



CARRE

Personalized patient empowerment and shared decision support for cardiorenal disease and comorbidities

Risk Factor Repository Evaluation

September 2016















FP7-ICT-2013-611140

consortium: 6 partners from 4 EU countries

coordinator: Eleni Kaldoudi (DUTH)

duration: Nov 2013 - Oct 2016

budget: 3,210,470€

http://carre-project.eu/

CARRE

Cardiorenal comorbidity management via **empowerment** and

shared informed decision









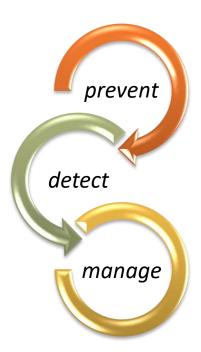






motivation

- significant increase in the prevalence and incidence of chronic disease
- ½ of all chronic patients present comorbidities
- the chronic patient is mostly an outpatient
 - heeds to care for herself at home
 - mainly away from continuous professional care
 - while trying to lead a normal life





medical domain

chronic cardiorenal disease and comorbidities

- simultaneous (causal) dysfunction of kidney and heart
- diabetes and/or hypertension common underlying causes
- a number of other serious comorbidities often present nephrogenic anemia, renal osteodystrophy, malnutrition, blindness, neuropathy, severe atherosclerosis, cardiovascular episodes, and eventually end-stage renal disease and/or heart failure, and death

deterioration to end stage renal/heart disease is life threatening, irreversible and expensive to manage



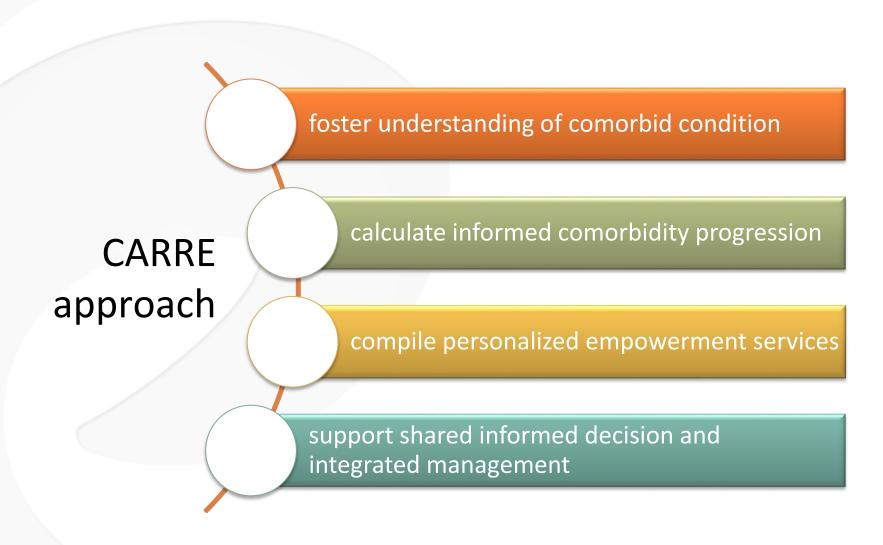


cardiorenal disease & comorbidities

some numbers...

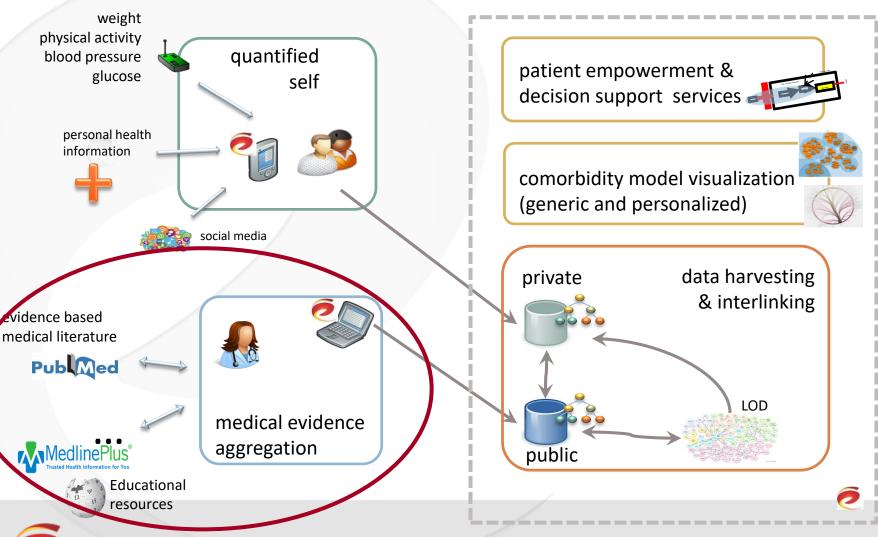
- ♦ hypertension ♥ 1/3 of adults (US 2008)
- ♦ chronic kidney disease ♦ 9-16% of overall population
- 44% of chronic kidney disease is due to diabetes
- ♦ 86% of chronic kidney disease has at least 1 comorbidity
- most patients with chronic kidney disease develop cardiovascular disease
- ⇒ chronic heart failure ⇒ 1-2% of total healthcare costs
- ⇒ end-stage renal disease (dialysis) ⇒ >2% of total healthcare costs





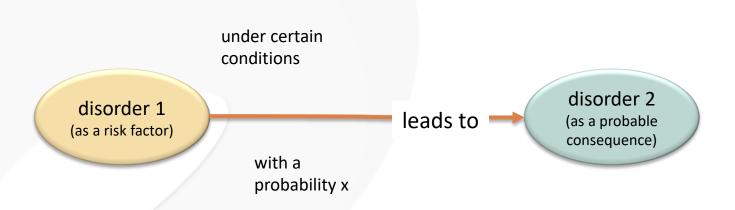


CARRE approach





modelling health risk factors

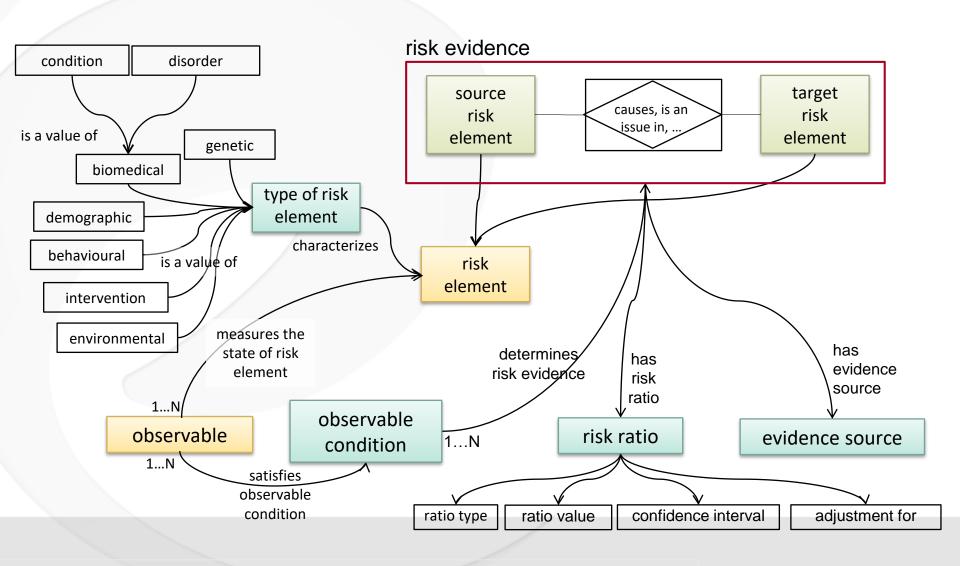


risk factors are reported in medical literature (top level evidence: systematic reviews with meta-analysis)

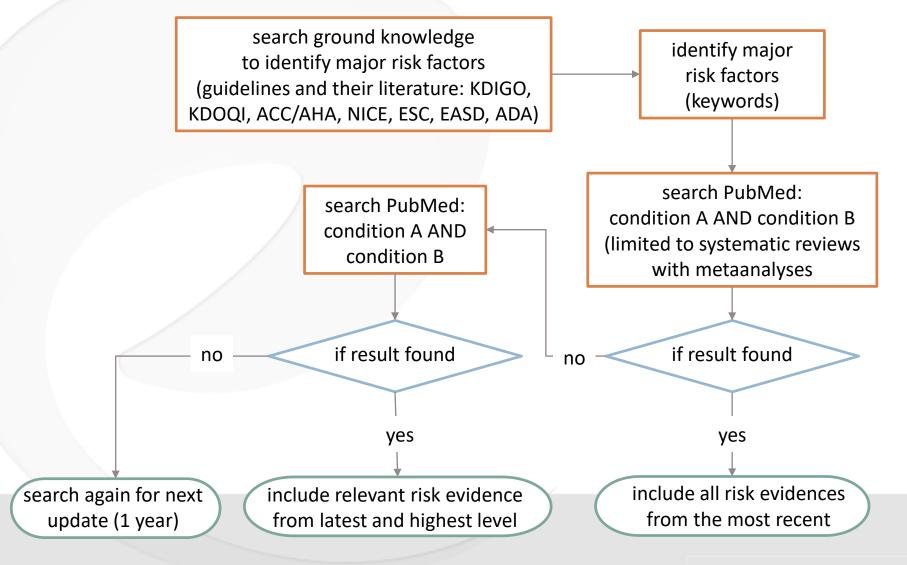
E. Kaldoudi, et al. CARRE D.2.1, 2014



modelling health risk factors



risk factor identification methodology



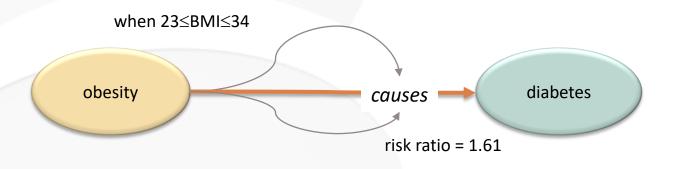
some of the major related conditions

- 1. Acute kidney injury
- 2. Acute myocardial infarction
- *3. Age*
- 4. Albuminuria
- 5. Anaemia
- 6. Angina pectoris
- 7. Asthma
- 8. Atrial fibrillation
- 9. Chronic kidney disease
- 10. Chronic obstructive pulmonary disease
- 11. Cholelithiasis
- 12. Colorectal Cancer

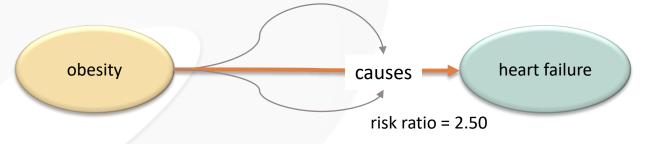
- 13. Coronary and carotid revascularisation
- 14. Death
- 15. Depression
- 16. Diabetes
- 17. Diabetic nephropathy
- 18. Drugs
- 19. Dyslipidemia
- 20. Family history
- 21. Heart Failure
- 22. Hyperkalemia
- 23. Hypertension
- 24. Hyperuricemia
- 25. Hypoglycaemia

- 26. Ischemic heart disease
- 27. Ischemic stroke
- 28. Left ventricular hypertrophy
- 29. Obesity
- 30. Obstructive Sleep Apnoea
- 31. Myocardial infarction
- 32. Osteoarthritis
- 33. Pancreatic Cancer
- 34. Peripheral Arterial Disease
- 35. Physical activity
- 36. Smoking
- *37.* ...

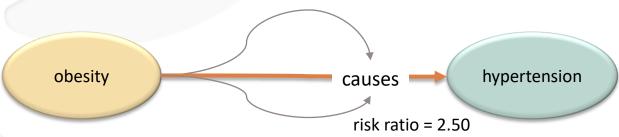




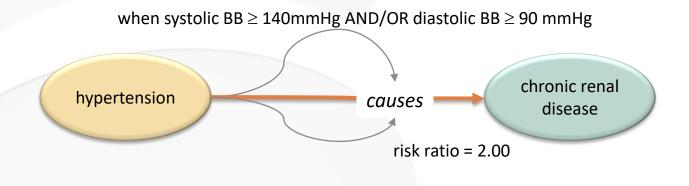
when $25 \le BMI \le 30$ AND sex=female

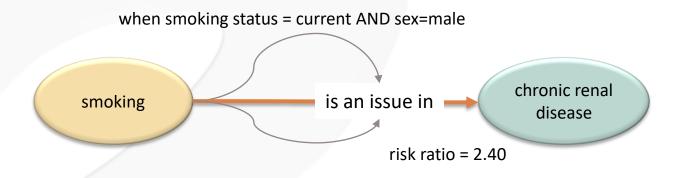


when 99.4 \leq Waist Circumference \leq 106.2 AND sex=male





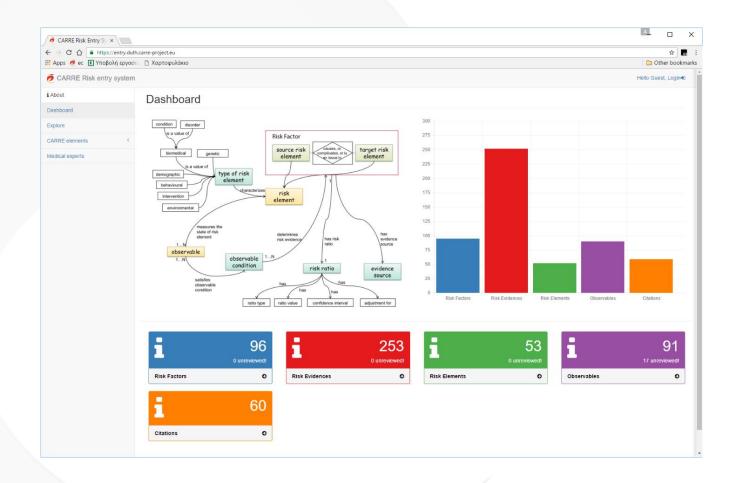




so far... 253 major risk associations (or evidences) identified in medical literature (which involve 53 health conditions and 82 related observables) as included in the CARRE risk factor database and predictive model



https://entry.duth.carre-project.eu/

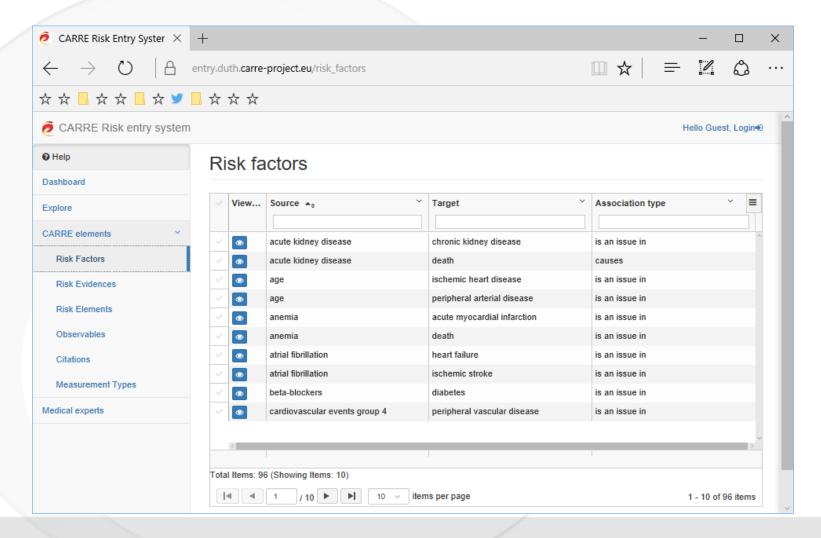




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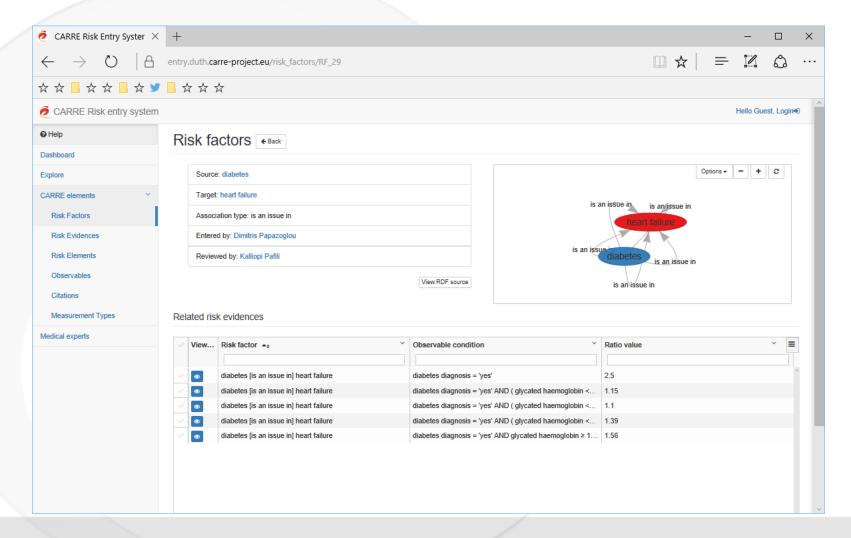


risk factors



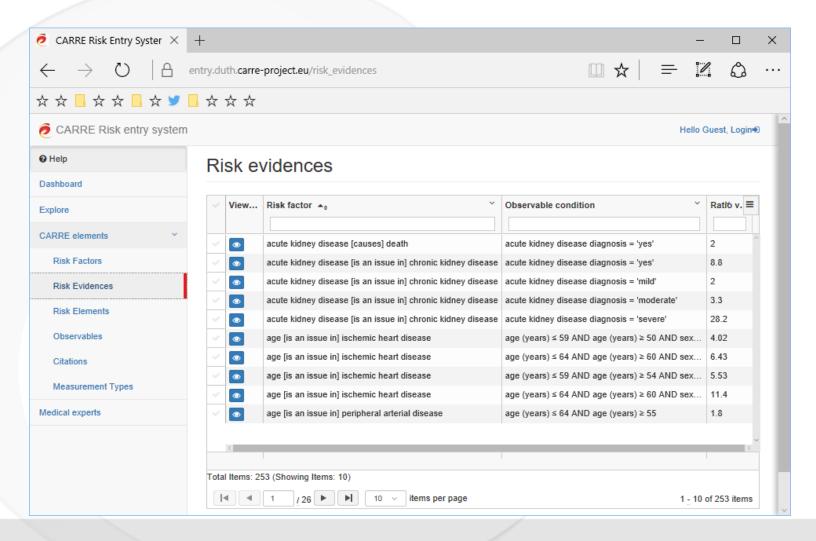


risk factors

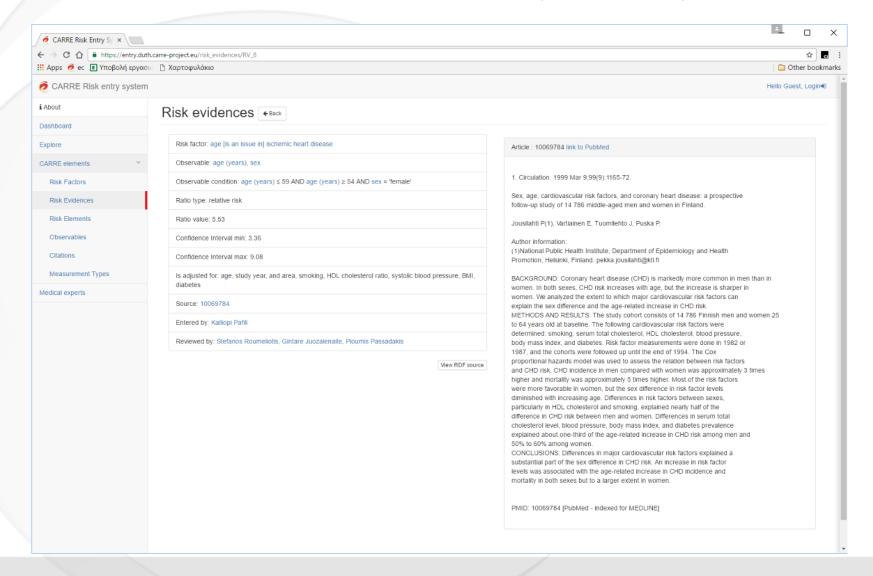




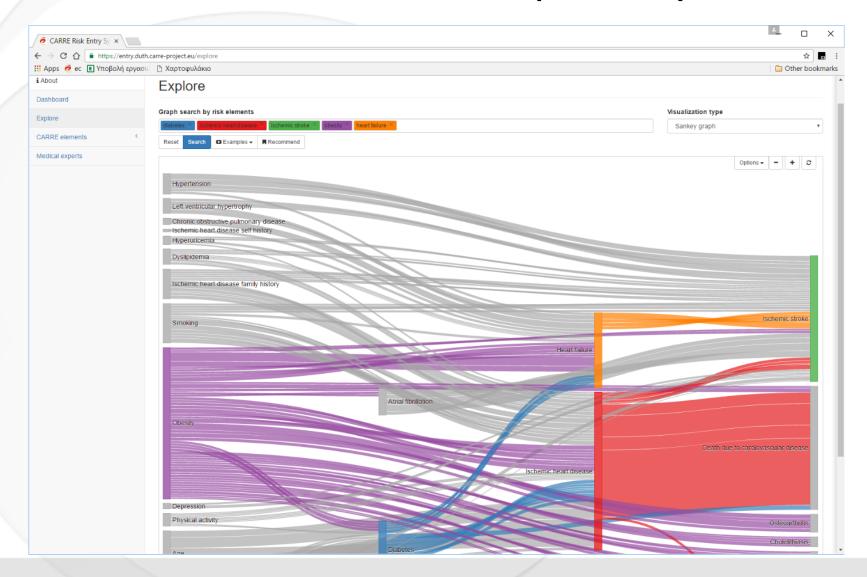
risk evidences



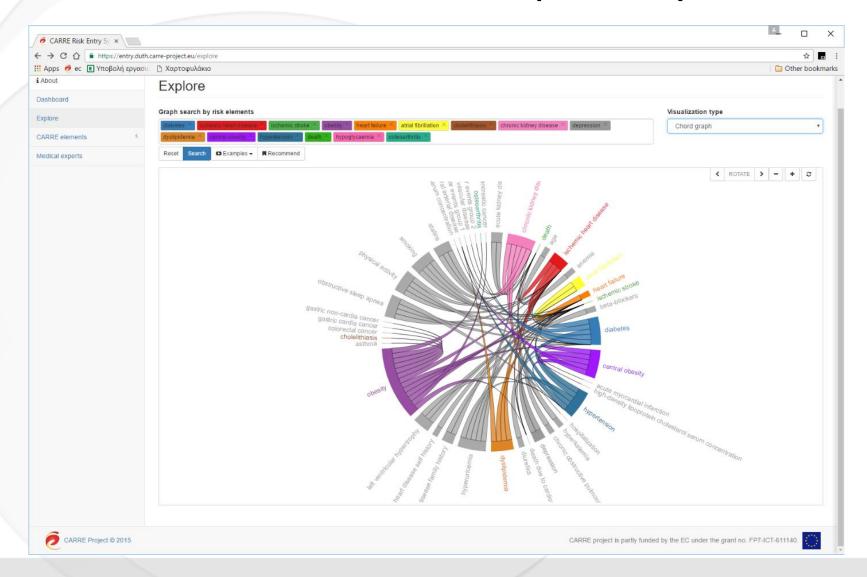




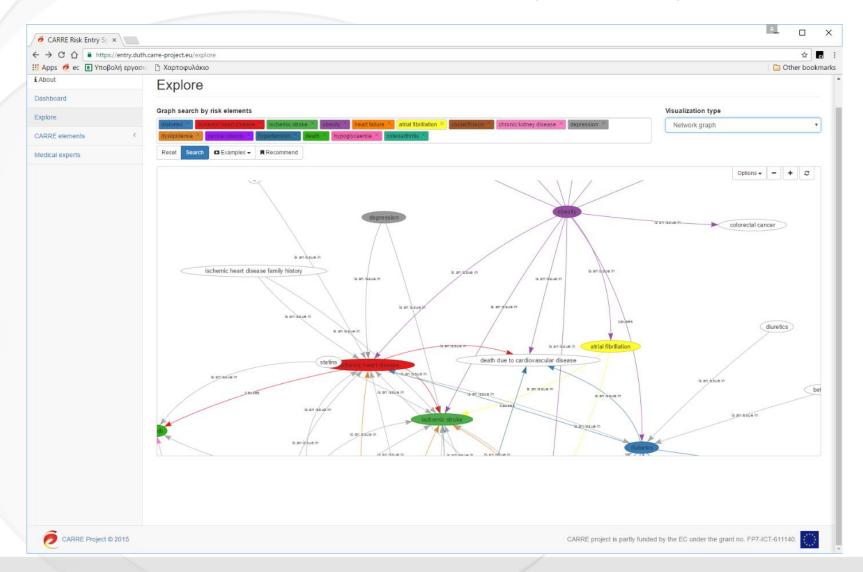






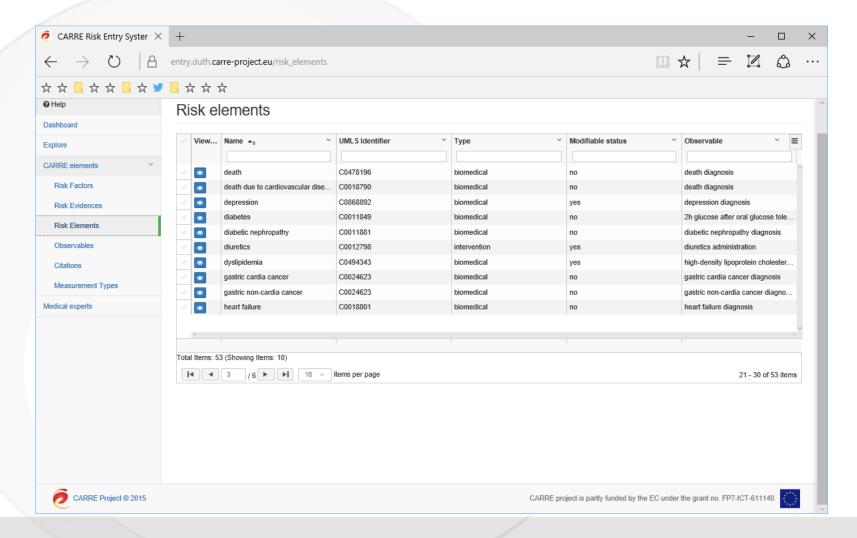






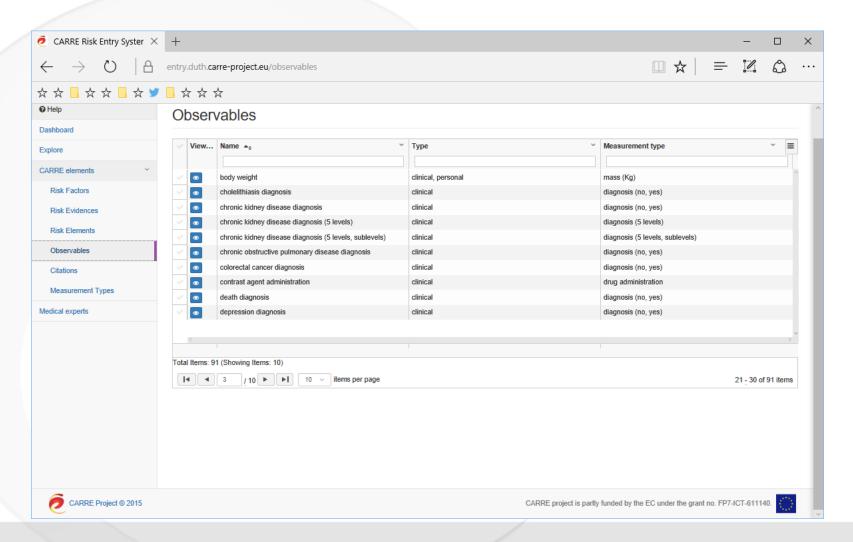


risk elements



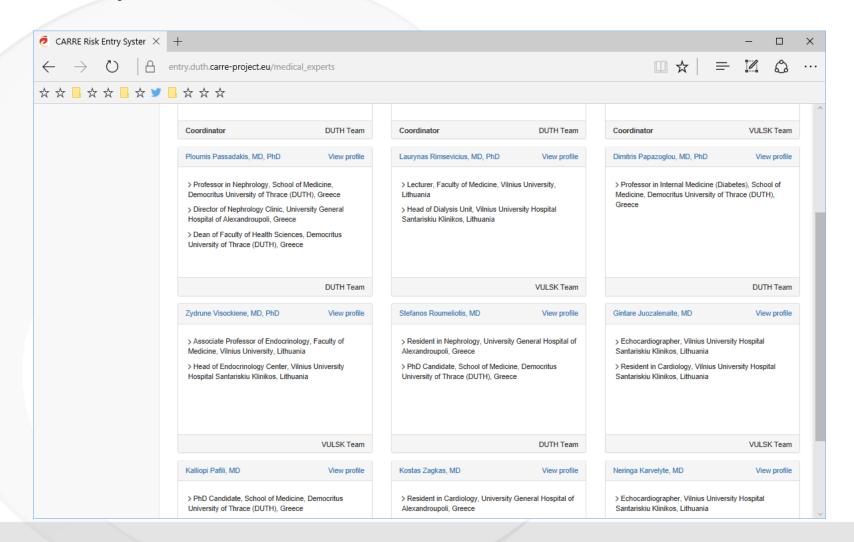


observables



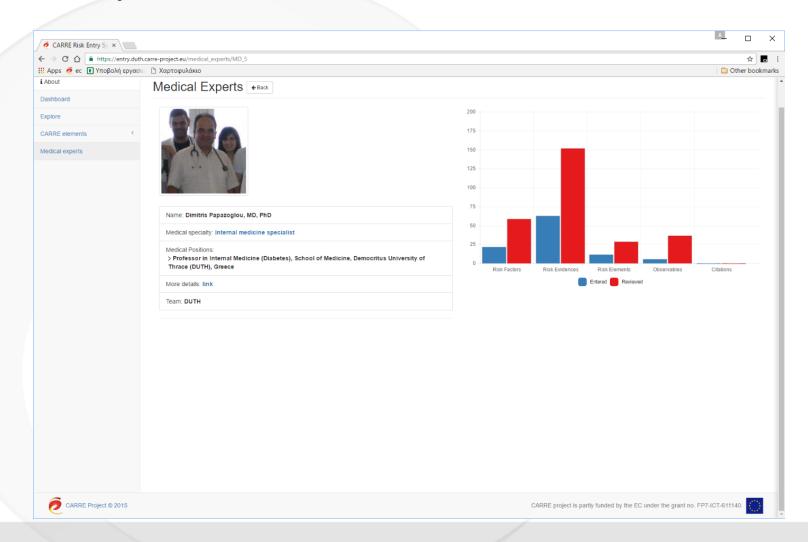


experts





experts





evaluation scenarios and procedure

explore the system

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♥ login
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dashboard – browse and evaluate

explore – visual exploration of the data

study risk evidence – navigate and study risk evidences

by edit data – edit data and insert new evidence

- answer the evaluation survey
- discuss your comments and suggestions



acknowledgment

work funded under project CARRE

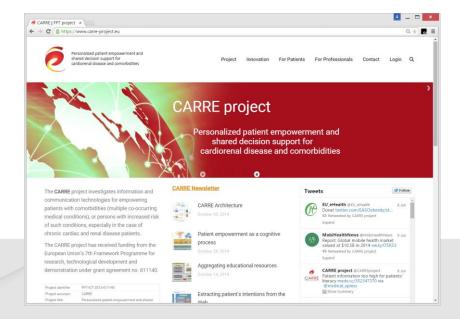
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