

# AdriaClim

Climate change information, monitoring and management tools for  
adaptation strategies in Adriatic coastal areas

Project ID: 10252001

**D.5.4.9 The health functions of the tool will be  
developed by enrichment of the 'Medical Board'  
currently in use for the government of territorial  
medicine**

**PP14 – Azienda ULSS 3 Serenissima**

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Project Title: Climate change information, monitoring and management tools for adaptation strategies in Adriatic coastal areas

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Specific objective: 2.1 - Improve the climate change monitoring and planning of adaptation measures tackling specific effects, in the cooperation area

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Work Package Title: Adaptation Plans

Activity Number: 5.4

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<b>Authors</b>	AULSS3
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## Introduction

Littoral areas constitute an extremely delicate environment, subject to continuous dynamic changes and influenced by multiple natural, ecological, economic and social factors. The city of Venice and its lagoon represent a unicum of anthropic and natural interaction with relations in close interdependence that make this reality extremely vulnerable to climate change. The intensity of climatic events and their increasing occurrence makes the design of mitigation and adaptation plans ever more urgent, adjusted to the urban peculiarities of Venice.

The maintenance of the public health system is of great relevance to the community of Venice, which faces a crucial challenge due to the logistical difficulties caused by the characteristic of urban tissue, which amplifies some adverse effects and complicates the response in the case of extreme weather events, such as heat waves.

ULSS3 Serenissima is a partner of the AdriaClim project in the scope of the Interreg Italy-Croatia Programme (Measure 2.1), which aims to "Improve the monitoring of climate change and the planning of adaptation measures that address specific effects, in the Programme cooperation area".

The solution implemented by ULSS 3 Serenissima consists in the strengthening of initiative medicine which presupposes targeted and preventive intervention on the segment of population most sensitive to the adverse effects of climate change.

## Project Goals

In this framework ULSS3 Serenissima contributes to the development of a pilot project "5.4 Veneto Coastal Pilot - Adaptation, mitigation, intervention plan". In detail, the purpose of the deliverable D.5.4.9 is the implementation of specific functions of the "Medical Board" tool, currently in use for the territorial health governance of the AULSS3.

The development of the 'Medical Board' was aimed at supporting the action of initiative medicine that the AULSS3 intends to extend throughout the territory in favour of the population most exposed to the effects of climate change and of the increasingly intense and frequent 'heat waves'; this action intends to identify social vulnerabilities, meaning people who present precarious health conditions combined with situations of loneliness and indigence.

In addition, an experiment was started on mapping pathologies and analysing how they change in relation to climatic adverse events, analysing the flow of emergency room admissions and ordinary hospitalisations.

## Medical Board 2.0

The implementation of Medical Board, in the managing and operational context of the AULSS3, is centralised in the development and testing of:

- Case Summary App. Tool of the Medical Board, it provides a framework of the care and assistance information for the preparation and coordination of the taking care of patients.
- RCM (Relation Care Management). Application for cooperation between COT<sup>1</sup>, IDF<sup>2</sup> and GPs for care management.

### App Case Summary

Is a module application created in QLIK Sense® that integrates information from the 20 largest information flows that AULSS3 collects in its activity of providing health services.

The function of the application is to allow the operator to clearly recap of the state of care service of the patient, mainly in the last year, without dwelling on access and consultation of more databases in which the AULSS3 stores its activity.



The screenshot shows a web application interface for patient care summary. At the top, it says 'PAZIENTE' and 'Cliccare la categoria per il campo CF\_HDS'. Below this is a navigation bar with 'Entry' in the center and arrows on either side. On the left, there is a vertical form with fields for 'Cognome', 'Nome', 'Data Nascita', 'Indirizzo', 'Telefono', and 'Medico', each with a search icon. The main area contains a grid of buttons representing different care services and their counts:

DIAGNOSI (8)	ESEZIONI (1)	TERAPIE (12)	Prest. Spec. (36)
ACCESSI PS (2)	RICOVERI (3)	ADI (3)	IDF ()
ODC-URT	CdR	CSM	HOSP
FAD	RIA	PROTESICA	CF

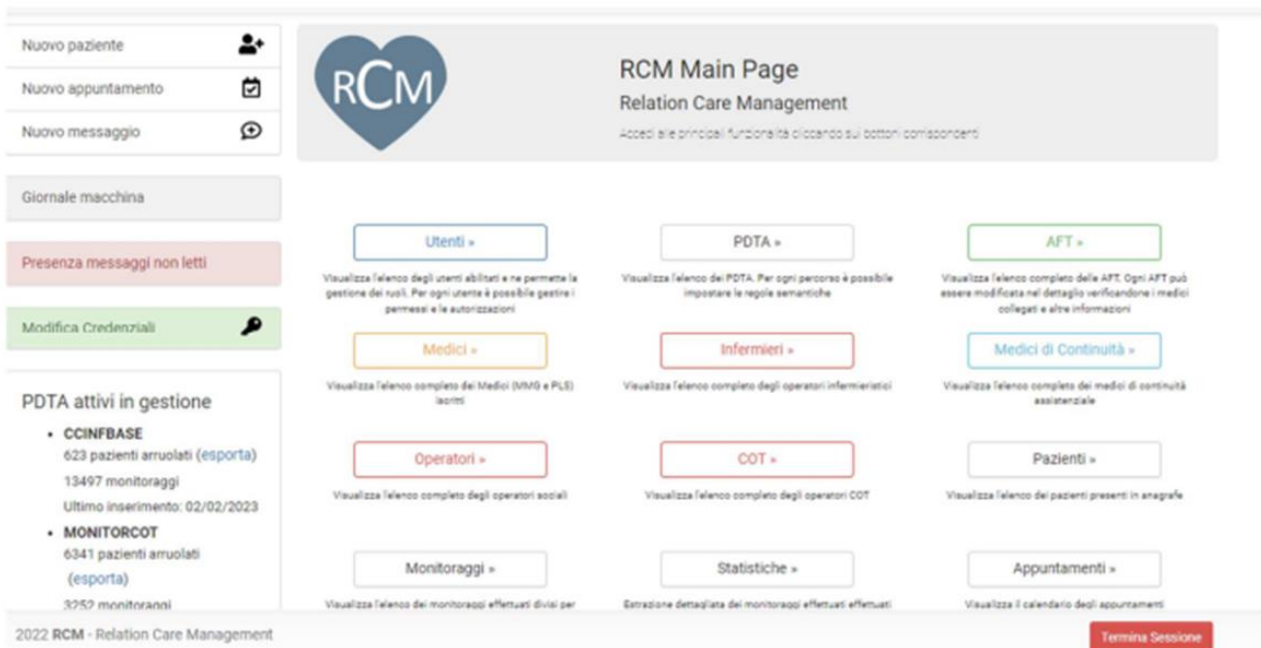
<sup>1</sup> COT (Centrale Operativa Territoriale) Territorial Operations Centre - (Dgr n. 2271/2013 Dgr n. 2271/2013 Dgr n. 2271/2013)

<sup>2</sup> IDF (Infermiere Di Famiglia) Family Nurse - (DGR n. 782 of 16/06/2020 and n. 1103 of 06/08/20)

## RCM (Relation Care Management)

RCM is an application that allow cooperation and coordination between COT, IDF, GP; the main functions of the application are:

- Communication: between operators through bulletin board, chat, SMSs, mail,
- Validation: Survey to propose questions and acquire evaluations
- Reservation: for example, for MMG to book vaccines at hospital pharmacies
- Interoperation on PDTA on PDTA on PDTA: multiple figures share a path of care, for example the IDF reports to the GP about the patient's visit.
- Indication: e.g.the specialist doctor indicates to the GP the prescription of the next follow-up
- Reporting: the GP for example sends the reporting data agreed in the EC or Pact
- Monitoring: for example, which are the GPs who have viewed a report published in a showcase.



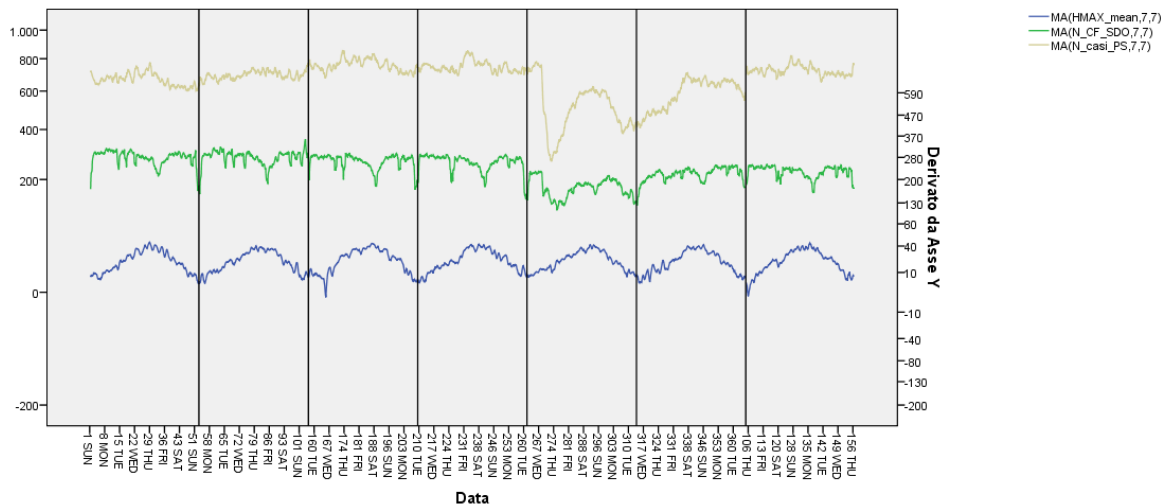
In the first three years they were accredited to use RCM:

- 375 GPs
- 15 IDF
- 30 COT operators
- 10 operators from municipalities working with health services
- ULSS executives for monitoring and control

During the summer, the Territorial Operations Centre (COT) contacted 3423 people by telephone out of a list of 6400 vulnerable persons entered in the RCM platform reported by the Prevention Department and municipal social services. More than 746 patients were assisted by the IDF with the RCM functionality integrated in their mobile service devices and the collected data were processed in the Case Summary APP.

## Data collecting and analysis

Health data cross-referenced with climatic datasets were collected, over 3M of records are collected and 1.7M records are sampled and analysed. The purpose is to determine the existence of time series correlated to heat waves, in order to be able to build predictive models on the impact of temperatures on the population and on health facilities. over 1.7M records are sampled and analysed.



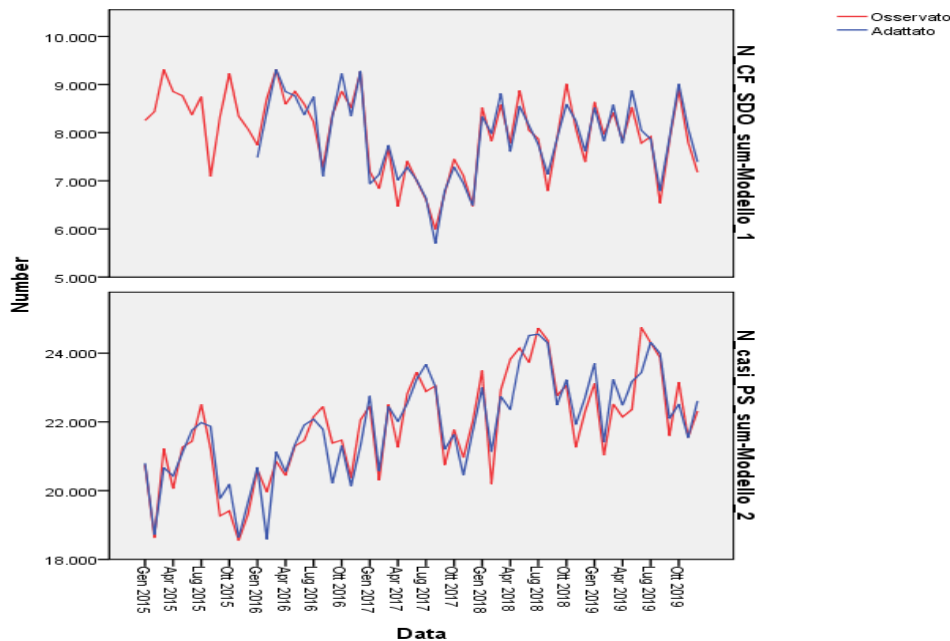
Due to a change of standards that occurred in the past years, for the current data analysis a range of 7 years from 2015 to 2022 has been considered. Moreover, the advent of the pandemic has produced a distortion trend and in the same analysis the data was studied since 2020.

Datasets for stratification of cases sensitive to extreme climate change have been implemented, grouping the target population by age, pathology, social fragility and vulnerability (recorded by telephone activity related to the "Caldo" project). In addition, it were made some data aggregation to create homogeneous cohorts for the territory of administrative competence corresponding to the 4 districts of the ULSS3: District 1 Venice and coastal, District 2 Venice Mainland, District 3 Dolo-Mirano, District 4 Chioggia-Cavarzere. On the basis of the literature on the subject, comorbidity indices were created to quantify the coexistence of adverse predisposition to heat waves.

Riepilogo dei casi									
ULSS di riferimento	Stazione	Validi		Casi		Totale			
		N	Percentuale	N	Percentuale				
2	HMED	Bibbione	2780	98,1%	54	1,9%	2814	100,0%	
		Cavallin	2805	99,7%	9	,3%	2814	100,0%	
		Eraclea	2806	99,7%	8	,3%	2814	100,0%	
		Portogru	2809	99,8%	5	,2%	2814	100,0%	
		Venezia	2809	99,8%	5	,2%	2814	100,0%	
	HMIN	Bibbione	2780	98,1%	54	1,9%	2814	100,0%	
		Cavallin	2805	99,7%	9	,3%	2814	100,0%	
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		Cavallin	2805	99,7%	9	,3%	2814	100,0%	
		Eraclea	2806	99,7%	8	,3%	2814	100,0%	
3	HMED	Campagna	2792	99,2%	22	,8%	2814	100,0%	
		Mira	2814	100,0%	0	,0%	2814	100,0%	
		HMIN	Campagna	2792	99,2%	22	,8%	2814	100,0%
			Mira	2814	100,0%	0	,0%	2814	100,0%
		HMAX	Campagna	2792	99,2%	22	,8%	2814	100,0%
	Mira		2814	100,0%	0	,0%	2814	100,0%	
	4	HMED	Chioggia	2809	99,8%	5	,2%	2814	100,0%
			Codevigo	2779	98,8%	35	1,2%	2814	100,0%
		HMIN	Chioggia	2809	99,8%	5	,2%	2814	100,0%
			Codevigo	2779	98,8%	35	1,2%	2814	100,0%
		HMAX	Chioggia	2809	99,8%	5	,2%	2814	100,0%
			Codevigo	2779	98,8%	35	1,2%	2814	100,0%

Data	Casi					
	Inclusi		Esclusi		Totale	
	N	Percentuale	N	Percentuale	N	Percentuale
ULSSD	1.714.310	100,0%	0	,0%	1.714.310	100,0%
CF_Cript	1.714.310	100,0%	0	,0%	1.714.310	100,0%
Classe_età	1.450.833	84,6%	263.477	15,4%	1.714.310	100,0%
CodiceSesso	1.450.833	84,6%	263.477	15,4%	1.714.310	100,0%
CodiceMotivodellaccessoaPS	1.710.214	99,8%	4.096	,2%	1.714.310	100,0%
ICD9	1.683.102	98,2%	31.208	1,8%	1.714.310	100,0%
Anno	1.714.310	100,0%	0	,0%	1.714.310	100,0%
Mese	1.714.310	100,0%	0	,0%	1.714.310	100,0%
Età	1.450.833	84,6%	263.477	15,4%	1.714.310	100,0%
Fascia d'età	1.714.310	100,0%	0	,0%	1.714.310	100,0%
Fragili per patologia	1.714.310	100,0%	0	,0%	1.714.310	100,0%
Fragili Sociali/COT	1.714.310	100,0%	0	,0%	1.714.310	100,0%
HMED_mean	1.597.505	93,2%	116.805	6,8%	1.714.310	100,0%
HMIN_min	1.597.505	93,2%	116.805	6,8%	1.714.310	100,0%
HMAX_max	1.597.505	93,2%	116.805	6,8%	1.714.310	100,0%

It was processed and compared environmental and health data for a prior assessment of the possibility of determining a correlation between high heat stress indexes and emergency room admissions or routine hospitalizations. Despite the large amount of data available, it was not possible to appreciate a time series with climate predictors supported by satisfactory statistical significance.





Contrary to the data available on mortality, the correlation index found between access to the emergency room and high temperatures gave a statistically "weak" response (Pearson's correlation, significance 0.57%). It is advisable to check for additional disturbing components that may have produced bias and to investigate further in combinations of population subgroups.

Partial results and preliminary assessments were presented in a meeting with the lead partner; on this occasion it was agreed to involve, through ARPAV, the expertise of the University of Venice (Ca' Foscari). In the future, further analysis and insights can be carried out by ARPAV with the support of advanced analysis tools such as the "Learning Machine".