



REGIONE DEL VENETO

# USING ACG (ADJUSTED CLINICAL GROUPS) TO IMPROVE EQUITY AND CARE COORDINATION

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Regione del Veneto

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Giunta Regionale  
Area Sanità e Sociale

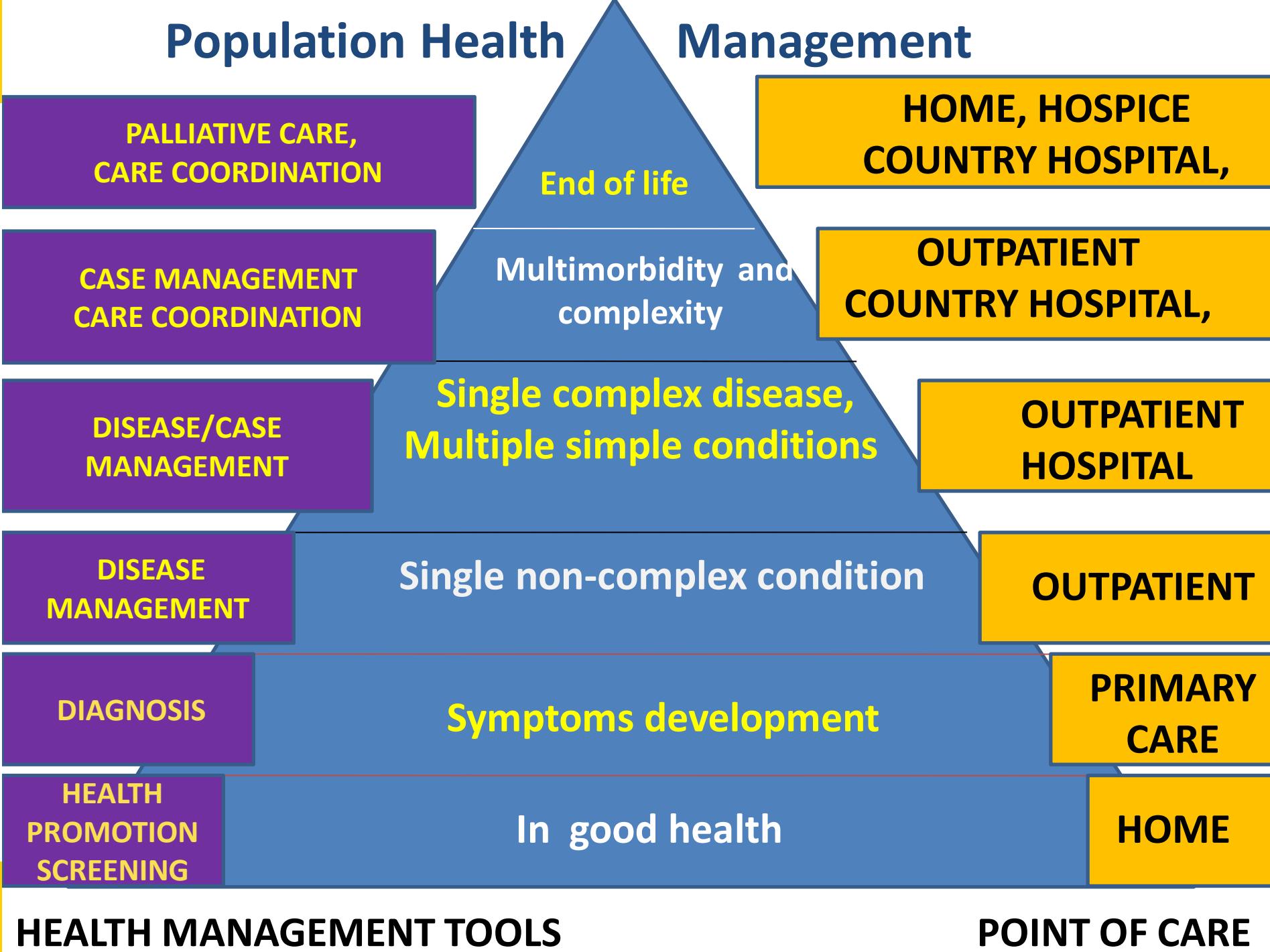


# Multimorbidity and Population Health Management

- Multimorbidity is the norm in our population.
- Care for these persons is fragmented and expensive
- Disease management programs fail, when many chronic conditions are co-prevalent
- Risk stratification is a key component for case finding and case-mix adjustment.



# Population Health Management





# WHAT IS THE ACG SYSTEM?

**ACG = Adjusted Clinical Groups**

USED FOR RISK ADJUSTMENT:

IT'S A POPULATION GROUPER:

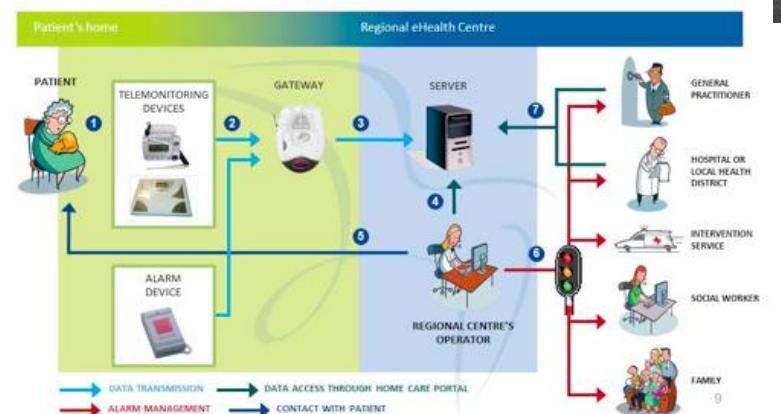


Developed by Johns  
Hopkins University ,  
Baltimore (USA)



# 3 key goals from our regional Plan

- Stratify the population and their risk.
- Integrating data to integrate professionals in primary care
- Improve care coordination for persons with multi-morbidity.

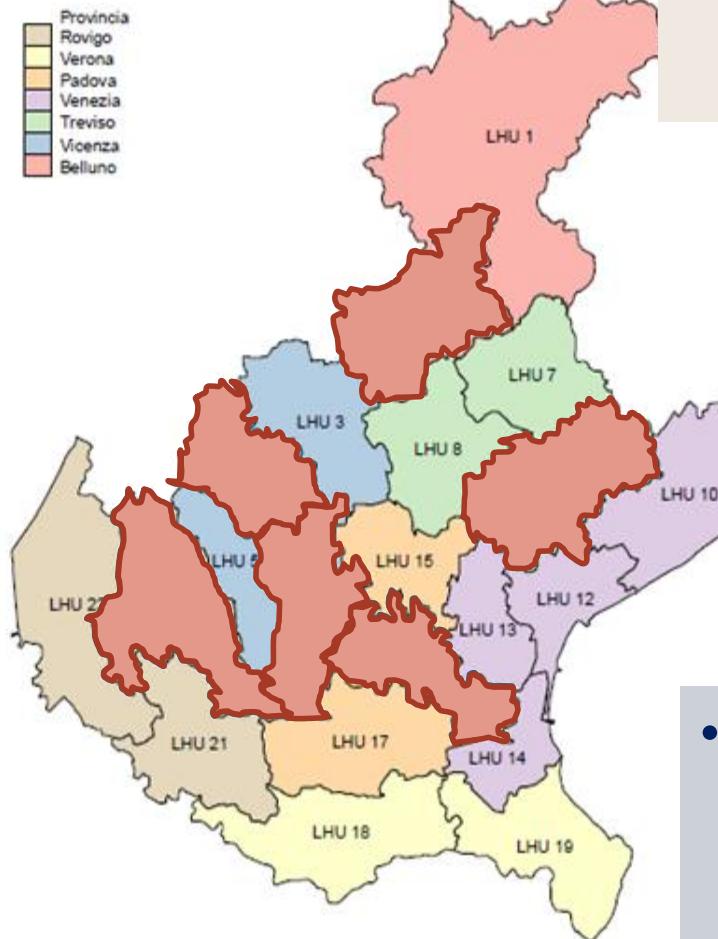




# Scaling up with ACG in VENETO

- Pilot 2012-2013: 2 LHU (1 mln inhabitants)

- Database building
- Statistical validation
- Integration with GP diagnoses



- 2013-2014: 6 LHU (2 mln inhabitants)
  - Retrospective analyses :
  - Focus on specific chronic diseases depressione, diabetes, ....
  - Hospital admission predictive modelling
  - ACG Interface with business intelligence systems

- 2014-2015: 21 LHUs (5 mln inhabitants)
  - All LHUs are involved
  - Regional database is now available
  - Case management program in primary care



# Person centered data collection

Disease registries  
(ICD9)

Hospital discharge data  
(ICD9CM)

Emergency Room (ICD9CM)

Mental Health Database (ICD10)

Nursing homes  
Hospice (ICD9CM)

Rare disease registry  
(ICD 9)

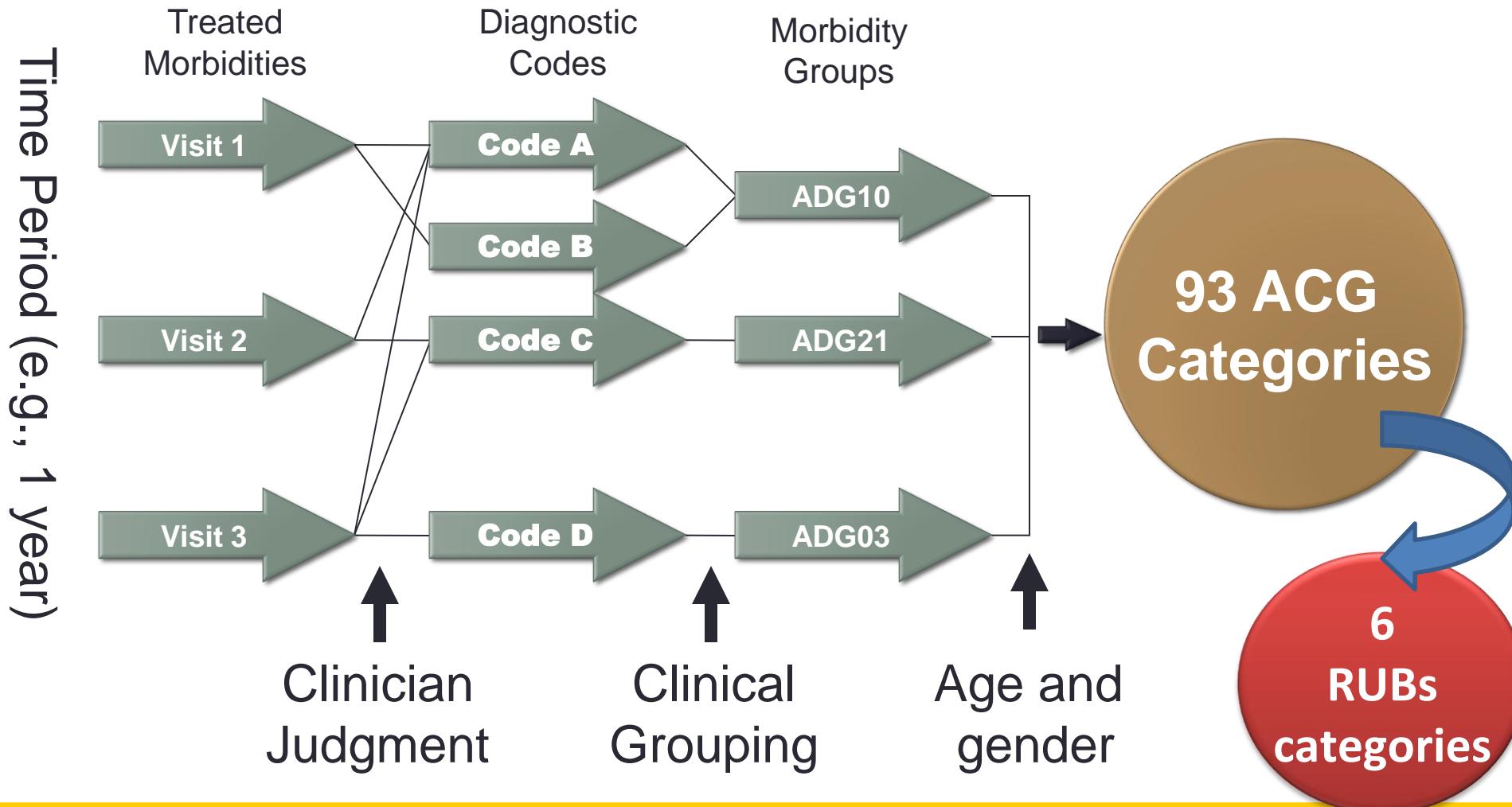
Home care  
(International Classification for Primary Care-ICPC)

Drugs (ATC)

Costs & tariffs  
(DRGs, tariffs, drug costs)

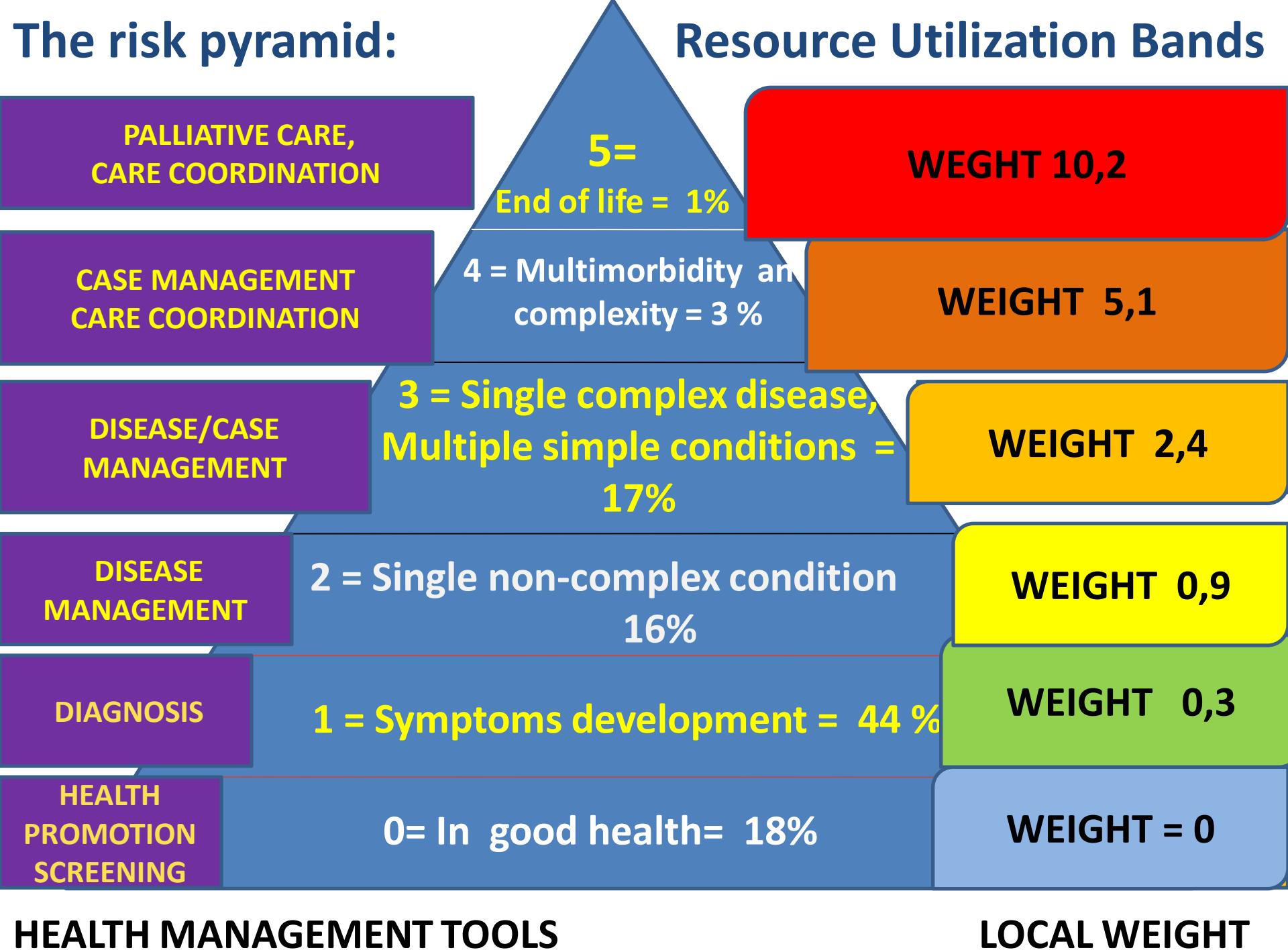


# ACG Actuarial Cells Reflect the Constellation of Health Problems Experienced by a Patient



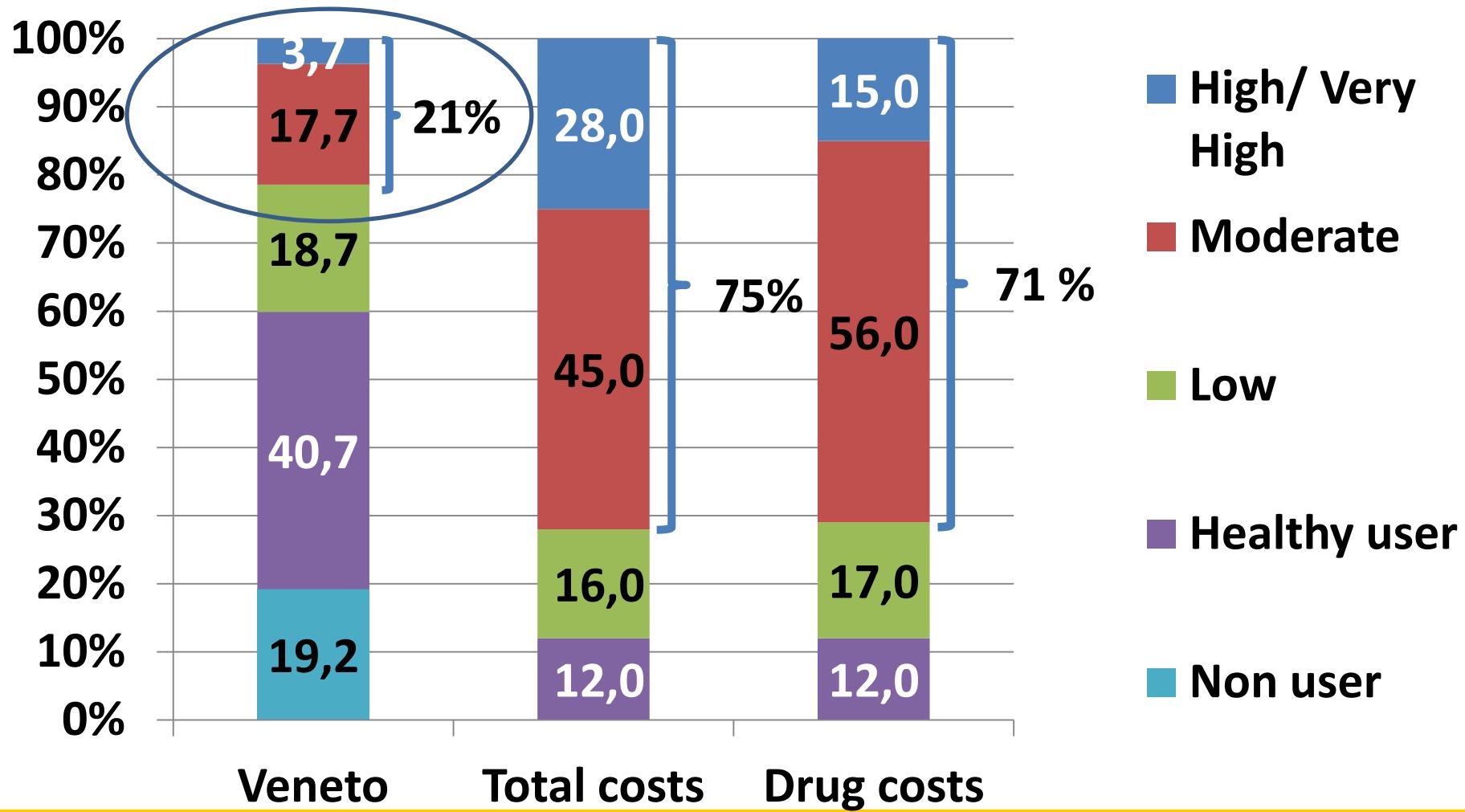
# The risk pyramid:

# Resource Utilization Bands

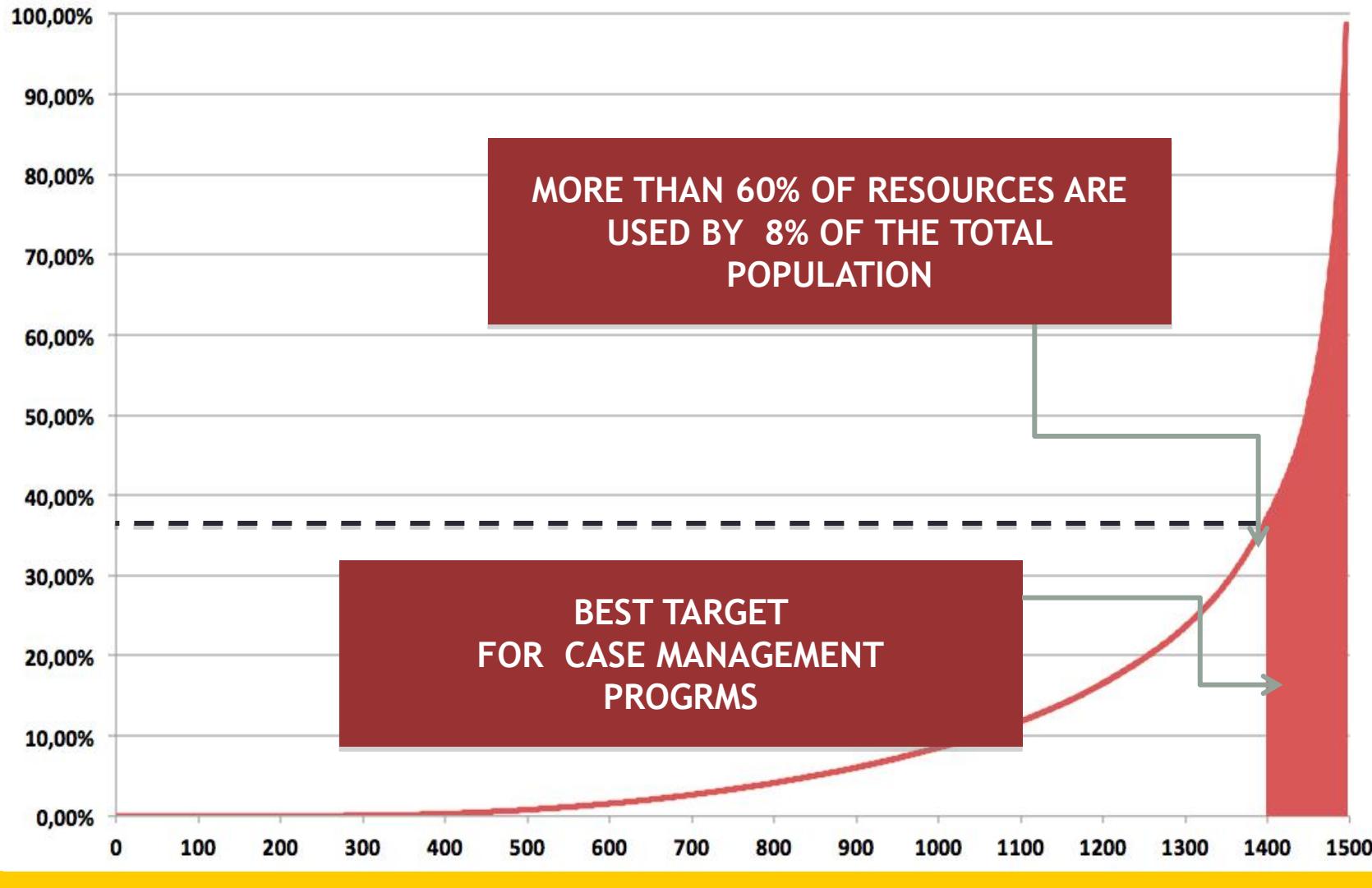




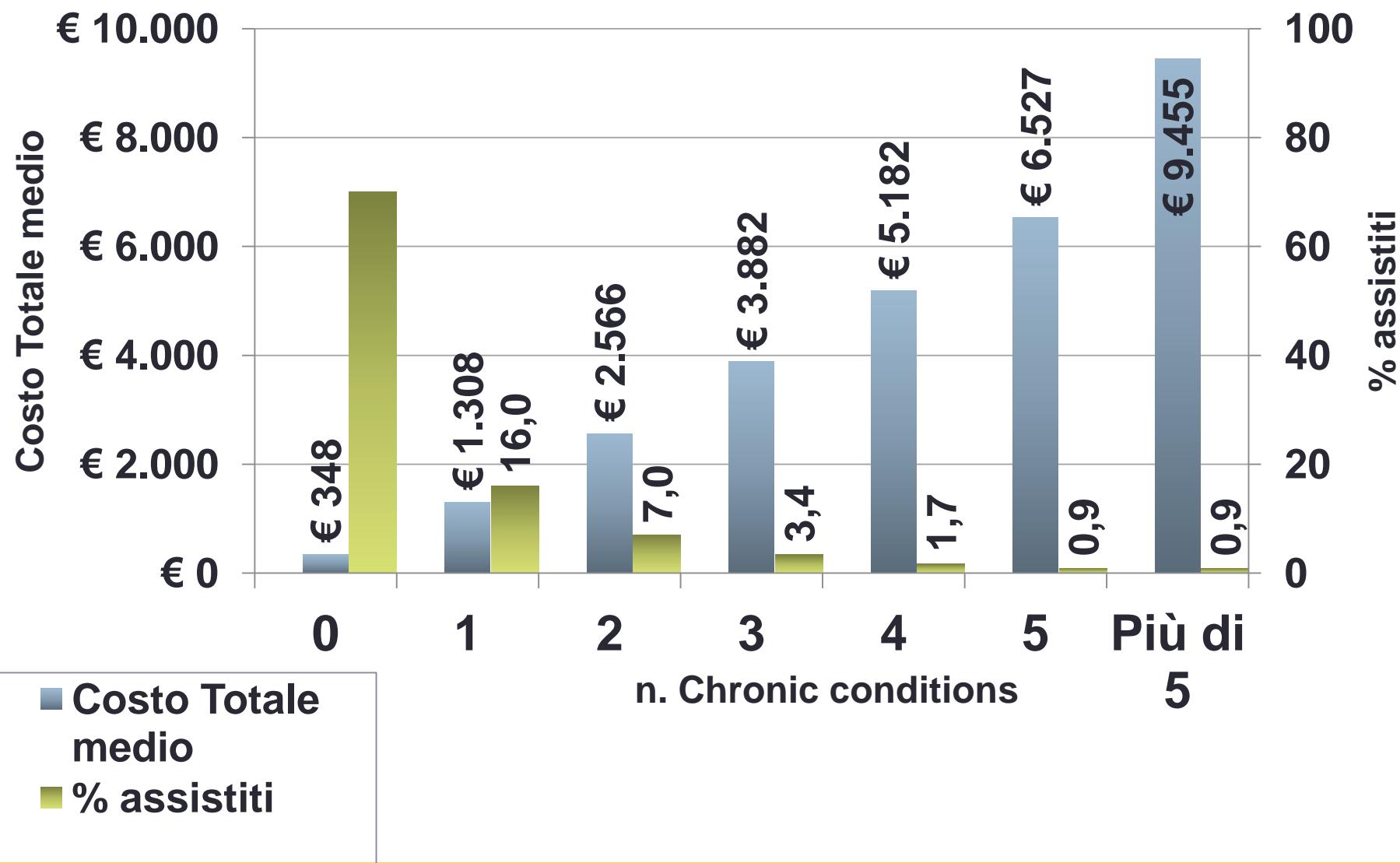
# Population vs cost % distribution by RUBs



# Health care resources : % cumulative distribution



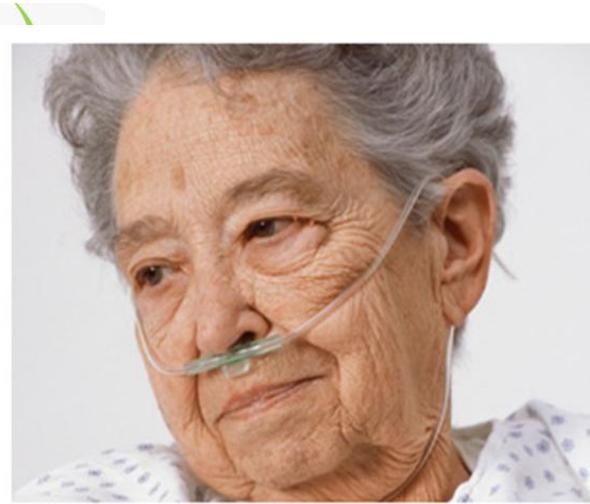
# % Population and costs by N. of chronic conditions





# What type of intervention did we need?

- Population focused
- Evidence based
- Adapted from the Guided Care Model
- Comprehensive
- Personalized
- Intersectorial approach
- Granting continuity

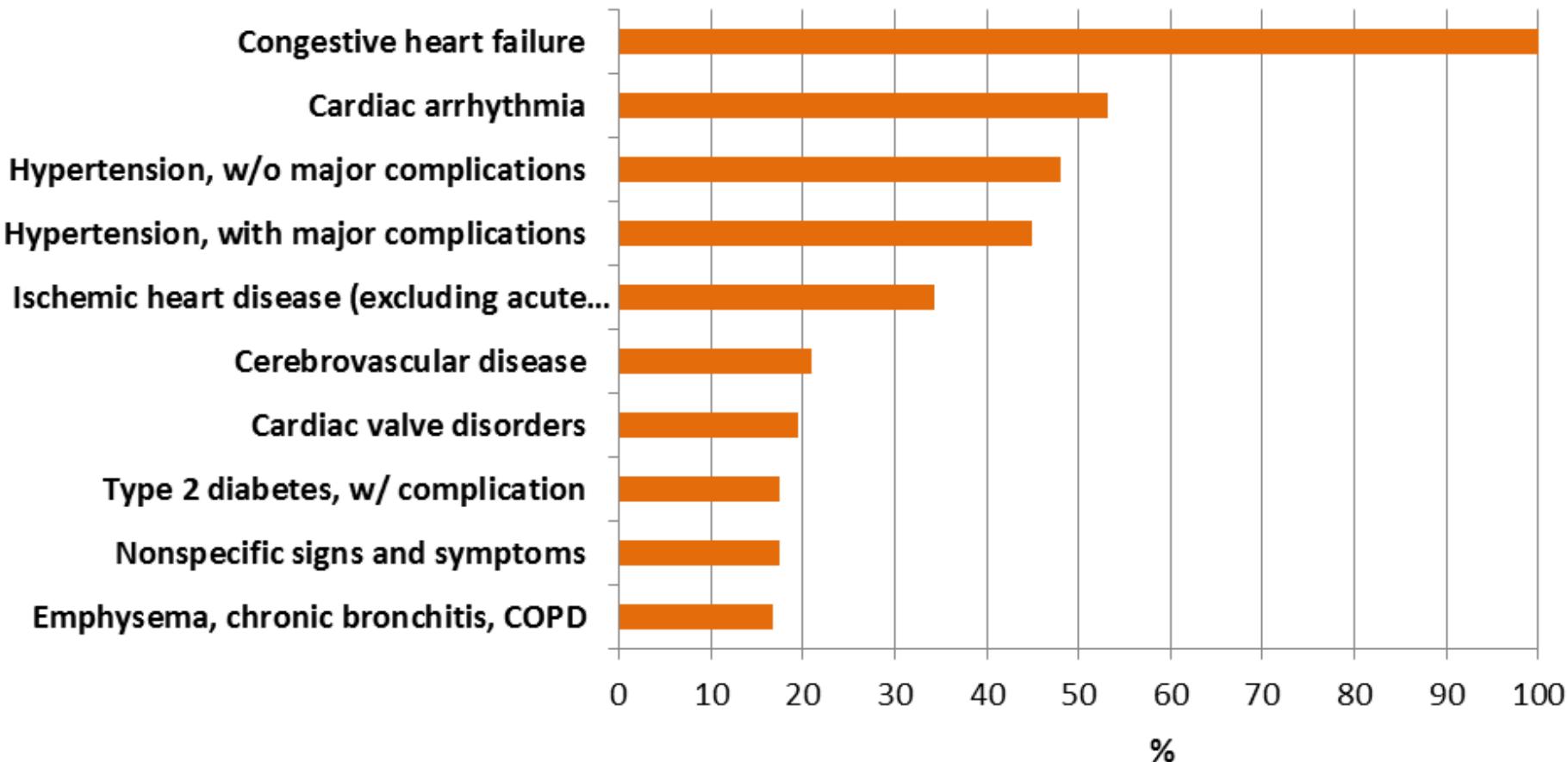




# The paradigm of Congestive Heart Failure

Congestive Heart Failure . Comorbid conditions.

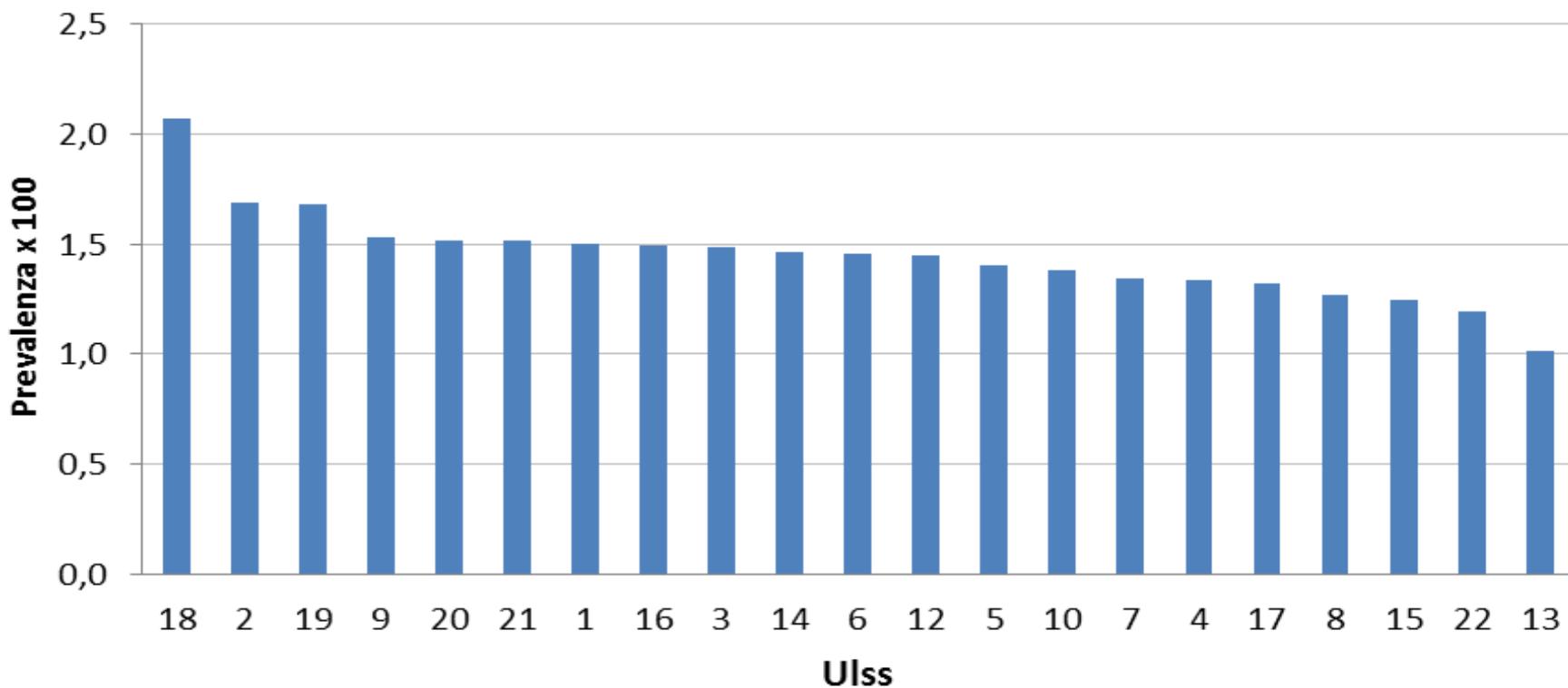
Year 2014. Source: ACG database





# The paradigm of Congestive Heart failure

Scompenso cardiaco (diagnosi). Prevalenza per Azienda ULSS.  
Anno 2013. Fonte: archivio ACG

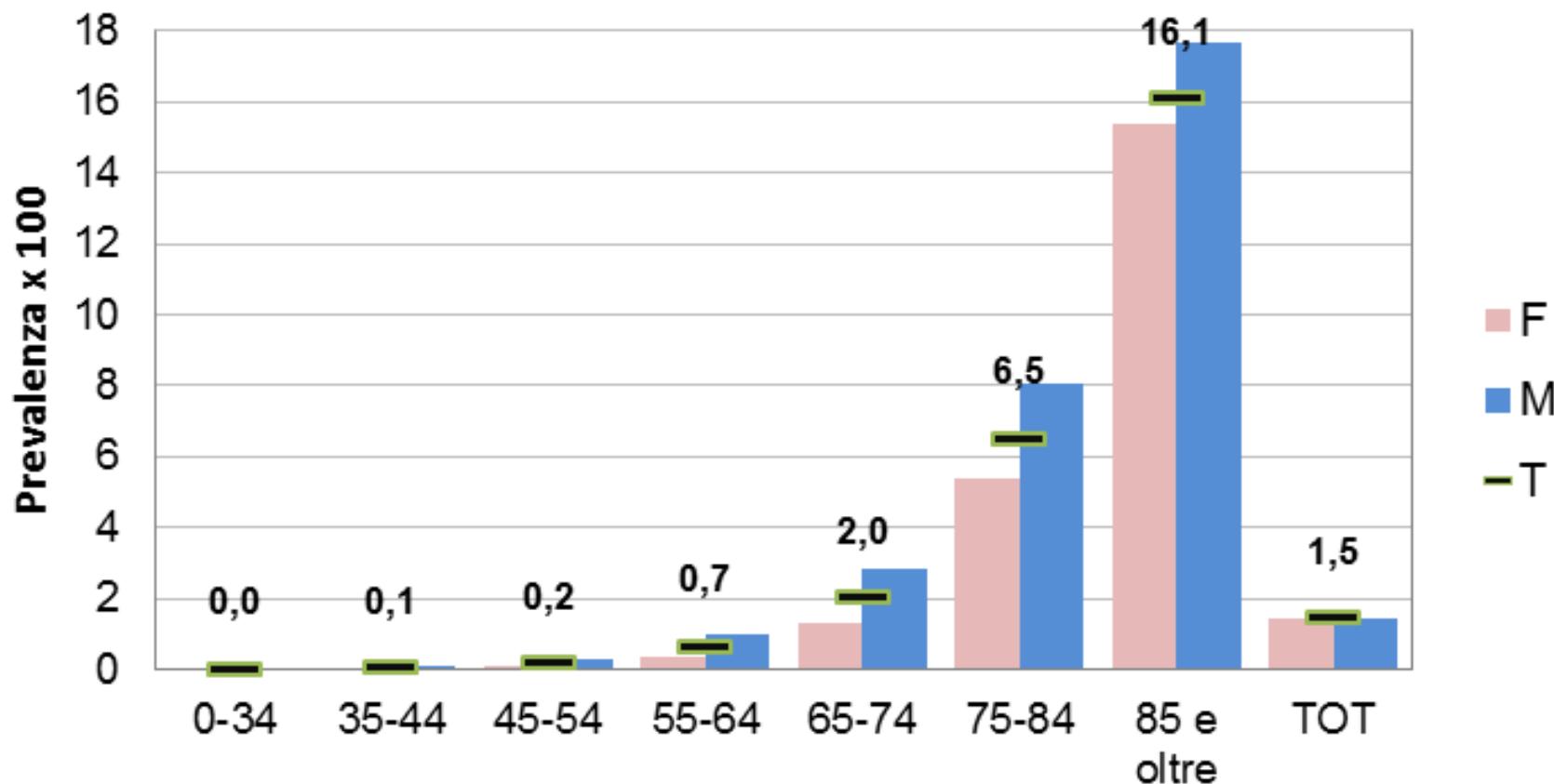


N. of patients with CHF in 2013 in Veneto	70.828
N. of patients with CHF in 2014 in Veneto	72.875



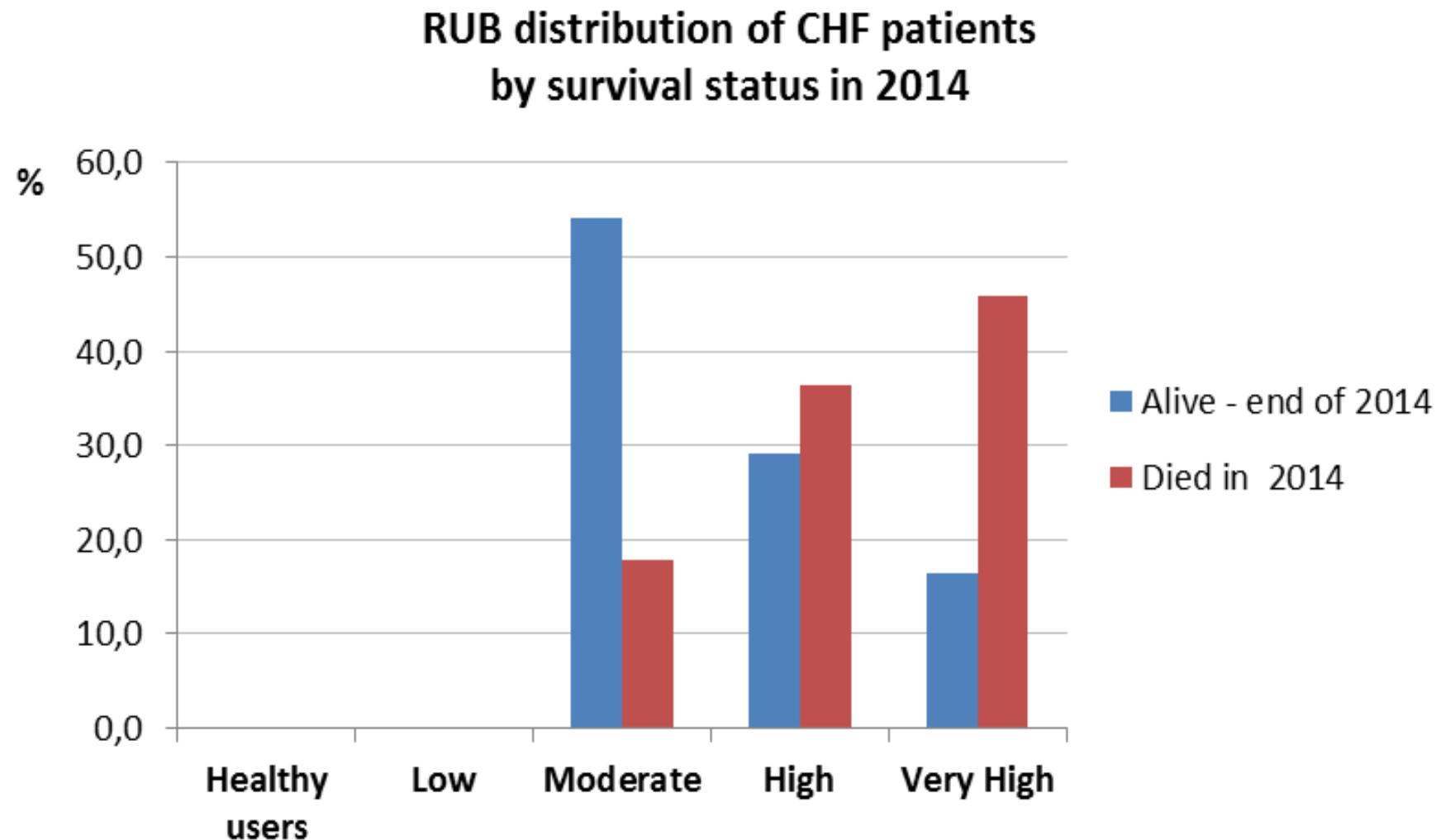
# The paradigm of Congestive Heart failure

Scompenso cardiaco (diagnosi). Prevalenza per età e sesso. Anno 2014. Fonte: archivio ACG



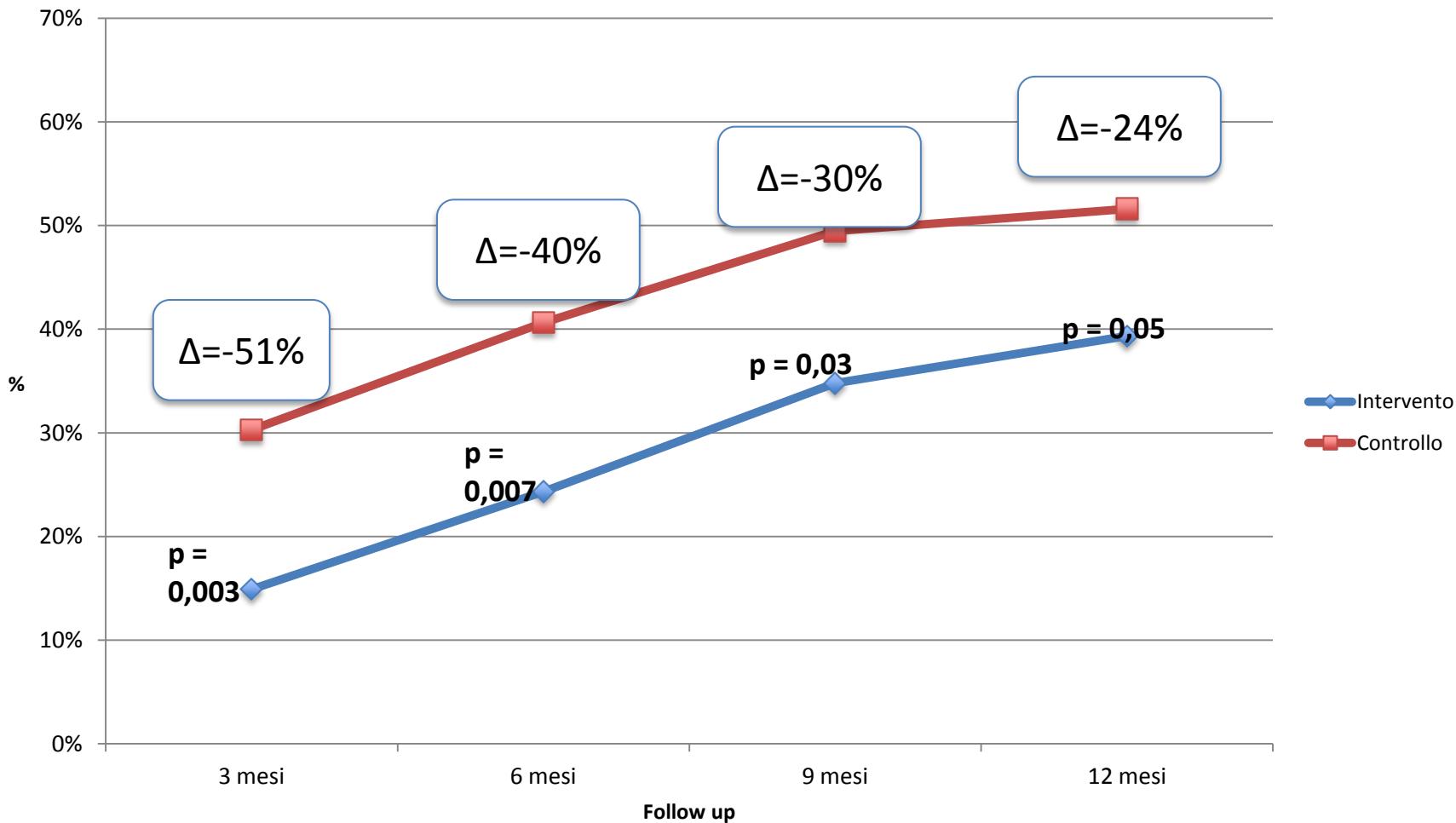


# The paradigm of Congestive Heart failure



# Evidenze cliniche in Veneto

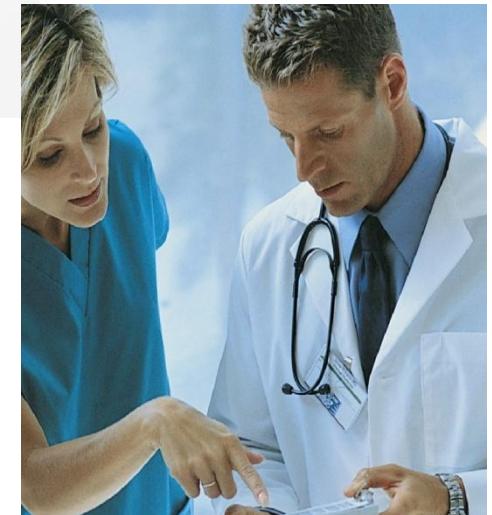
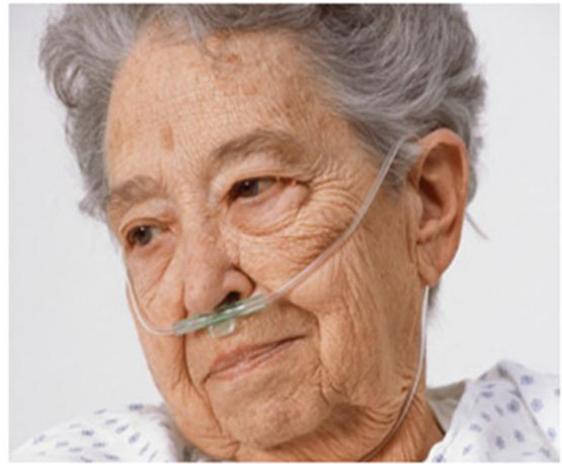
Combined Outcome : all cause mortality and CHF hospital admissions)





# What type of intervention did we need?

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# About the Guided Care Model

- Specially-trained RNs are based in GPs Medical Homes
- The nurse collaborates with 2 GPs in caring for 50-60 high-risk older patients with chronic conditions and complex health needs (CHF) .
- The nurse partners with the patient for the rest of their life;
- it is NOT a “one episode” solution.



Boyd et al. *Gerontologist* 2007



# Care Manager Nurses

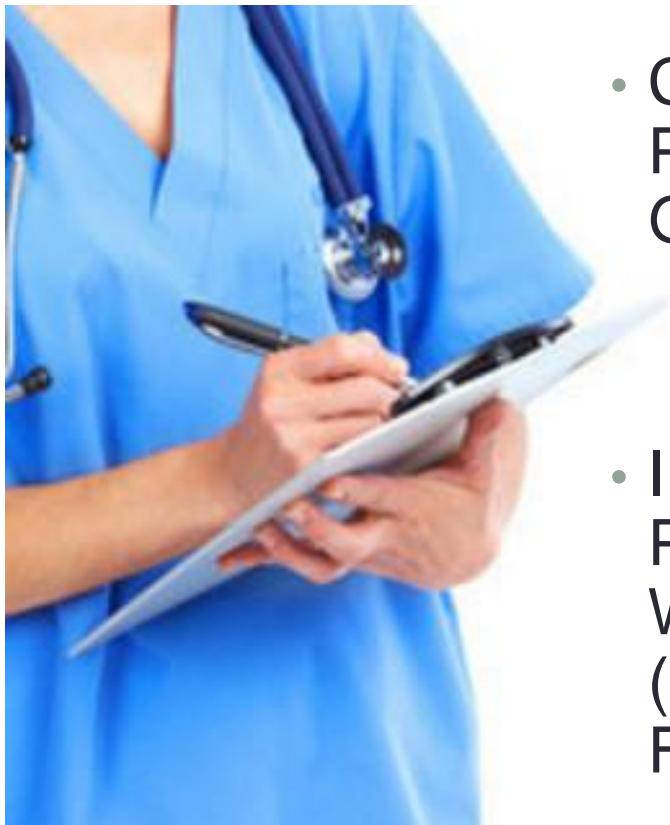
- Assess patient needs & preferences
- Create an evidence-based Care Guide and Action Plan
- Monitor patient proactively
- Support patient self-management
- Smooth transitions between sites of care
- Coordinate with all providers:
  - ✓ Hospitals, EDs, specialty clinics, rehab facilities, home care agencies, hospice programs, and social service agencies
- Educate and support family caregivers
- Facilitate access to community services
- Regularly updates care and action plan with GPs.



Boyd et al. *Gerontologist* 2007



# How are patients selected ?

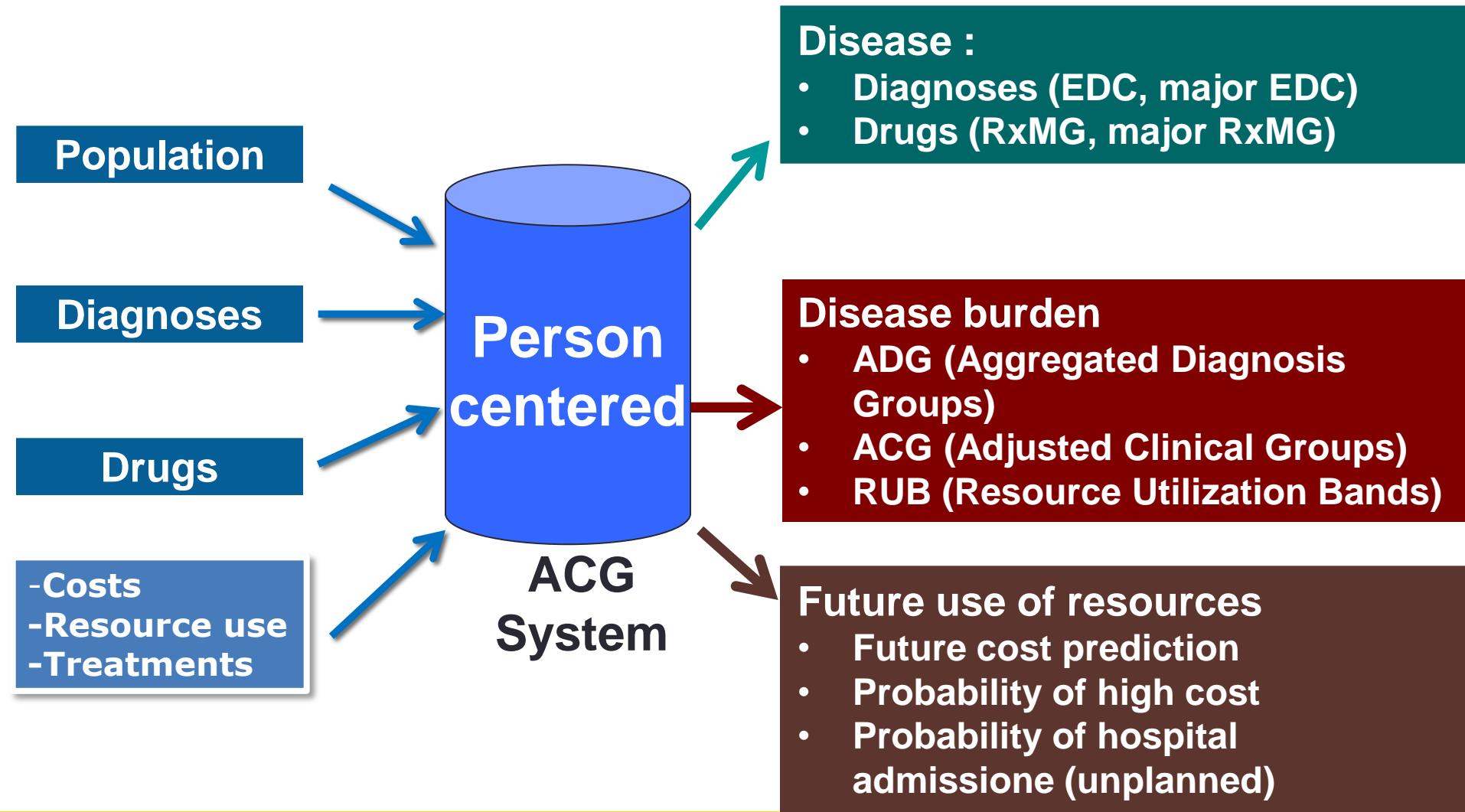


- CARE MANAGEMENT LISTS OF PATIENTS WITH CHF GENERATED BY ACG
- INTEGRATED WITH OTHER CHF PATIENTS IDENTIFIED BY GPs WITH ADDITIONAL COMPLEXITY (SOCIAL BURDEN, OTHER FRAILTIES)





# Integration of data to integrate care



# Case finding of high risk patients

## ACG care management tools



1. Care Management Lists
2. Patient Clinical Profile Report





Patient Id	Age	Sex	Total Cost	Rescaled Total Cost Resource Index	Probability High Total Cost	Probability IP Hospitalization
1002050	46	1	53.454,74	22,85	0,95	0,49
1014372	76	1	38.975,03	18,97	0,95	0,60
1003706	63	2	14.089,49	20,87	0,95	0,25
610	87	2	19.267,75	23,35	0,95	0,60
55	81	1	18.749,54	24,50	0,95	0,63
1016156	58	1	53.476,02	21,61	0,95	0,34
1043878	70	1	10.215,42	19,32	0,95	0,48
1016580	84	1	12.638,04	18,64	0,95	0,47
1047030	59	1	21.939,28	19,75	0,95	0,46

# Single Patient Clinical Report

## Patient Clinical Profile Report

Patient Id: 120\_1078799  
 PCP Id: 004059  
 Product:

### Descriptive informazioni descrittive

Age	68	Total Cost	€ 10.170
Gender	1	Rx Cost	€ 4.460
Resource Utilization Band	4	Models	
Local Weight	10,71	DxRx-PM - total cost - lenient dx -> total cost DxRx-PM - rx cost - lenient dx -> rx cost	

### Special Markers Predictive Values

Chronic Condition Count	7	Probability High Total Cost	0,73
Hospital Dominant Morbidity Types	0	Predicted Total Cost Range	€ 7.500-€ 10.000
Frailty Flag	N	Probability High Rx Cost	0,97

### Common Condition Profile

Age-Related Macular Degeneration	NP	Bipolar Disorder	NP
Congestive Heart Failure	Rx	Depression	NP
Diabetes	TRT	Glaucoma	NP
Human Immunodeficiency Virus	NP	Disorders of Lipid Metabolism	NP
Hypertension	TRT	Hypothyroidism	NP
Immunosuppression/Transplant	BTH	Ischemic Heart Disease	NP
Osteoporosis	Rx	Parkinsons Disease	BTH
Persistent Asthma	NP	Rheumatoid Arthritis	NP
Schizophrenia	NP	Seizure Disorders	NP
COPD	NP	Chronic Renal Failure	ICD
Low Back Pain	NP		

NP = Not Present, ICD = ICD Indication, Rx = Rx Indication, BTH = ICD and Rx Indication, TRT = Treated with Pharmacy

### High Impact Conditions

EDC6	Rx-MG6
ADM03	Transplant status
REN01	Chronic renal failure

### Moderate Impact Conditions

EDC6	RX-MG6
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## Patient Clinical Profile Report

Patient Id: 120\_1078799  
 PCP Id: 004059  
 Product:

diagnosi da farmaci

### EDC6

CAR1	Cardiac arrhythmia
CAR15	Hypertension, with major complications
END07	Type 2 diabetes, w/o complication
NUR03	Peripheral neuropathy, neuritis
NUR06	Parkinsons disease

### Rx-MG6

ALLx030	Allergy/Immunology / Chronic Inflammatory
CARx020	Cardiovascular / Congestive Heart Failure
CARx050	Cardiovascular / Vascular Disorders
ENDx040	Endocrine / Diabetes Without Insulin
GASx060	Gastrointestinal/Hepatic / Peptic Disease
GSIx020	General Signs and Symptoms / Pain
GURx010	Genito-Urinary / Acute Minor
MUSx010	Musculoskeletal / Gout
NURx040	Neurologic / Parkinsons Disease

### diagnosi codificate

### Low Impact Conditions

### EDC6

CAR14	Hypertension, w/o major complications
GUR08	Urinary tract infections
NUR01	Neurologic signs and symptoms
NUR05	Cerebrovascular disease
NUR11	Dementia and delirium

### Rx-MG6

CARx030	Cardiovascular / High Blood Pressure
ENDx010	Endocrine / Bone Disorders
INFx020	Infections / Acute Minor
ZZZx000	Other and Non-Specific Medications



REGIONE DEL VENETO



# Recruitment status at July 1°, 2015

N. GPs involved (2 each LHU)	42
N. Nurses involved (2 each LHU)	42
N. of patients with CHF among the 42 GPs	1.040
Elegible CHF patients	525
Contacted CHF patients	225
Recruited CHF patients	152



DRIVERS for change	HOW	WHEN
Outcome measurement Administrative data	<ul style="list-style-type: none"><li>Inpatient days</li><li>ER and outpatient episodes</li><li>costs</li></ul>	2014 2015
Training GPs CM Nurses	32 Credits 52 Credits with certification	Fall 2015 Spring 2016 Fall 2016
Evaluation	GP, nurse, patient satisfaction	Fall 2015
ICT	Web based integrated platform for GPs and Nurse	2016 In progress





<http://acg.regione.veneto.it>



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