

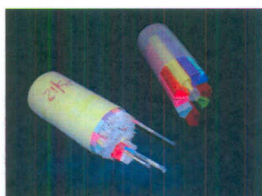
The CNESPS Biobank: a population based resource for epidemiological research in Italy

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THE CNESPS BIOBANK

BACKGROUND

The CNESPS biobank is a collection of biological material, associated to data stored at the National Centre of Epidemiology Surveillance and Health Promotion (CNESPS) of the Istituto Superiore di Sanità (ISS) in Rome. A pilot study on collection of serum samples as a support of population-based survey was conducted in 1987. Since that time the preservation of biological specimens was considered a valuable component of our cohort studies. The objective of the CNESPS biobank is the availability of prospective data collections complemented by biological samples to benefit various research strategies in public health.



METHODS

The CNESPS Biobank stores serum, plasma, buffy coat, packed red cells in liquid nitrogen; 24h-urine, saliva, whole blood, umbilical cord at -80°C; DNA at -30°C. These biological specimens are associated with a large collection of population based data on lifestyle (physical activity, diet, and smoking habit), laboratory assays (haemochrome, lipids, blood glucose) and exams (EKG, spirometry, bone densitometry, MRI), cardiovascular personal and family history. Some exams are repeated over time. Enrolled populations are variously followed for all causes and specific mortality, hospitalization, cancer, coronary and cerebrovascular events and, for part of them, evaluation of physical performance and cognitive function at older age are recorded. Events are validated according to International diagnostic criteria (MONICA, Cancer registries).

Relevant characteristics of the Epidemiological Studies contributing to CNESPS Biobank

ACRONYM	STUDY	POPULATION AT BASELINE	BASELINE YEAR for biological specimens	BASELINE DATA	BIOLOGICAL SPECIMENS	FOLLOW-UP
MATISS	Malattie Aterosclerotiche Istituto Superiore di Sanità	4 municipalities in Central Italy; men and women aged 20-69 years	1993-96	socio-demographic characteristic; lifestyles (diet, smoking, physical activity); risk factors (blood pressure, blood lipids and glucose, BMI); medications; CVD history	serum, plasma, buffy coat, red cells; N=4489	total and cause specific mortality; coronary and cerebrovascular events; cognitive and physical performance; cancers
FINE	Finland Italy the Netherlands Elderly	2 municipalities in Central Italy; men aged 65-85 years	1991	socio-demographic characteristic; lifestyles (smoking, physical activity); risk factors (blood pressure, blood lipids, weight); cognitive function; physical performance	N=391; serum	total and cause specific mortality
MONICA- Area Latina	MONitoring Cardiovascular disease	7 municipalities in Central Italy; men and women aged 25-64 years	1998	socio-demographic characteristic; lifestyles (smoking, physical activity); risk factors (blood pressure, BMI, blood lipids and glucose); medications; CVD family history;	N=800 serum, plasma, buffy coat, red cells	total and cause specific mortality; coronary and cerebrovascular events; cancers
OEC	Osservatorio Epidemiologico Cardiovascolare	52 municipality, all regions covered; men and women aged 35-74 years	1998-2002	socio-demographic characteristic; lifestyles (smoking, physical activity); risk factors (blood pressure, blood lipids and glucose, BMI); medications; CVD family history	N=9712; serum and whole blood	total and cause specific mortality; coronary and cerebrovascular events
OEC/HES	Osservatorio Epidemiologico Cardiovascolare/Health Examination Survey	23 municipality, all regions covered; men and women aged 35-79 years	2008-2012	socio-demographic characteristic; lifestyles (smoking, diet, physical activity); risk factors (blood pressure, blood lipids and glucose, BMI, sodium-potassium intake in 24h urine); medications; CVD family history; cognitive function in ≥65 years	N=9107; serum, plasma buffy coats, red cells, 24h urine	total and cause specific mortality; coronary and cerebrovascular events
IPREA	Italian Project on the Epidemiology of Alzheimer's disease	12 municipalities; men and women aged 65-84 years	2003-2004	socio-demographic characteristics; clinical and subclinical conditions; health and familial diseases history; life-styles; cognitive and disability status; biochemical and anthropometric measures; medications; physical performance; MRI	N=2228; serum, plasma, buffy coat; red cells	incidence and risk factors of the preclinical phase of dementia; transition to dementia; total and cause specific mortality
TWINS	Italian Twins register	whole Italy; twins of all ages	2006 - ongoing	lifestyle (smoking, diet, physical activity); risk factors Blood pressure, blood lipids and glucose, BMI); medications; cognitive function; physical performance	saliva DNA from N=2000 twins; lymphocytes, buffy coat, serum, plasma from 500 twins	
ESEN	European Sero Epidemiology Network	men and women aged 0-99 years	2004	age, sex	N=3500; serum	N.A.
PICCOLI+	Enrolment and epidemiological surveillance of a newborn cohort	newborns and their mothers from 6 Italian birth centers	2011 - ongoing	lifestyle and exposures before and during pregnancy (job, drugs, chemicals, diseases, diet, physical activity, sleeping); social status, education, indoor environment	buffy coat, plasma serum, erythrocytes from 3000 mothers and newborns; umbilical cords and heel blood spots from 3000 newborns	at 6, 12 and 24 months of newborn's age: feeding habit, health status, growth and development, respiratory diseases

CONCLUSIONS

The CNESPS Biobank is available for public health research purposes, under the provision of International ethical guide-lines and the national legal norms regarding personal and sensitive data treatment (Leg.Decree 196/2003); accordingly, informed consent procedures are followed to collect biological materials and personal data. All the projects were approved by the ISS Ethics Board. The CNESPS Biobank power is the possibility to associate the biological samples with a large collection of biological and environmental data of healthy individuals drawn from the general population and prospectively followed. International collaborations have been set up with different studies: MORGAM (MONICA, Risk, Genetics, Archiving and Monograph), BiomarcRe (FP7), GENOME-WIDE, BBMRI and PG3. Sound information are guaranteed on a number of etiological questions.