability (both for Healthcare professionals and citizen/patients) at its heart.

Conclusion

A striking characteristic of the study has been the enthusiasm and hard work observed within all of the pilot actions and their willingness to cooperate and learn from the oversight team. As has been observed, the pilot sites in the different Member States have very different starting points, as dictated by both national and local contexts in terms of the relative stage of development of health services for those with chronic diseases. It seems evident that this context influenced the local approach to utilise the JA CHRODIS Recommendations and Criteria (1) at the different sites, but this variety, while not allowing direct comparison, supports the relative versatility of the recommendations as a tool.

In terms of usability, while there are a number of improvements that can still be made, based on potential learning inputs from this exercise, there was a consensus among implementers that the recommendations were a positive framework and a useful checklist which supported their implementation process.

Our comments in the 'Future steps' section however, sound a note of caution in that there is still work to be done before the recommendations and the above guide could be promoted more widely. The most obvious of these are: the simplification of language, benchmarking against other work done in this field, the possibility of digital formatting, and last but not least, a trial of implementation in a much wider selection of chronic diseases and in more countries around Europe.

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P a g e |42

Appendices

Appendix 1 JA CHRODIS Recommendations and Criteria (from Reference 1)

JA CHRODIS Recommendations

Design of the Practice
The design should clearly specify aims, objectives, and methods, and rely upon relevant data, theory, context, evidence, and previous practices including pilot studies. The structure, organisation, and content of the practice is defined and established together with the clearly described target population (i.e., exclusion and inclusion criteria and the estimated number of participants). Human and material resources should be adequately estimated in relation with committed tasks. Relevant dimensions of equity have to be adequately taken into consideration and targeted.

Promote the Empowerment of the Target Population
The practice should actively promote the empowerment of the target population by using appropriate mechanisms, such as self-management support, shared decision-making, education-information, value clarification, active participation in the planning process, active participation in professional training, and considering stakeholder needs in terms of enhancing/acquiring the right skills, knowledge, and behavior.

Define an Evaluation and Monitoring Plan
The evaluation outcomes should be linked to action to foster continuous learning and/or improvement, and/or to reshape the practice. Evaluation and monitoring outcomes should be shared among relevant stakeholders and linked to the stated goals and objectives, taking into account social and economic aspects from both the target population and formal and informal caregiver perspectives.

Comprehensiveness of the Practice
The practice should consider relevant evidence on effectiveness, cost-effectiveness, quality, safety, the main contextual indicators, and underlying risks of the target population using validated tools to individual risk assessment.

Include Education and Training
The practice should include educational elements to promote the empowerment of the target population (e.g., strengthen their health literacy, self-management, stress management, etc.). Relevant professionals and experts are trained to support target population empowerment, and trainers/educators are qualified in terms of knowledge, techniques, and approaches.

Ethical Considerations
The practice should be implemented equitably (i.e., proportional to needs). The objectives and strategy are transparent to the target population and stakeholders involved. Potential burdens (i.e., psychosocial, affordability, accessibility, etc.) should be addressed to achieve a balance between benefit and burden. The target population has the right to be informed, and to decide about their care, and participation. Their right to confidentiality should be respected and enhanced.

Governance Approach
The practice should include organizational elements, identifying the necessary actions to remove legal, managerial, financial, or skill barriers, with the contribution of the target population, caregivers, and professionals planned for, supported, and resourced. There is a defined strategy to align staff incentives and motivation with the practice objectives. The practice should offer a model of efficient leadership and should create ownership among the target population and several stakeholders considering multidisciplinary, multi-/intersectoral, partnerships and alliances, if appropriate. The best evidence and documentation supporting the practice (guidelines, protocols, etc.) should be easily available for relevant stakeholders (e.g., professionals and target populations), which should support the multidisciplinary approach for practices. The practice should be supported by different information and communication technologies (e.g., medical record system, dedicated software supporting the implementation of screening, social media etc.), defining a policy to ensure acceptability of information technologies among users (professionals and target population) to enable their involvement in the process of change.

Interaction with Regular and Relevant Systems
The practice should be integrated or interactive with regular healthcare and/or further relevant systems, enabling effective linkages between all relevant decision makers and stakeholders, and enhancing and supporting the target populations' ability to effectively interact with the regular relevant systems.

Sustainability and Scalability

The continuation of the practice should be ensured through institutional anchoring and/or ownership by the relevant stakeholders or communities, as well as supported by those who implemented it. The sustainability strategy should consider a range of contextual factors (e.g., health and social policies, sex and gender issues, innovation, cultural trends, general economy, and epidemiological trends) that assesses the potential impact on the population targeted.

JA CHRODIS Criteria

Criteria	Categories
Practice design	The practice aims, objectives and methods were clearly specified
	The design builds upon relevant data, theory, context, evidence, previous practice including pilot studies
	The structure, organization and content of the practice were defined, and established together with the target population
	There was a clear description of the target population (i.e. exclusion and inclusion criteria and the estimated number of participants)
	The practice includes an adequate estimation of the human resources, material and budget requirements in clear relation with committed tasks
	There was a clear description of the target population, carers and professionals specific role
	In design, relevant dimensions of equity are adequately taken into consideration, and are targeted (i.e. gender, socioeconomic status, ethnicity, rural-urban area, vulnerable groups)
Target population empowerment	The practice actively promotes the empowerment of the target population by using appropriate mechanisms (e.g. self-management support, shared decision making, education-information or value clarification, active participation in the planning process and in professional training)
	The practice considered all stakeholders needs in terms of enhancing/acquiring the right skills, knowledge and behaviour to promote target population empowerment (target population, carers, health and care professionals, policy makers, etc.)
Evaluation	The evaluation outcomes were linked to actions to foster continuous learning and/or improvement and/or to reshape the practice
	Evaluation outcomes and monitoring were shared among relevant stakeholders
	Evaluation outcomes were linked to the stated goals and objectives
	Evaluation considered social and economic aspects from both target population, and formal and informal caregiver perspectives
Comprehensiveness of the practice	The practice has considered relevant evidence on effectiveness, cost-effectiveness, quality, safety, etc.
	The practice has considered the main contextual indicators
	The practice has considered the underlying risks of the target population (i.e. validated tools to individual risk assessment)

Education and training	Educational elements are included in the practice to promote the empowerment of the target population (e.g. strengthen their health literacy, self-management, stress management….etc.)
	Relevant professionals and experts are trained to support target population empowerment
	Trainers/educators are qualified in terms of knowledge, techniques and approaches
Ethical considerations	The practice is implemented equitably (i.e. proportional to needs)
	The practice objectives and strategy are transparent to the target population and stakeholders involved
	Potential burdens of the practice (i.e. psychosocial, affordability, accessibility, etc.) are addressed, and there is a balance between benefit and burden
	Target population rights to be informed, to decide about their care, participation and issues regarding confidentiality, were respected and enhanced
Governance	The practice included organizational elements, identifying the necessary actions to remove legal, managerial, and financial or skill barriers
	The contribution of the target population, carers and professionals was appropriately planned, supported and resourced
	The practice offers a model of efficient leadership
	The practice creates ownership among the target population and several stakeholders considering multidisciplinary, multi-/inter-sectorial, partnerships and alliances, if appropriate
	There was a defined strategy to align staff incentives and motivation with the practice objectives
	The best evidence and documentation supporting the practice (guidelines, protocols, etc.) was easily available for relevant stakeholders (e.g professionals and the target populations)
	A multidisciplinary approach for practices is supported by the appropriate stakeholders (e.g professionals associations, institutions etc)
	The practice is supported by different information and communication technologies (e.g. medical record system, dedicated software supporting the implementation of screening, social media etc)
	There was a defined policy to ensure acceptability of information technologies among users (professionals and the target population) i.e., enable their involvement in the process of change
Interaction with regular and relevant systems	The practice was integrated or fully interacting with the regular health, care and/or further relevant systems
	The practice enables effective linkages across all relevant decision makers and stakeholders
	The practice enhances and supports the target populations ability to effectively interact with the regular, relevant systems

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P a g e |45

Sustainability and scalability	The continuation of the practice has been ensured through institutional anchoring and/or ownership by the relevant stakeholders or communities	
	The sustainability strategy considered a range of contextual factors (e.g.health and social policies, innovation, cultural trends and general economy, epidemiological trends)	
	There is broad support for the practice amongst those who implemented it	
	The potential impact on the population targeted (if scaled up) is assessed	
Total		

Appendix 2 Template examples

Template example 1 – Definition of stakeholders' roles

Functions/roles	Institution, name
Organizer Plan, prepare, chair and run the group workshops Run the secretariat (prepare agendas and minutes) Write reports	
Experts Provide knowledge and faculty on specific matters depending on the intervention selected	
Decision makers Provide strategic vision Support and sponsorship of the implementation process Eliminate bottlenecks during the implementation process	
Front-line stakeholders Give knowledge and expertise on real-life practice experience Choose the right type of subject to implement Motivate and empower implementers Equip and support implementers to deal with the implementation	
Implementers (can be the same individuals as the front-line professionals) Implement the intervention following the agreed plan Continuously assess the implementation process Provide input and feedback to the local implementation group	
Patient representatives	

Give the input during the pilot action development, implementation, monitoring and evaluation	

Template example 2 – Scope definition

Item	Description
Problem/challenge	
General purpose of the intervention	
Target population	
Quality criteria	1. Practice design … 2.Target population empowerment … 3. Evaluation … 4. Comprehensiveness of the practice … 5. Education and training … 6. Ethical considerations … 7. Governance … 8.Interaction with regular and relevant systems … 9.Sustainability and scalability.

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P a g e | 47

Template example 3 – Swot diagram with JA CHRODIS criteria

SWOT diagram with JA CHRODIS criteria	STRENGHTS	WAKENESSES
INTERNAL	Practice design: Target population empowerment: Evaluation: Comprehensiveness of the practice: Education and training: Ethical considerations: Governance: Interaction with regular and relevant systems: Sustainability and scalability:	Practice design: Target population empowerment: Evaluation: Comprehensiveness of the practice: Education and training: Ethical considerations: Governance: Interaction with regular and relevant systems: Sustainability and scalability:
	OPPORTUNITIES	THREATS
EXTERNAL	Practice design: Target population empowerment: Evaluation: Comprehensiveness of the practice: Education and training: Ethical considerations: Governance: Interaction with regular and relevant systems: Sustainability and scalability:	Practice design: Target population empowerment: Evaluation: Comprehensiveness of the practice: Education and training: Ethical considerations: Governance: Interaction with regular and relevant systems: Sustainability and scalability:

Template example 4 – Pilot action plan

Improvement area(s)	Specific objective(s)	Change Package Describe the activities	Person(s) involved /responsible	Timeline (months)	Key performance indicator(s)
Description 1		Activity 1 Activity 2	Responsible/leader: Members of the group: Responsible/leader: Members of the group:	Month, year …	KPI1: KPI2:

Template example 5 – Self-assessment against JA CHRODIS criteria

Criteria	Categories	Current practice fulfils this category (yes/no)	Justification/explanation of the answer (a few sentences)	Potential improvement of the current practice to achieve the category, if not yet achieved
Practice design	The practice aims, objectives and methods were clearly specified			
	The design builds upon relevant data, theory, context, evidence, previous practice including pilot studies			
	The structure, organization and content of the practice were defined, and established together with the target population			.
	There was a clear description of the target population (i.e. exclusion and inclusion criteria and the estimated number of participants)			
	The practice includes an adequate estimation of the human resources, material and budget requirements in clear relation with committed tasks			
	There was a clear description of the target population, carers and professional's specific role			
	In design, relevant dimensions of equity are adequately taken into consideration, and are targeted (i.e. gender, socioeconomic status, ethnicity, rural-urban area, vulnerable groups)			

Appendix 3 Pilot action descriptions

CROATIA

Croatian minimum diabetes data set implementation using JA CHRODIS Recommendations and Criteria

Patients with diabetes need to be treated more efficiently in order to postpone the development of chronic complications. However, not all healthcare providers included in the care of patients with diabetes are using the same internationally accepted minimum data set and are not providing good quality data. Therefore, there is an assumption that not all the patients with diabetes are being treated by the same clinical standards, or through clinical pathways providing similar outcomes. Furthermore, general practitioner teams rarely keep track of secondary prevention activities in diabetes.

The aim of this project was to improve the management of diabetes according to international standards, based on JA CHRODIS Recommendations and Criteria. Specific aims were the following: to improve general practitioners' awareness and practice in diabetes monitoring, to improve patients understanding on the importance of yearly check-ups, and to harmonize diabetes information systems and coordination mechanisms according to international standards.

The primary target population was general practitioners which provide primary healthcare services to patients. There were 3 groups of teams in the intervention: those who have received education and feedback, those who have received only information about the project and have been told that their minimum diabetes data set (MDDS) use will be monitored, and teams that have been analyzed without any intervention.

The results have shown that MDDS usage among general practitioners increased after intervention. The average number of patients with fulfilled minimum diabetes data set per GP increased by 52.30% from 20.2 before, to 30.8 after intervention. The education of general practitioners may contribute to better monitoring of patients with diabetes. Qualitative research confirmed that most general practitioners have positive attitude towards MDDS, which can serve as reminders in regular monitoring of patients with diabetes. There are many possibilities for improving MDDS and quality of care, and our recommendations for better care are based on them.

FINLAND

Health and wellbeing for all – development and implementation of a culturally sensitive lifestyle intervention for Somalis in Finland through the adoption of JA CHRODIS recommendations and set of criteria

Somalis, particularly women, have high levels of type 2 diabetes (T2D) and its risk factors. People with immigrant background are a hard-to-reach population segment and may face language and conceptual barriers against participation in preventive interventions, especially when offered in health care context.

The objectives of our pilot were to improve access to T2D preventive services by underserved population and among them, to increase awareness on T2D risk factors and adoption of healthy lifestyles.

The JA CHRODIS Recommendations and Criteria at focus were "Practice design", "Target population empowerment", "Education and training", and "Ethical considerations".

The intervention was organized in the mosque by a Somali researcher and volunteer health care students and comprised of T2D risk detection with FINDRISC risk score followed by group and digital lifestyle counselling. Altogether 24 participants joined the pilot.

The impact of the intervention was assessed quantitatively with clinical and lifestyle measures taken before and after the intervention. Qualitative measures included a survey on participants' experiences and opinions of the pilot intervention.

Moderate positive changes in some health measurements, diet and physical activity were seen. The pilot proved to be a feasible model to provide prevention interventions to an underserved population group. The co-created T2D prevention intervention model could be transferred to other Somali communities and other immigrant groups in Finland and other countries but would require close collaboration with the target population as well as training of the local implementers. It is important to establish collaboration between health care services and preventive intervention providers as well as other stakeholders.

GREECE

From understanding to implementing the JA CHRODIS recommendations and set of criteria to chronic cardiovascular diseases, with the view to adopt or improve self-management and prevention, under continuing ongoing education.

Background: The Greek healthcare system (GHS) has been striving to offer as much as possible regarding the medical needs of the population under the constant pressure of the fiscal crisis for the last ten years, with a special attention to primary and secondary prevention of cardiovascular diseases. JA CHRODIS PLUS pilot action offers extensive recommendations and criteria that focus on staff education, integrated care and patients' self-management training. These were adopted in order to meet current and future challenges regarding health care in Greece.

Aim: To educate hypertensive and diabetic patients in the self-management of modifiable risk factors in the prevention of cardiovascular complications from a specifically educated staff.

Methods: We randomized a target population of 30 diabetic patients (15 males and 15 females) and 30 hypertensive patients (15 males and 15 females), who have been attending on a regular basis the outpatient clinic of first Propaedeutic Clinic of Internal medicine, AHEPA University Hospital, Thessaloniki, Inclusion criteria were: age >60 years, >12 months since diagnosis of diabetes and hypertension. The training in the self-management of patients' chronic disease was based on the principles of the JA CHRODIS Recommendations and Criteria and quantitatively and qualitative performance indicators measurements were used in order to evaluate the impact of the intervention.

Results: a) 25 out of 30 diabetics have shown a positive psychological impact compared to 21 out of 30 before exercise training, b) 23 out of 30 hypertensive patients have shown a positive psychological impact compared to 19 out of 30 before exercise training, c) the compliance of patients to the intervention protocol has been 64% vs 32% for diabetics after the implementation of the JA CHRODIS Recommendations and Criteria - a similar trend has also been observed in the hypertensive patients' group (76% vs 53%), d) the IT (information technology) training outcomes have been the most impressive and very promising ones even before the COVID 19 epidemic appearance (in diabetics 28 out of 30 after training compared to 20 out of 30 before training and in the hypertensive group the respective values have been 29 out of 30 and 22 out of 30), e) early drop out ratio was 18 out of 30 in diabetics and 23 out of 30 in hypertensive before the implementation of the JA CHRODIS Recommendations and Criteria compared to 24 out of 30 and 25 out of 30 respectively.

Conclusion: Variable positive changes have been observed in both the study groups, such as positive psychological impact before exercise training, an augmented compliance of patients to the intervention protocol and a reduction in early drop out ratio in trained patients compared to the control group.

The implementation of the JA CHRODIS Recommendations and Criteria proved to be a feasible effective and very promising intervention method regarding the achievement of positive outcomes in prevention of the cardiovascular diseases, through enforcement of the self-management culture model on demanding clinical cases of hypertensive and diabetic populations.

Our overall experience and results will provide the necessary tools and encouragement for continuing future implementation and replicability of this pilot action in Greece. Furthermore, similar interventions can be transferred (after minor adjustments) to other chronic disease groups such as patients with stroke, dementia and renal diseases. For this purpose, new potential partnerships and collaborations with public and private health care services, preventive and curative providers and other stakeholders need to be explored.

SERBIA

Redesigning diabetes care delivery in Serbia, using JA CHRODIS Recommendations and Criteria

Background: Non-communicable diseases are the leading causes of morbidity and mortality in Serbia. Managing chronic conditions requires redesigning health care delivery in order to achieve better coordination of services at all levels of health care.

Specific aims: The aim of this Pilot action was improving prevention and strengthening high quality of care for non-communicable diseases by using type 2 diabetes as a model disease.

Interventions: The Serbian Pilot Action identified five improvement areas: establishment of National Diabetes Centre, reintroducing the Diabetes Care Units (DCUs), comprehensive implementation of National Program for Prevention and Early Detection of type 2 Diabetes, education of health care professionals and implementation of information technologies.

Study of the intervention: In order to analyse the impact of the intervention processes, mixed methods approach (quantitative and qualitative) was used. Key Performance Indicators (KPI) for evaluation activities in defined Improvement Areas (IA) of the Pilot action were reports, indicators of quality of diabetes care and proposal of amendments of diabetes care legislation, particularly National Plan for Development of Diabetes Care, together with implementation of the Book of Electronic Diabetes Records (BEDR).

Results: During the Pilot Action, the National Diabetes Centre (NDC) was established. The experts from the NDC organized numerous educational events, with 316 physicians and nurses participating in total. Health care professionals expressed high satisfaction with the education. Regarding information technologies, BEDR was implemented in 20 pilot Primary Health Care Centres (PHCCs) with 38833 new electronic diabetes records.

Suggestions for future implementations, sustainability and replicability: The Pilot Action led to the establishment of the NDC, organization of educations for health care professionals from all primary health care centres in Serbia and to the renewal of the Diabetes Care Units in PHCCs included in the pilot.

SLOVENIA

Model of integration across primary and secondary level of healthcare and the community, based on JA CHRODIS Recommendations and Criteria

The Healthcare system in Slovenia is not organised in a way to foster integrated care, especially for those who experience complex chronic conditions. Such patients have many underlying needs that are being addressed by a number of health and social experts, family members, carers and volunteers. They often find it hard to navigate across different services and face fragmentation in care. As suggested by *Resolution on National healthcare plan 2016-2025* and other important strategic documents in Slovenia there is a need for interventions that tackle fragmentation and foster patient-centred care.

Community health centre Novo mesto and General hospital Novo mesto, with the support of other partners in the pilot action and Joint Action CHRODIS PLUS, developed a model for integration across levels of care and community. The model was developed based on a case study of chronic wound management as a complex chronic condition and framed with the support of JA CHRODIS Recommendations and Criteria.

The model suggests the implementation of a protocol of care adopted by primary and secondary level of healthcare and the introduction of a care coordinator at the secondary level. The study of 15 patient cases showed high variability in access points (five) and duration (from three days to six months) of treatment procedure for patients with potential highest health needs which would be reduced to 7 – 14 days by adopting these elements. Based on patient needs assessments, conducted with nine patient participants using a qualitative methodology, sustainable links between social care centre and respective health institutions were established to address social aspects of care. The model fosters strong community and target population involvement.

The model could be implemented to other settings, but contextual factors are to be considered by conducting a baseline (context and situation) analysis. For future implementations, pilot experience suggests the key to success is patient participation in the research and decision-making process.

Sustainability of the practice was ensured through the support of national decision-makers (Ministry of Health, National Institute of Public Health) which fostered the development of the model and is using its elements to establish a national action plan for integration of care for complex chronic conditions.

The pilots with a joint task to implement mHealth tools

BULGARIA

Empowering People with Diabetes within the framework of JA CHRODIS Recommendations and Criteria through the Use of mHealth Technology

Diabetes self-management is considered a cornerstone in preventing long-term complications. Every individual can succeed in achieving good control over diabetes when following several rules. This pilot was designed within the framework for the implementation of actions using JA CHRODIS Recommendations and Criteria to promote self-management via momentary and daily assessments with the help of a mobile app as a means towards sustainable and scalable patient care.

The recruited participants (N=19) were allocated to two versions of the app – an enhanced version (with personalized feedback and embedded health education module – group T; N=11) and a basic version (without feedback and education module – group C; N=8). The intervention's objectives were to investigate whether the app enables people with diabetes to obtain more control over their disease; to examine the extent to which personalized feedback and a health education module contributes to patients' compliance; and to assess practitioner's satisfaction on patients' performance.

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P a g e |53

The quantitative data derived from the momentary and daily assessment of participants revealed higher involvement and lower dropout rate for group T, and an unusual increase of physical exercises for group C (2 participants only during the time of the analysis). The end-of-study interviews showed that 11 participants reported improved control of their disease, while 12 of them said that the application met their diabetes needs. The practitioner's interview indicated satisfaction of patients' performance and further explained the importance of the two-way communication with patients. Based on the implementation experience within the JA CHRODIS Recommendations and Criteria framework, future implementation recommendations are reported.

GERMANY

Development of tinnitus education app using JA CHRODIS Recommendations and Criteria

Tinnitus is the perception of a phantom sound including the patient's reaction to it. It can occur at all ages, and it affects more than 10 % of the general population, whereas 1% of the population considers tinnitus as their major issue affecting their health. Assuming this increase is linear and of similar magnitude, prevalence estimates in Europe would double by 2050.

Tinnitus is a heterogeneous condition and complex in many ways. Currently, there is no treatment available that reliably cures all forms of tinnitus. The quality of care is limited by the fact that there are only a few medical centres available that are specialized in tinnitus.

The specific aim of the tinnitus education app is to supply the chronic tinnitus patients with high-quality information and tips for dealing with their tinnitus. At the same time, the JA CHRODIS Recommendations and Criteria should be applied, and temporal dynamics of tinnitus are monitored by short app-based questionnaires. This data can be used for medical research and informs the patient about her/his tinnitus.

The results indicate that TinnitusTipps has a positive effect on patient compliance. Most importantly, we also found moderate positive changes in the tinnitus-related distress showing that the chronic tinnitus patients may benefit from the smartphone app.

SPAIN

Improved care of chronic diseases (diabetes) in Cantabria, Spain, by following JA CHRODIS Recommendations and Criteria in mobile health applications.

Diabetes is a common chronic disease in Europe. Promoting changes in "lifestyle" and traditional healthcare, with the help of electronic support and information technologies, can facilitate therapeutic compliance and metabolic control by the patients themselves.

The goals were to improve the empowerment and control over the disease via the use of the app TrackYourDiabetes using app-generated feedback.

The JA CHRODIS Recommendations and Criteria of focus were: Practice design, Target population empowerment, Evaluation, Education and training, Ethical considerations and Sustainability and Replicability/Transferability.

The intervention included two working groups (control -C, and with feedback –T). The study encompassed three general questionnaires filled once, and three other daily questionnaires. At the end of the study, patients received their results online following the end of the study survey. Similar surveys were sent to members of the Diabetic Cantabria Association to gather their opinions regarding apps for diabetes. Involved practitioners also completed surveys about their experiences with the apps and the pilot study.

Results showed a trend of stable compliance, but with a high dropout rate. The average time of physical exercise and perceived control over disease decreased slightly in the first weeks of study. The end of the study survey showed that the app is a useful tool but requires improvements.

Suggestions for future implementations: Patients need to participate in the design of future tools and practices to ensure better control of chronic diseases.