

CARE4VALUE

A CLINICAL INSTRUMENT DATA COLLECTION
PLATFORM FOR LONG-TERM CARE UNITS

6th ENBENG
IEEE PORTUGUESE MEETING IN BIOENGINEERING

Authors

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AGENDA

- Introduction
- Care4value – Specific and Technical Goals
- THE CARE4VALUE ECOSYSTEM
 - Mobile Application
 - Dashboard
- Conclusions and Future Work

INTRODUCTION

- Costs in Healthcare are a major concern – tend to rise!
- Healthcare Units need to monitor and visualize costs and gains
- Daily usage of clinical instruments' data (scales)
- Assess the clinical condition of a patient

CARE4VALUE GOALS

- Predictive measurement of costs based on the **clinical condition of a patient**
- **Data collection** >> Mobile Application + Clinical Support System

CLINICAL CONDITION – Clinical Instruments / Scales

Physical	Spirituality	Social	Mental
<ul style="list-style-type: none">• Barthel Index• Braden• MUST / MNA• Skin Integrity Screening Question / Pressure Ulcers• Charlson Comorbidity Index• Pain (Numeric Rating Scale)	<ul style="list-style-type: none">• “Escala de Avaliação da Espiritualidade” (Spirituality Scale)	<ul style="list-style-type: none">• Gijón• Family Relationship Scale	<ul style="list-style-type: none">• Depression Screening Question• Mini-Mental State Examination

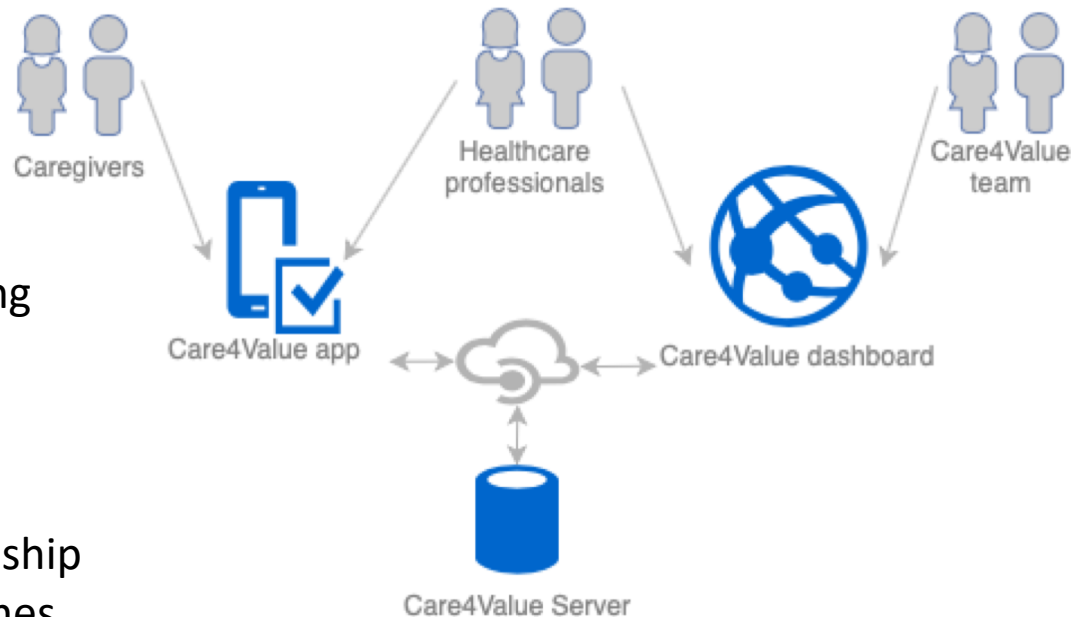
* EQ-5D e Zarit Burden Interview

CARE4VALUE – Specific Goals

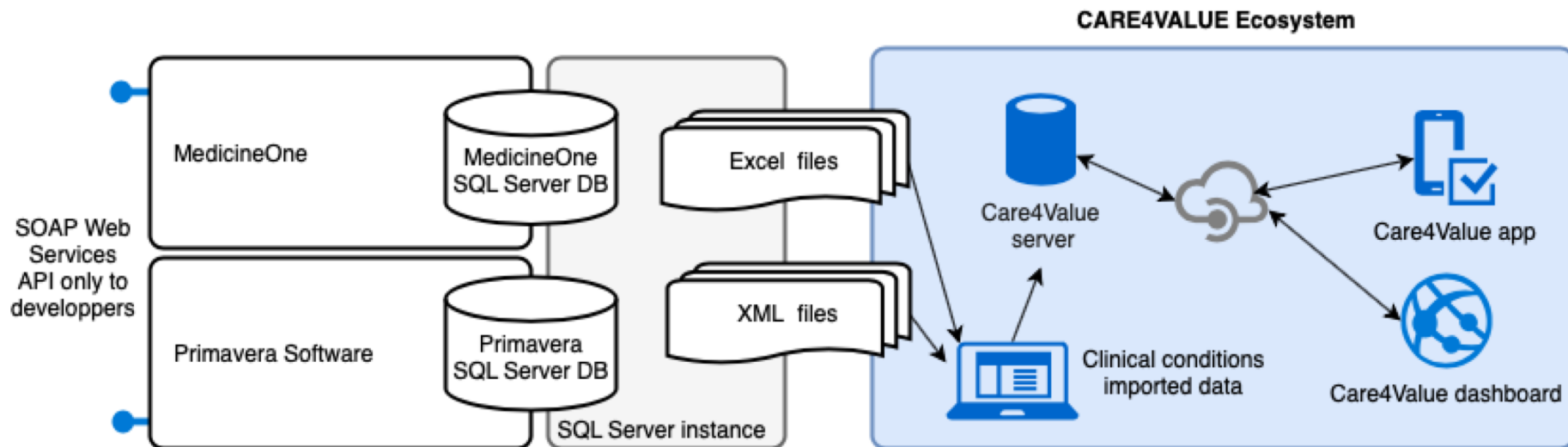
- Enhance value creation in Long-Term Care (LTC) providers
- Pilot project = intervention to be carried out in a specific LTC unit
- Categorization of patients within different levels of clinical condition
- Predict the direct impact (cost) of the patient's care
- Support decision making by top level management and practitioners

CARE4VALUE – Technical Goals

- Centralized data model
- Data collection through:
 - a tailored **mobile app**;
 - and manual import of existing data in the available clinical systems.
- Analysis and reporting through a **dashboard**, revealing the relationship between costs and health outcomes



THE CARE4VALUE ECOSYSTEM



THE CARE4VALUE ECOSYSTEM – Mobile Application

- List of clinical instruments (scales) that health professional needs daily
- Collects patient data and submits it directly to a centralized location

Escalas

Total de perguntas: 19

- Qualidade de Vida do Cuidador Informal**
Avaliar a qualidade de vida do cuidador informal
Total de perguntas: 7
- Qualidade de Vida do Utente**
Avaliar a qualidade de vida do utente
Total de perguntas: 7
- Relacionamentos Familiares**
Estado de relacionamentos familiares
Total de perguntas: 1
- Zarit**
Sobrecarga dos Cuidadores
Total de perguntas: 22
- Índice de Comorbidade de Charlson**
Prever sobrevivência em pacientes com múltiplas comorbidades
Total de perguntas: 15

DISPONÍVEIS | EM PROGRESSO | COMPLETOS

Índice de Comorbidade de...

- 1 Idade *
- 2 Diabetes mellitus *
- 3 Doenças de fígado *
- 4 Malignidade *
- 5 SIDA *
- 6 Doença crónica de rins moderada a severa *
- 7 Insuficiência cardíaca congestiva *
- 8 Enfarte do miocárdio *
- 9 Doença de obstrução pulmonar crónica *

QUESTÕES | RESULTADOS

Índice de Comorbidade de...

- 1 Idade *
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QUESTÕES | RESULTADOS

Índice de Comorbidade de...

Resultado	Min	Max
Sobrevivência a 10 anos entre 90% e 100%	0	2
Sobrevivência a 10 anos entre 50% e 80%	3	4
Sobrevivência a 10 anos de 20%	5	5
Sobrevivência a 10 anos até 2%	6	34

SUBMITER

QUESTÕES | RESULTADOS

THE CARE4VALUE ECOSYSTEM – Dashboard

- Data visualization (export to known formats)
- Profiling of patients based on their clinical condition*
- Management of users and clinical instruments

The screenshot shows a web browser window with the Care4Value dashboard. The main heading is "Vai ter ajuda para cuidar do seu familiar?". Below it is a table for a mandatory question:

Resposta	Valor
Sim	0,0
Não	1,0

Buttons for "Editar Questão" and "Mover Para Cima" are visible. At the bottom, there is a section for "Já cuidava anteriormente do seu familiar?".

The screenshot shows the "Gerir Escala" interface. It includes fields for "Título" (Title) and "Descrição" (Description). Below these are buttons for "+ Adicionar Resultado" and "Submeter Alterações". A summary table shows:

ID	Total de Questões	Total de Respostas
18	30	3

Below this is a "Criar Questão" (Create Question) section with fields for "Questão" (Question) and "Descrição" (Description).

The screenshot shows the "Gerir Escala" interface with a table of results:

Resultados gerais	3,0	5,0	Apagar
Situação social boa (baixo risco de institucionalização)	3,0	5,0	Apagar
Situação intermédia	6,0	9,0	Apagar
Deterioração social severa (alto risco de institucionalização)	10,0	15,0	Apagar

Buttons for "+ Adicionar Resultado" and "Submeter Alterações" are visible. Below the table is a "Criar Questão" (Create Question) section.

* Patient's cost estimation (at the end of the project)

CONCLUSIONS AND FUTURE WORK

- Ongoing project! But the platform is deployed and in use!
- The pilot-study phase is already helping to improve the developed ecosystem based on the obtained feedback
- The need to exchange data with other systems (interoperability) is one of the major security concerns in this project
- Valuable insights on the clinical monitoring of patients and their caregivers
- Add value to the visualization of the information
- Future: new features for the dashboard and other LTC locations

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