eHealth Strategy in Veneto Region

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Veneto Region

 Territory and Population

- 4.9 M inhabitants (2009 data)
- 18,391 km² of land surface

<table>
<thead>
<tr>
<th>Population structure</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Members per family</td>
<td>2.6</td>
</tr>
<tr>
<td>Birth rate</td>
<td>9.3</td>
</tr>
<tr>
<td>Death rate</td>
<td>9.0</td>
</tr>
<tr>
<td>Natural growth rate</td>
<td>0.3</td>
</tr>
<tr>
<td>Total growth rate</td>
<td>5.6</td>
</tr>
<tr>
<td>% population &gt; 65 years</td>
<td>18.5</td>
</tr>
<tr>
<td>% EU population &gt; 65 years</td>
<td>14.1</td>
</tr>
</tbody>
</table>

Source: 2001 General Consensus, Veneto Region
Veneto: 4.9 million of citizens (2009)
- European Community: 29% of the members states (8 out of 27) with less population of Veneto
- USA: 58% of the states (29 out of 50) with less population of Veneto

<table>
<thead>
<tr>
<th>VENETO &amp; EU</th>
<th>VENETO &amp; USA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lithuania</td>
<td>3,436,561</td>
</tr>
<tr>
<td>Ireland</td>
<td>4,422,100</td>
</tr>
<tr>
<td>VENETO</td>
<td><strong>4,910,170</strong></td>
</tr>
<tr>
<td>Finland</td>
<td>5,336,458</td>
</tr>
<tr>
<td>Slovakia</td>
<td>5,389,180</td>
</tr>
<tr>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>Germany</td>
<td>82,438,000</td>
</tr>
</tbody>
</table>

Source: EU data – 2009; U.S. Census Bureau – 2009
Veneto Region numbers of the Health System

- 21 Local Health Authorities
- 2 Hospital Trusts
- 1 Specialty Research Institutes

### PUBLIC ACCREDITED INSTITUTIONS *

<table>
<thead>
<tr>
<th>Service Type</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>IRCSS (SPECIALIST RESEARCH INSTITUTES)</td>
<td>1</td>
</tr>
<tr>
<td>Public health authority (Az. Osp.)</td>
<td>2</td>
</tr>
<tr>
<td>Hospital in the Provincial capital</td>
<td>6</td>
</tr>
<tr>
<td>Network hospital / strong integration</td>
<td>33</td>
</tr>
<tr>
<td>Integrating hospital of the network</td>
<td>8</td>
</tr>
<tr>
<td>Polyfunctional health centre</td>
<td>10</td>
</tr>
<tr>
<td>Management experimentation</td>
<td>4</td>
</tr>
</tbody>
</table>

### PRIVATE ACCREDITED INSTITUTES *

<table>
<thead>
<tr>
<th>Service Type</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>IRCSS (SPECIALIST RESEARCH INSTITUTES)</td>
<td>1</td>
</tr>
<tr>
<td>Care homes/ hospital</td>
<td>19</td>
</tr>
<tr>
<td>Classified hospital</td>
<td>4</td>
</tr>
</tbody>
</table>

(*Veneto Region Statistics Office data, 2007)

About 60,000 health care professionals over 15,000 hospital beds *
History of the National Health System

**Basic Principles**

- **Solidarity** - Universal Coverage and free access
- **Essential Level of Assistance** to all citizens
- **Decentralisation** – three levels of government involved in running the system
- **Integration of health care activities**: Hospital & Territory
- **Social Issues** - tight integration between health and social issues
Veneto Region: challenges for the Health System

- Ageing population and chronic diseases: home-care
- Patient mobility: tourism, immigrants and long term residents
- Lack of health professionals (paediatricians and nurses)
- Restrictions imposed in public funding by commitments (EU stability treaties)
- Rising costs due to technological innovation
- Reply to increase in EU citizens’ expectations and...
- Drive innovation in healthcare issues
- Need for reduction of public health expenditure
From a **technical perspective**: 

1. Enable the **interoperability** of eHealth services at **regional** level

2. Put down the basis for a standardized **EHR systems** at local level with a view to establishing a **Patient Health Record** at Regional level

3. Develop eHealth-based **disease management models** for outpatients’ treatment

4. Foster the **interoperability** of the above systems/services at **national and European level**.
The Social Health Plan highlights the potentiality of increasing the quality of health services by the application of the **FSER** (Fascicolo Sanitario Elettronico Regionale, i.e. Regional Electronic Health Record).

Further, the analysis of national laws relating to FSER brings out a need to develop a joint project between the Region and Local Health Authorities in order to achieve by 2014 the necessary infrastructure.
the concept and use of the FSER are extended to several areas:

The instrument must be unique at the regional level regardless of where the information are originated.
Because of these purposes, it is considered essential the convergence of all active e-health projects in order to achieve these aims as quickly and economically sustainable.
**Programme:** RENEWING HEALTH is the second Pilot Type A eHealth project funded under the new European Union ICT-PSP (Information and Communications Technologies – Policy Support Programme)

**Project start date:** 1st of February 2010

**Project duration:** 32 months

**Total budget:** 14,000,000 Euros

**EU contribution:** 7,000,000 Euros
Consortium of RENEWING HEALTH

- Veneto Region (I)
- Region of Southern Denmark (DK)
- County of Norrbotten (S)
- Region Northern Norway (N)
  - Catalonia (E)
  - South Karelia (FI)
  - Region Central Greece (GR)
  - Carinthia (A)
  - Berlin (D)

- Consorzio Arsenàl.IT (IT)
- Medcom (DK)
- eHealth Innovation Centre – Lulea university (S)
- Norwegian Centre for Integrated Care and Telemedicine (N)
- TicSalut (E)
- CAHTA (E)
- VTT Technical Research Centre (FI)
- E-Trikala (GR)
- TSB (D)

- Representatives of the main categories of telemedicine users, patients and professionals

- **Aim**: Making sure that the users’ interests of and needs are properly taken into consideration

- A team of multidisciplinary experts from industry leaders in the eHealth sector

- **Aim**: providing an expert advice on all the technical issues relevant for the implementation of the large scale pilots and their further deployment
Aim of RENEWING HEALTH

Validating, in real life settings and with a common rigorous assessment methodology (MAST), the use of existing Personal Health Systems for innovative types of Telemedicine services used to monitor chronic patients with Cardiovascular Disease (CVD), Chronic Obstructive Pulmonary Disease (COPD) and Diabetes and to prepare for their wider deployment.
Remote Monitoring for HF and COPD in Veneto Region

<table>
<thead>
<tr>
<th>Clinical parameters</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heart rate</td>
<td>Wrist clinic device</td>
</tr>
<tr>
<td>ECG</td>
<td>Easy selection of the clinical parameters to be measured on the device itself</td>
</tr>
<tr>
<td>Blood pressure</td>
<td>Clear data display</td>
</tr>
<tr>
<td>Respiratory rate</td>
<td>Wireless data transmission</td>
</tr>
<tr>
<td>Oxygen saturation</td>
<td></td>
</tr>
<tr>
<td>Temperature</td>
<td></td>
</tr>
<tr>
<td>Body weight</td>
<td>Ease of use</td>
</tr>
<tr>
<td></td>
<td>Wireless data transmission</td>
</tr>
</tbody>
</table>
Different Telemonitoring projects
Self Monitoring for HF and COPD

1: Clinical parameters measuring

Patient home

Biomedical devices

Gateway

Telemonitoring data collection

Telemonitoring centre

System for data storage and management

Patient profile

Centre operator

Alarm - 2a

Alarm - 2b

Data transmission
Data access through Home Care portal
Alarm management

GP

Hospital

Specialist

LHA district

Specialist

ER

LHA

Different Telemonitoring projects
Self Monitoring for HF and COPD

1: Clinical parameters measuring

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Hospital

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LHA district

Specialist

ER

LHA
Different Telemonitoring projects
Remote monitoring with nurse

1: instrumental test execution

Data transmission
Data access through web portal
Alarm management
Different Telemonitoring projects
Remote Monitoring for ICD

1: data recording
Gateway

Patient home

ICD&PM Telemonitoring centre
Medical/technical operator
Web interface/management system
Cardiological centre
Health professionals

Online server

Data transmission
Integration
Data access through web portal
Alarm management
Different Telemonitoring projects
Veneto’s Strategy Telecare

Person

Data

Data

Data

Data

Data

e-Health Center

Cal Center

Web Portal

Tecnical
Device

Professional
Care Giver

Informal
Care Giver
From Telecare to Telehealth

Telecare:

• 1,000,000 over 65 (20% of Veneto population)

• Over 38,000 elderly people in Italy are currently assisted in telecare, in Veneto Region they are 24,500 (64.5% of Italian elderly people, 2.45% of over 65 years)
From Telecare to Telehealth

Telehealth:

• In 2007 there were about 6,300 hospitalizations for hip fracture in older age group (0.68% of Veneto residents over 65 years).

• 73% of people aged 65 or older in Veneto suffer from one or more chronic illnesses, in particular cardiovascular diseases, diabetes, respiratory diseases.

Veneto – Year 2005
Telehealth:

In 2009, in Veneto there are 193,471 people with diabetes mellitus.

Prevalence of diabetes sex and age in 2009 (x 1,000 inhabitant)
Telehealth:

- In Italy, 31.3% of patients with heart failure are over 65 years (1).
- 61,000 people with heart failure in 2009 in Veneto (2)
  ➔ about 19,100 people over 65 years in Veneto (2%)

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Prevalence of heart failure for sex and age in 2009

Telehealth:

- In Italy, 53.5% of patients with COPD are over 65 years (1).
- About 20,000 hospital admission each year, and 90% hospital admission of elderly people (age ≥ 65) (2)

### Prevalence of COPD in Italy, age classes (2009)

<table>
<thead>
<tr>
<th>Age Classes</th>
<th>Prevalence (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-24</td>
<td>0.2</td>
</tr>
<tr>
<td>25-34</td>
<td>0.3</td>
</tr>
<tr>
<td>35-44</td>
<td>0.5</td>
</tr>
<tr>
<td>45-54</td>
<td>1.5</td>
</tr>
<tr>
<td>55-64</td>
<td>3.8</td>
</tr>
<tr>
<td>65-74</td>
<td>8.3</td>
</tr>
<tr>
<td>75-84</td>
<td>13.8</td>
</tr>
<tr>
<td>≥85</td>
<td>14.0</td>
</tr>
</tbody>
</table>

Male and Female prevalence are shown in the graph.

From Telecare to Telehealth

Expenditure of Health System per capite

![Graph showing the expenditure of the health system per capita from 2004 to 2008, with values increasing from 1.556 EUR in 2004 to 1.796 EUR in 2008.](image)
From Telecare to Telehealth

- Telehealth
- Primary Care
- Specialized care
- Remote Patient Monitoring (RPM)
- Medical
- e-Health Center
- Social
- Integrated Home Care
- Information Gateway
- Telecare
- Social Care & Alarms
From Telecare to Telehealth
Equipment at home

**Wrist clinic**
- Heart Rate
- ECG derived mono
- Blood pressure
- Regularity of rhythm
- Respiratory rate
- Blood oxygen saturation (SpO2)
- Body temperature

**Digital Balance**

**MEDIC GATE**

**Glucometer**

**Lifesaving**

**Fall Sensor**
• Check that the patient sends data telemedicine according to the protocol established by the physician and in case of failure to transmit data contact the patient;
• Manages the “alert” in case of sending parameters out of range;
• Make control calls (programmed) to be sure the health of the patient and submit a questionnaire to the patient, according to the agreed procedure;
• Connects the patient with the physician;
• Contact the physician when necessary (parameter out of range, patients who report not feeling well etc.).
• Alert assistance in case of emergency according to the agreed procedure;
• Coordinates the activities of its technical staff in installation of hardware technologies in the homes of patients.
Patient and Person

- Information stand alone
From Person to Patient

- Hospital
- Primary Care
- EMR
- LHR
- PHR
- Telecare
- Information Gateway
- Social Care & Allarms
- Integrated Home Care
- Telehealth
- Specialized care
- Remote Patient Monitoring (RPM)
- PHR
- EHR
- EMR
From Person to Patient
FSER as storyboard
From Person to Patient
FSER as storyboard

Telecare
- Data

Hospital

Primary Care

FSER

Social

Public Health

e-Health Center

Telecare
From Person to Patient
FSER as storyboard

Telecare
- Data

Hospitalization
- Emergency referral
- Electronic Medical Record
- Discharge Letter

Hospital

Primary Care

EMR
FSER

e-Health Center

Telecare

Social

Public Health
From Person to Patient
FSER as storyboard
From Person to Patient
FSER as storyboard

Telecare
- Data

Hospitalization
- Emergency referral
- Electronic Medical Record
- Discharge Letter

Telemonitoring
- Data

Visits & exams
- Medical Report

Hospital

EMR

EHR

FSER

e-Health Center

Telecare

Telehealth

Social

Public Health
From Person to Patient
FSER as storyboard

- Telecare
  - Data
- Hospitalization
  - Emergency referral
  - Electronic Medical Record
  - Discharge Letter
- Telemonitoring
  - Data
- Visits & Exams
  - Medical Report
- Note
  - Information of patient

FSER
- EMR
- EHR
- PHR

Hospital

Primary Care

Social

Public Health

Telecare

Telehealth

e-Health Center
From Person to Patient
FSER as storyboard

Telecare
• Data

Hospitalization
• Emergency referral
• Electronic Medical Record
• Discharge Letter

Telemonitoring
• Data

Visits & Exams
• Medical Report

Note
• Information of patient

Workflow

Document Sharing
Workflow

Document Sharing
Thank you for your attention!

Claudio Saccavini
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