

## Country report of Cyprus – September 2018



Report by Lambros Kypris, MD, MA  
Cardiologist/Intensivist  
Private Cardiologist – CardioHealth Cardiology Center, Cyprus

National CVD Prevention Coordinator for Cyprus

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**Health care | Risk factors | Prevention methods | Prevention activities | Cardiac Rehabilitation | Future**

### Acknowledgement

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### Baseline information about Cyprus

Cyprus is an island country in the Eastern Mediterranean and the third largest and third most populous island in the Mediterranean. Cyprus is located south of Turkey, west of Syria and Lebanon, northwest of Israel, north of Egypt, and southeast of Greece.

The Republic of Cyprus has de jure sovereignty over the entire island with the exception of the Sovereign Base Areas of Akrotiri and Dhekelia, which remain under British control. However, Cyprus is de facto partitioned into two main parts: the area under the effective control of the Republic, located in the south and west, and comprising about 59% of the island's area, and the north, administered by the self-declared Turkish Republic of Northern Cyprus, covering about 36% of the island's area. Another nearly 4% of the island's area is covered by the UN buffer zone.

The government of the Republic of Cyprus has no access to information concerning the northern part of the island. Therefore, this report refers to those areas of the Republic of Cyprus in which the government exercises active control.

The population of Cyprus is estimated at 947.000 at the end of 2016 compared to 940.100 at the end of the previous year, recording an increase of 0,7% (Statistical Service, Republic of Cyprus 2017). The population of the Government controlled area is estimated at 854.800 at the end of 2016, compared to 848.300 at the end of 2015, recording an increase of 0,8%.

### I. Structure of Health care

The health system in Cyprus is comprised of two healthcare delivery systems of similar size: the public and the private sectors. The public health system is highly centralised and exclusively financed by the state budget. Healthcare services in the public sector are directly controlled by the Ministry of Health and provided through a network of public hospitals, healthcare centers, subcenters and dispensaries in the form of primary health care, specialists' services, paramedical services, emergency services, hospital care,

pharmaceutical services, dental care, rehabilitation and home care. The public system suffers from long waiting lists for a range of services, including surgery and diagnostic tests, and access for specific groups, such as uninsured illegal immigrants, is problematic. Additionally, coverage in certain services including dental care, long-term care, rehabilitation care and palliative care is limited.

Reference: [Country Cooperation Strategy \(CCS\): WHO-Cyprus](#)

The private system, on the other hand, is practically completely separate from the public health system, largely unregulated by the Ministry of Health and mostly financed by out-of-pocket payments. The private sector suffers from an uncontrolled deployment of high-cost medical technology, an oversupply of private practitioners and poor organisation. Supplementary, data and documentation regarding the private system's performance is sparse, given the absence of a universal electronic medical record system to facilitate coordination, continuity of care, and quality improvement.

The number of physicians has increased every year and by 2015 there were 3.6 physicians per 1000 population and 342 beds in hospitals per 100 000 population. Today there are 164 members listed in Cyprus Society of Cardiology including 7 cardio surgeons and 6 paedocardiologists (corresponding to 17 cardiologists per 100 000 inhabitants).

## **Finances**

Unlike in most other countries in the EU, not all of the population is covered by the publicly funded health system. Entitlement to free services is mainly dependent on annual income levels, with the eligibility threshold varying according to the number of dependents. There are also varying eligibility criteria related to chronic diseases. Although exact numbers are not available, around 25% of the population is not covered by the public system. These non-beneficiaries can access all public services by paying fees set by the Ministry of Health, though this is uncommon and most of them visit the private sector.

The present public system is mainly funded through general taxation. Public spending as a share of total health expenses (42.6% in 2015) is the lowest in the EU. Since joining the EU in 2004, each year Cyprus has allocated less of its government budget to health (7.1% of total public expenditure in 2015) than any other EU Member State. As of 2015, total health spending per capita was EUR 1592, which is below the expenditure levels before the financial crisis and well below the EU. As a result, the Cyprus health system is largely financed through out-of-pocket expenditures (49% in 2012).

## **ESTABLISHING A NEW NATIONAL HEALTH SYSTEM**

Major health system reform that would provide universal health care coverage has been mooted since the early 1990s. Although the legal foundation for the new national health system was agreed by the Parliament in 2001 and a Health Insurance Organization tasked with administering the new system has been established, full implementation has been continuously delayed due to uncertainty regarding the costs, contribution rates, financial and administrative autonomy of public hospitals and involvement of private insurers.

Reference: [State of Health in the EU – Cyprus/Country Health Profile 2017](#)

The reform program and timetable were finally agreed by the major parties and the President in July 2016, and parliamentary approval followed a year later. Implementation of the new Health Care System, regarding the primary care, is anticipated to begin in June of 2019.

The proposed National Health System's main characteristics are:

- Financing resources originating in contributions from the Employers, Employees, Self-Employed, Pensioners, Income-earners and the Government,
- Procurement of healthcare services from both the public and private sectors,
- Patient freedom of choosing healthcare service provider,
- Implementation of the Family Doctor concept,
- Financial self-sustainability through the establishment of the Health Insurance Fund,
- Global Budgeting (expenses will not exceed contributions) and providers pricing readjustment mechanism, and
- Universal Coverage.

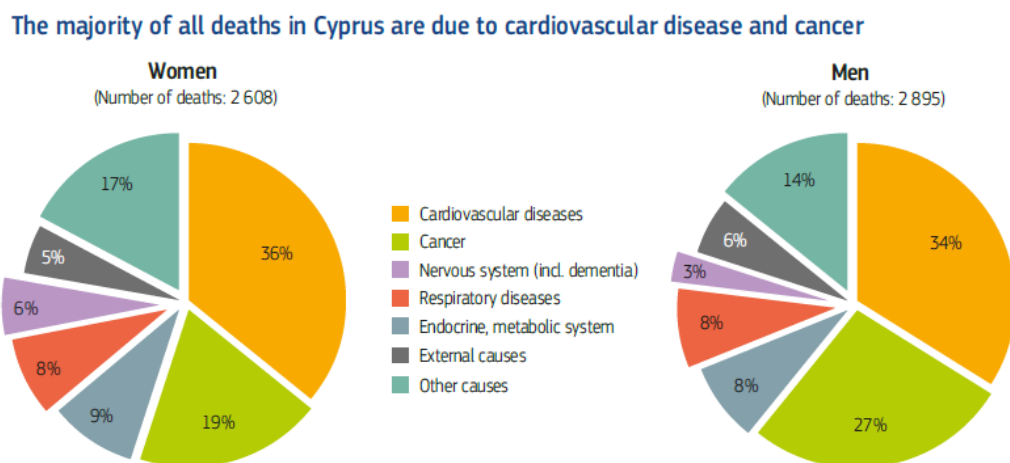
Reference: <http://www.hio.org.cy/en/strategy.html>

## II. Risk factor statistics

### CVD Mortality

In 2015, life expectancy at birth was 81.8 years (EU average 80.6), the seventh highest among all EU countries. Long life expectancy in Cyprus can be mainly attributed to reductions in mortality due to cardiovascular diseases, including heart diseases and stroke. Despite these improvements, cardiovascular diseases remain the main cause of death (36% among women of and 34% among men). (Fig. 1)

Fig 1:



**Note.** The data are presented by broad ICD chapter. Dementia was added to the nervous system diseases' chapter to include it with Alzheimer's disease (the main form of dementia).

**Source:** Eurostat Database (data refer to 2014).

### Diabetes mellitus

There has been a notable increase in the number of deaths due to diabetes over the past decade, making up 7% of all deaths in 2014 (Fig. 2). In 2014 the prevalence of diabetes was 8.9% in males and 6.7% in females (7.8% in total). Although, in recent years, there was an increase in age standardised prevalence of diabetes in males, the trend was stable in females (Fig. 3).

Reference: [http://www.who.int/diabetes/country-profiles/cyp\\_en.pdf?ua=1](http://www.who.int/diabetes/country-profiles/cyp_en.pdf?ua=1)

Fig 2:

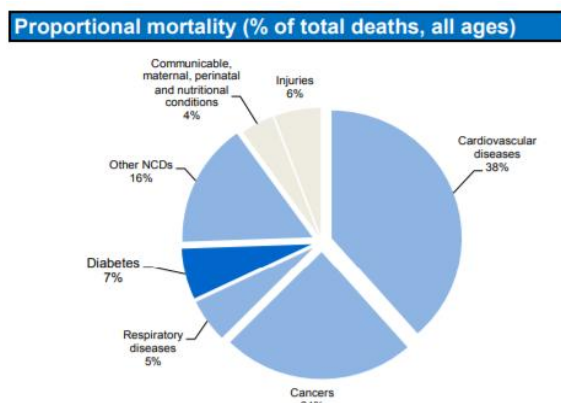
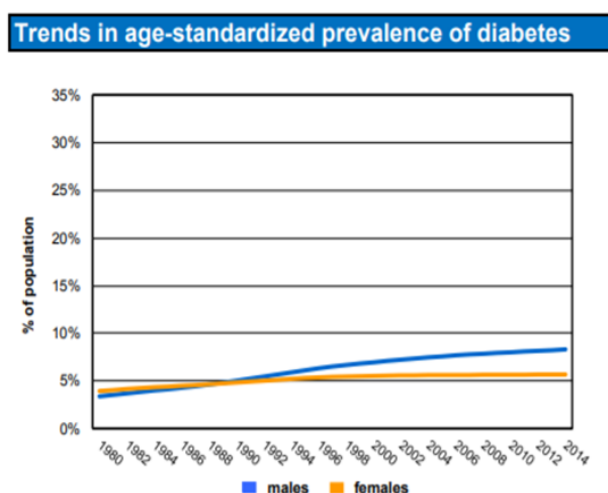


Fig 3:



Source Fig 2 and 3: [World Health Organization – Diabetes country profiles, 2016](http://www.who.int/diabetes/country_profiles).

## Smoking

The percentage of daily smokers in Cyprus in 2014 remains well above the EU average (25.2% in Cyprus versus 21% for the EU average) and fourth highest overall (Fig. 4). Men (38%) are more likely to smoke than women (14%) and as opposed to most EU member States, smoking rates in Cyprus are generally higher among the highly educated (Fig. 5)

Fig. 4:

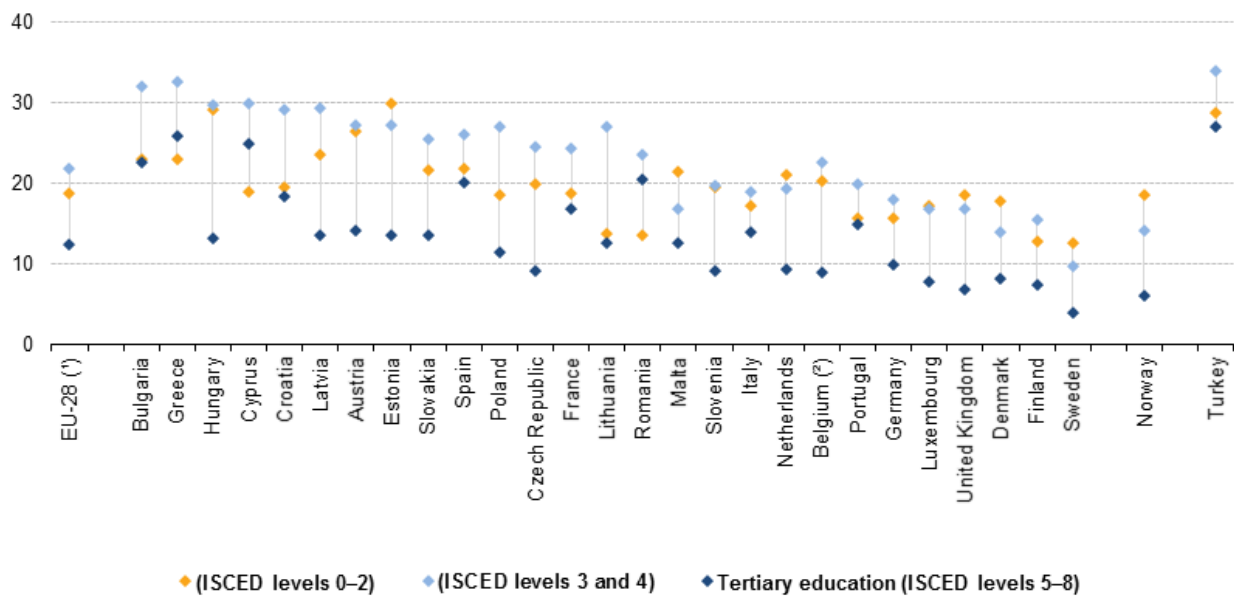
	Total	Men	Women	Gender difference (percentage points)
	(% )			
EU-28 (*)	18.4	21.9	15.1	6.8
Belgium (*)	16.8	18.5	15.3	3.2
Bulgaria	27.3	35.4	19.9	15.5
Czech Republic	21.2	27.1	15.6	11.5
Denmark	12.3	12.6	11.9	0.7
Germany	15.0	16.4	13.6	2.8
Estonia	22.7	31.8	15.0	16.8
Ireland	.	.	.	.
Greece	27.0	33.3	21.3	12.0
Spain	22.2	26.2	18.5	7.7
France	20.5	22.9	18.3	4.6
Croatia	24.5	28.8	20.5	8.3
Italy	17.4	21.6	13.4	8.2
Cyprus	25.2	37.3	14.0	23.3
Latvia	24.1	36.0	14.5	21.5
Lithuania	20.2	33.6	9.2	24.4
Luxembourg	13.8	15.6	12.0	3.6
Hungary	25.8	31.6	20.7	10.9
Malta	18.9	21.4	16.5	4.9
Netherlands	17.2	18.9	15.6	3.3
Austria	23.9	26.0	22.0	4.0
Poland	21.9	27.8	16.6	11.2
Portugal	16.3	22.7	10.7	12.0
Romania	19.8	32.2	8.3	23.9
Slovenia	18.0	20.6	15.6	5.0
Slovakia	22.6	30.0	15.6	14.4
Finland	11.6	12.7	10.5	2.2
Sweden	8.7	7.5	9.8	-2.3
United Kingdom	13.7	14.4	13.1	1.3
Norway	12.5	12.7	12.3	0.4
Turkey	27.2	41.7	13.1	28.6

(\*) Estimates.

(\*) Data with low reliability.

Source: [https://ec.europa.eu/eurostat/statistics-explained/index.php/Tobacco\\_consumption\\_statistics](https://ec.europa.eu/eurostat/statistics-explained/index.php/Tobacco_consumption_statistics)

Fig 5:



Note: ranked on the overall proportion of daily smokers. 2014 data for Ireland not available.  
 ISCED levels 0-2 (Pre-primary, primary and lower secondary education)  
 ISCED levels 3 and 4 (Upper secondary and post-secondary non-tertiary education)  
 ISCED levels 5-8 (Tertiary education)

(\*) Estimates.

Source: [https://ec.europa.eu/eurostat/statistics-explained/index.php/Tobacco\\_consumption\\_statistics](https://ec.europa.eu/eurostat/statistics-explained/index.php/Tobacco_consumption_statistics)

## Obesity

Obesity is a significant health problem in Cyprus. 15.6% of the adult population is obese, which is the average across EU countries. Particularly alarming is the data on childhood obesity, where more than 25% of adolescents aged 12 to 17 in Cyprus are overweight or obese. Moreover, there has been a marked increase in the prevalence of obesity over a decade (2000 to 2010) mainly in rural areas and among school-aged boys.

Reference: Savva, S.C. et al. (2014), "Overweight and Obesity Prevalence and Trends in Children and Adolescents in Cyprus 2000-2010", Obesity Research & Clinical Practice, Vol. 8, pp. e426-e434

Adulthood obesity prevalence forecasts (2010-2030) predict that in 2020, 25% of men and 21% of women will be obese.

## Physical inactivity – Dietary Considerations

According to estimates generated by WHO, 59.9% of the Cypriot population aged 15 years and over are insufficiently active (men 49.3% and women 63.8%).

Reference: WHO Global Health Observatory Data Repository [online database]. Geneva, World Health Organization, 2013

Cyprus had a fruit and vegetable supply of 616 grams per capita per day, according to 2009 estimates (WHO/FAO recommendation of >600 grams), whereas data from 2005–2008 show that salt intake in Cyprus was 5.0 grams for both men and women (WHO/FAO recommendation of <5 grams).

### **Hypertension**

Based on self-reported data from the European Health Interview Survey (EHIS), more than one in six people 15 years or over in Cyprus have hypertension. According to WHO the prevalence of hypertension in the Cypriot population is 31.2% in males and 21.3% in females (26% total).

Reference: World Health Organization - Non-communicable Diseases (NCD) Country Profiles, 2014

### **Hypercholesterolemia**

Consistent data regarding the prevalence of hypercholesterolemia in Cyprus is lacking. Although a small-scaled study (1) found that in the elderly the prevalence of hypercholesterolemia (defined as total cholesterol > 200 or use of lipid lowering drugs) was 65%, the actual prevalence in the Cypriot population is estimated at 14% (2).

References:

- 1) Polychronopoulos E et al, Diet, lifestyle factors and hypercholesterolemia in elderly men and women from Cyprus, *Lipids Health Dis.* 2005 Sep 6;4:17
- 2) <https://kypseli.ouc.ac.cy/handle/11128/1452?show=full>

### **PCI resources**

There are seven Percutaneous Coronary Intervention (PCI) capable centers in Cyprus, two in the public and five in the private sectors, located in only two of the five major cities of the country – four in Nicosia and three in Limassol. This has created geographic imbalances and access barriers with excess PCI centers relative to need in some regions and inadequate access in others. All the above PCI centers provide primary PCI services.

### III. Main actors and Prevention methods

The main actors of CVD prevention in Cyprus are:

- The Cyprus Ministry of health
- The Cyprus Society of Cardiology
- Primary care physicians
- Cardiac centers of the private and public sector

#### Who delivers?

Primary cardiovascular prevention is mainly provided by general practitioners, internal medicine specialists and cardiologists. The majority of general practitioners are employed by the public health care system, where they work at primary care facilities. There are no dedicated units focused on cardiovascular prevention in the public health system.

The role of the GP is to identify cardiovascular risk factors, make provisional diagnosis, treat the emergency cases and refer the patient to the secondary or tertiary centers, private or public, according to the patient's choice.

Unfortunately, primary care general practitioners face a lot of difficulties in trying to accomplish a holistic approach for a preventing program of CVD. The main barriers are: firstly, the lack of time due to the large number of patients visiting the primary healthcare centers (the year 2016, there were 929 000 visits in the General Practitioners of the public health system accounting at 51.7% of the total visits) and secondly, the scarcity of continuous specialised training in the field of CVD prevention care. The general practitioners should be more actively elaborate in the prevention of CVD in every day practice. In order to accomplish this objective, they need better training concerning prevention strategies and treatment of CVD disease. They should also be able to devote more time for prevention through every day practice.

The primary prevention at the private sector is mostly provided by cardiologists, internal medicine specialists and physicians specialized in diabetes. Due to the better education endorsed by these physicians and more available time dedicated per patient, the prevention measures for CVD may be established more effectively.

In addition, primary prevention programs for CVD disease are provided by school health services. Health visitors, on the basis of their specialised professional and technical skills, work either as autonomous or in coordination with pediatricians in the field of health promotion. They educate students about healthy lifestyle issues.

Secondary prevention is mainly provided by cardiologists and internal medicine specialists both in the private and public health systems.

The Cyprus Society of Cardiology (CSC) was founded in 1977 and plays an essential role in CVD prevention. It is run by a board of directors which consists of 9 members and its term runs for 2 years. There are currently 164 members. CSC is the recognised scientific body in Cyprus in the field of cardiology and has been a member of the European Society of Cardiology since 1980 and the International Society of Cardiology since 1981. The society organises campaigns, seminars and conferences (local and international) in order



to educate physicians involved (cardiologists, general practitioners, internal medicine physicians) and to raise awareness about the prevention of CVD.

### **Where?**

The prevention of CVD is taking place in the primary health care system, which falls under the responsibility of the Ministry of Health, as well as in the private sector (private polyclinics, clinics or cardiologists at private practice). Secondary prevention is carried out in hospitals and private clinics. The public hospital services mostly gather the treatment of critically ill patients and the hospital care. In most cases secondary prevention is handled on out-patient basis at the out-patient departments of public hospital or at private units.

### **Guidance**

The [European Guidelines on Cardiovascular Disease Prevention in Clinical Practice](#) are endorsed by the Cyprus Society of Cardiology. The Society supports their wide spread promotion and implementation in daily practice. There are no national CVD Prevention guidelines published in Cyprus and as a result the majority of cardiologists abide by ESC guidelines.

### **Quality control**

Currently in Cyprus there is no official body responsible for the evaluation and monitoring of the results of National cardiovascular prevention. At present there is the Health Monitoring Unit established by the Ministry of Health, which focuses on the health surveillance of the local population. Its responsibilities include the collection, analysis and dissemination of data as well as the observation of different trends in health indicators.

## IV. Main Prevention activities

### Campaigns

The Cyprus Society of Cardiology (CSC) is the main driver for the organisation of the "World Heart Day" in Cyprus. A variety of activities involving preventing issues of CVD are taking place during the "World Heart Day". They include radio and TV appearances by cardiologists who speak about the preventing measures of CVD, promotion of associated articles, public awareness activities such as press releases and photographic-related material to sensitize citizens about the risk factors of CVD. A campaign on Facebook was also carried out, with posts including CVD-related articles, information about the CSC, announcements concerning the main activities in the framework of "World Heart Day", as well as TV and radio clips prepared by the members of the Society. The framework of "World Heart Day" also includes the calculation of body mass index, the measurement of blood pressure and glucose levels, and the determination of cardiovascular risk.

The "Heart failure awareness day" is also organised by the CSC with analogous activities. Similar campaigns are also performed by other organisations such as the Cyprus Society of Hypertension (World Hypertension day), the Cyprus Pulmonary Society (World No Tobacco Day) and the Cyprus Diabetes Association (World Diabetes Day).

The role of the Cyprus Cardiac Patients Association is also essential in raising awareness and sensitizing the citizens regarding CVD. It also provides social and financial support.

The Cyprus volunteer's doctor's organization is a non-governmental, non-profit voluntary organization with the aim to provide free services in all aspects of medicine including the implementation of preventive measures for CVD.

### Projects

The projects regarding the prevention of CVD are mainly focused on diabetes, tobacco control measures and the promotion of healthy lifestyle among children and adolescents.

During the year 2016 the Council of Ministers of Cyprus approved the latest diabetes strategic plan. The plan was organised by all related stakeholders such as representatives of the International Diabetes Federation, patients' organizations, universities, scientific societies and associated ministerial departments. The plan is coordinated by the Ministry of Health and it is based on 5 pillars:

1. prevention and health promotion
2. diagnosis and treatment
3. rehabilitation services
4. research and documentation
5. diabetes registry

Reference:

<http://www.euro.who.int/en/countries/cyprus/news/news/2016/04/cyprus-approves-a-new-diabetes-strategic-plan>

In this framework the Cyprus Ministry of Health organises training programs for nurses, doctors and clinical dietitians regarding diabetes in coordination with the public centers of diabetes in all provinces of Cyprus.

The national strategy for tobacco control falls under the umbrella of the Cyprus Ministry of Health Reference:

<https://www.moh.gov.cy/Moh/MOH.nsf/All/3559BA3C98A56F4BC2257A4C001D8A4A?OpenDocument> (only available in Greek).

During the period 1997-2009, the Ministry of Health took measures for tobacco control. The main legislative changes that were made are consistent with the European Directives 1989/622, 2001/37, 2003/33. A ban was imposed on tobacco advertisements at the following media outlets: TV, cable TV, radio, cinema or other services of information society. Since January 2010 smoking is forbidden in recreational areas, closed public places, and health care establishments. Cyprus citizens have the opportunity to get information for smoking cessation through a free telephone line (1431). The Cyprus National Addictions Authority also plays an essential role for the implementation of preventive measures on behalf of smoking control.

The Research and Educational Institute of Child Health represents Cyprus in the European Research Program IDEFICS. The program has a total duration of 5 years and aims at changing dietary habits in preschool and school aged children. The focal point is the prevention of chronic diseases such as obesity and hyperlipidemia. At this stage, the basic evaluation of the participants is carried out with a special protocol. The program includes 25 universities from 9 European countries.

The above Institute also participated in the following projects:

- The Porgrow program which investigated the factors that were associated with obesity in children. The project was funded by the European Union with the participation of nine European countries.
- The epidemiology of smoking in Cyprus and its effects on health.
- Participation in a research program which evaluated the association of socio-economic factors with the students' health level.

Reference: Research and Educational Institute of Child Health, available at <http://www.childhealth.ac.cy/> (in Greek only)

### **Education:**

The education system in Cyprus is dominated by three public universities (The University of Cyprus, The Open University of Cyprus and The Cyprus University of Technology) and four private universities (European University, Frederick University, University of Nicosia and Neapolis University).

There are 3 medical schools (two in private universities and one in a public university). The different aspects in the field of CVD prevention are included in the curricula of medical universities.

A postgraduate program in family medicine is running at the University of Nicosia. No postgraduate programs in cardiology have been implemented yet.

## V. Cardiac Rehabilitation (CR)

Cardiovascular Rehabilitation (CR) is not well established in Cyprus due to the lack of specialised centers, specialised programs and organised multidisciplinary teams.

A multidisciplinary approach considered to stabilize, slow, or even promote regression of CVD is the key component for a successful CR. Unfortunately this approach needs a lot of efforts in order to become a reality in our country. CR is recommended after cardiovascular surgery and after acute myocardial infarction stable coronary artery disease, heart failure, peripheral arterial disease, and arterial hypertension.

### **By whom and how**

To address the inadequate availability of CR in Cyprus, coordinated efforts through a National Program of prevention and control of cardiovascular diseases, are required. This National program should embrace actions for the initiation of rehabilitation programs.

The core elements of CR include initial evaluation of patients, physical activity training and counselling, nutritional counselling, management of risk factors (i.e., dyslipidemia, hypertension, obesity, diabetes mellitus, and smoking), as well as psychosocial interventions and counselling.

At this time CR referral is provided sporadically by cardiologists of the private sector. The absence of an expert multidisciplinary team for CR, to be provided free of charge in the public health system, is one of the main barriers for the establishment of a successful CR program. The cardiologist is the main doctor who is responsible for the baseline assessment of the patients as well as for the coordination of the patient's follow up and the linkage with other experts such as dietitians, physiotherapists etc. A basic program of CR is provided free of charge by the Cyprus Cardiac Patients Association in the Nicosia area.

The implementation of CR in Cyprus constitutes a pressing need, as the CVD is one of the main causes of morbidity and mortality. The EAPC expertise may contribute to achieve effective CR programs. The organisation of CR courses for cardiologists in all provinces of Cyprus (public and private sector) should be the first step. Secondly, the coordination of cardiologists with other experts associated with CR would be essential for the gathering of experts' groups. The creation of such trained groups in the core elements of CR may support CR provision through the country. Inpatient and outpatient groups through the public and private sectors both need to be well organized. The establishment of a holistic approach for CR could assist the reduction of CVD disability.

The World Health Organization (WHO) defines CR as the "sum of activities required to influence favorably the underlying cause of the disease, as well as to provide the best possible physical, mental and social conditions, so that the patients may, by their own efforts, preserve or resume when lost, as normal a place as possible in the community".

Under the light of this definition a lot of steps are required in order to pose CR at the forefront of care.

## VI. The Future

The Cyprus Society of Cardiology in collaboration with public health services and the Cyprus Cardiac Patients Association, have great potential in accomplishing a high quality level of CVD prevention.

Cyprus is the only country in the European Union without a universal National Health System (NHS). Currently, a national health system has been voted by the Parliament in order to provide universal coverage within an integrated, socially oriented, accessible health system.

Under the light of the impending major changes in the health system in Cyprus, an improvement in CVD prevention is expected to be achieved.

The principal actions for the 5 next years are:

- Assessment of the main obstacles to CVD prevention on different levels and mainly the level of patients, health care system and structural.
- Improvement of the health monitoring unit. This unit was recently established in Cyprus for the epidemiological surveillance of causes of mortality. The expanding of such unit for the registry of non-communicable diseases including CVD is a priority. This will contribute to the monitoring of alternative trends of CVD.
- Strengthening of the institution of the national coordinator.
- The continuing education of general practitioners in the field of cardiovascular disease needs to be reinforced in a systematic manner. Seminars and postgraduate programs in the sphere of CVD should be organized.
- Cardiac rehabilitation needs to be structured and established properly. The organization of cardiac rehabilitation programs across all provinces of Cyprus is a priority and must be included in the promoted NHS. Proper education in coordination with the establishment of cardiac rehabilitation units, is necessary.
- Organization of campaigns to raise public awareness on CVD, in a systematic manner through the year.
- Establishment of national guidelines for the prevention and treatment of CVD.
- Implementation of action plans promoting the adoption of a healthy lifestyle (healthy diet and regular physical activity) for Cypriot citizens. Prevention of childhood obesity , controlling diabetes and implementation of a smoking ban in open public places such as parks.