

## Country report of Luxembourg – January 2019



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[Health care](#) | [Risk factors](#) | [Prevention](#) | [Prevention activities](#) | [Cardiac Rehabilitation](#) | [Future](#)

## The Country

**Luxembourg**, officially the **Grand Duchy of Luxembourg**, is a small landlocked country in Western Europe. It is bordered by Belgium to the west and north, Germany to the east, and France to the south. Its capital, Luxembourg City, together with Brussels and Strasbourg, is one of the three official capitals of the European Union and the seat of the European Court of Justice, the highest judicial authority in the EU.

With an area of 2,586 square kilometres (998 sq mi), it is one of the smallest sovereign states in Europe. In 2018, Luxembourg had a population of 602000, which makes it one of the least-populous countries in Europe, but by far the one with the highest population growth rate. Foreigners account for nearly half of Luxembourg's population. As a representative democracy with a constitutional monarch, it is headed by Grand Duke Henri and is the world's only remaining grand duchy. Luxembourg is a developed country, with an advanced economy and one of the world's highest Gross Domestic Product [GDP] (PPP) per capita.

## I. Health care

Luxembourg has by far the most expensive health system in Europe

Since 2012 per capita spending has consistently been the highest in the EU and was 82% higher than the EU average in 2015. However, as a share of GDP, Luxembourg spent significantly less on health than most other EU countries (6.0% compared to 9.9% of GDP in EU), which reflects its strong economic performance.

The Luxembourg health system provides good quality-care and has made a major contribution to improving population health. Life expectancy in Luxembourg is among the highest in the EU and amenable mortality rates are among the lowest. The principle of compulsory social security system is funded by the contributions of insured persons and contributions from Governments. Contributions are paid to the common center of the social security (CCSS).

To ensure that the benefits of health care for Nationals (consultations, medical procedures, visits) give rise to a refund, they must be:

- Provided by a service provider who signed an agreement with CNS (Caisse Nationale de Santé)
- Provided for in the statutes of the CNS
- Be entered in the nomenclature of acts or a price list.

In general, these services are reimbursed by the CNS to the insured after advance payment.

On the other hand, hospital costs, costs of laboratories and pharmacies fees are paid directly between the provider and the NSC according to the system of the third party payment.

In this case, the insured is required to pay only its statutory participation, i.e. the portion of the expenses not supported by insurance.

Nearly all doctors in the country are self-employed and are paid by fee-for-service, irrespective of whether they practice in hospital or in their own outpatient practice. Only physicians working in the "Centre Hospitalier du Luxembourg" (CHL) and two other inpatient facilities are salaried by the hospital.

## **Mortality Rates and Life expectancy in Luxembourg**

Life expectancy at birth in Luxembourg is among the highest in Europe. It increased by more than four years between 2000 and 2015, to 82.4 years, which is nearly two years above the EU average. Similar to other Member States, a substantial gap persists between men and women, with men (80.0) living, on average, nearly five years less than women (84.7 years). Most of the gains in life expectancy in Luxembourg since 2000 have been after the age of 65, with the life expectancy of women at age 65 reaching 21.8 years in 2015 (up from 20.1 years in 2000) and that of men reaching 18.9 years (up from 15.5 years in 2000). At age 65, men can expect to live approximately 11 years of their remaining years free of disability, while women can expect to live only nine years of their remaining years in good health.

## **Hospitals**

4 Acute Hospitals	2290 beds
2 Acute Speciality Hospitals	
Cardiosurgery and Interventional cardiology	27 beds
Radiotherapy	
1 Physical Rehabilitation (Neuro/Traumato)	177 beds
1 Mental health	227 beds
Total	2746 beds

## **Cardiologists**

**78**

## II. Risk factors

Behavioural risk factors – smoking, drinking and obesity – are important challenges for the health system and reveal substantial inequalities according to education and income status. Preventable mortality indicators reveal a mixed picture of the effectiveness of prevention policies and suggest that these can be improved further.

A comprehensive set of health strategies, targeted health promotion and prevention activities aims to address these risks through raising awareness and public health campaigns. However, careful monitoring will be needed to demonstrate the effectiveness of these programmes and to detect health inequalities within the population.

### **Behavioural risk factors are a major public health issues in Luxembourg:**

Data from the Institute for Health Metrics and Evaluation (IHME) estimate that slightly over 25% of the overall burden of disease in Luxembourg in 2015 (measured in terms of DALYs) could be attributed to behavioural risk factors – including smoking, alcohol use, diet, and physical inactivity, with smoking and dietary risks contributing the most (IHME, 2016).

### **Smoking rates and alcohol consumption continue to decline but binge drinking is a problem:**

The share of regular smokers among adults in Luxembourg has decreased sharply by nearly 8 percentage points since 2005, and is now among the lowest (15.3%) in the EU (2014). This decline was less pronounced for 15-year-olds, in particular for girls. Nearly every fifth girl was a regular smoker (18%) compared to 14% at EU level in 2013–14. Because lung cancer is the third leading cause of death, and mortality from lung cancer in women is rising, Luxembourg has made further efforts to strengthen tobacco control laws.

Although alcohol consumption has been falling, it is still 1 litre above the EU average, with adults consuming 11.1 litres per capita in 2014.

### **Rising rates of overweight and obesity among children may present a future challenge:**

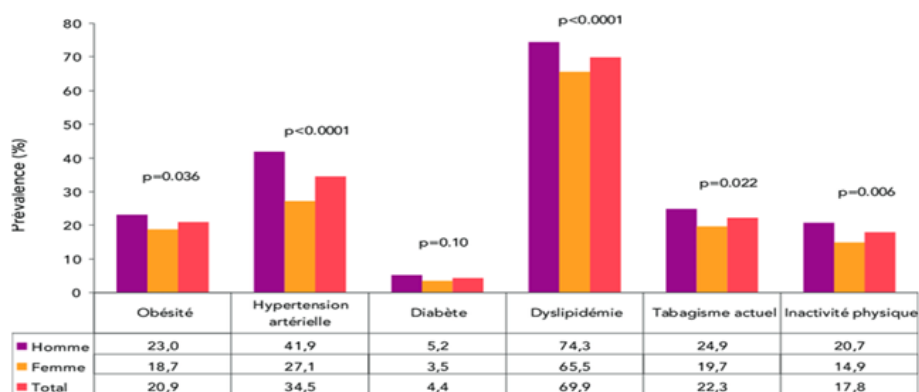
Based on self-reported data (which tend to under-estimate the true prevalence of obesity), close to one in seven adults (15%) in Luxembourg were obese in 2014, which equals the EU average. While the prevalence of overweight and obesity amongst 15-year-olds also remains close to the EU average, it grew over 40% between 2005–06 and 2013–14. This is particularly worrying given that being overweight or obese during childhood is a strong predictor of continuing into adulthood. Responding to this challenge, ten years ago Luxembourg started to implement national strategies on nutrition, preventing and treating obesity, and promoting physical activity and healthy diet, with a particular focus on children and the young.

### **Social Inequalities**

Many behavioural risk factors in Luxembourg are much more prevalent among populations disadvantaged by income or education. The prevalence of smoking is more than twice as high among those with the lowest level of education. More dramatically, the level of obesity among the population with the lowest level of education is nearly three times higher than those with the highest level of education.

### Oriscav Studies (LIH)

ORISCAV-LUX 2007-2008 study provided for the first time a very large number of new information on cardiovascular health of the Luxembourg population. The results highlighted a high frequency of cardiovascular risk factors among the residents. More than 80% of the population had at least one preventable cardiovascular risk factor. Diabetes touched 4.4% of the population and the frequency of the metabolic syndrome was 25% with a significant difference between the sexes. Dyslipidemia (69.9%) was the most frequent risk factor for both sexes and in all categories of age, followed by high blood pressure (34.5%). The people from Portugal, the most important community of foreign origin in the Grand Duchy, were 1.5 times more likely to be affected by high blood pressure than local people.



Source: First nationwide survey on cardiovascular risk factors in Grand-Duchy of Luxembourg (ORISCAV-LUX) *Ala'a Alkerwi et al BMC Public Health 2010***10**:468 <https://doi.org/10.1186/1471-2458-10-468>

Oriscav-Lux 2 is a second wave study to monitor the evolution of Cardio-vascular health between 2008 and 2015. The study bearing on an example of more than 1000 adults between January 2016 to July 2017 has shown in preliminary analysis a reduction in tobacco use from 22,3% to 14,4%.

### III. Prevention stake holders

- The Government
- Ligue Medico-sociale
- SLC Société Luxembourgeoise de cardiologie
- FLASS (Federation luxembourgeoise des associations de Sport de Santé)
- Association Luxembourgeoise du Diabète
- LIH Luxembourg Institute of Health
- LISER Luxembourg Institute of Economic Research
- Caisse Médico-chirurgicale
- LRC Luxembourg Resuscitation council
- Scientific Health council

## IV. Prevention activities

### Who is in charge of day to day prevention?

- General Practitioners
  - Normal consultation
  - Follow-up of the of the patient under the pilot program for Smoking cessation
  - Consultation by practitioners as part of a program of preventive medicine
- Diabetologists
- Cardiologists
- Neurologists
- Hospitals
- Nurses
- School Medicine
- Medecine du Travail

### Role of the Government

#### - **Tobacco Plan (Min of Health)2016-2020**

NTP (National Tobacco plan) 2016-2020 is built around 5-axes, 14 measures and 53 actions:

- Structured governance –
- Health promotion and active prevention –
- The sustainable smoking cessation assistance –
- Training for professionals –
- Research.

#### - **Anti-tobacco law of 2017**

The law of 13 June 2017 came into force August 1, 2017. It strengthens the anti-smoking legislation in place since 2006 and also aims to transpose into national law the provisions of directive 40/2014/EU. However, this new anti-smoking law has additional measures that go beyond the provisions of this directive.

These measures are designed to further protect the health of non smokers, and particularly that of children and to avoid entry into the youth smoking.

With the entry into force of the new law, what has changed is that:

- Smoking ban and vaping in playgrounds
- Smoking ban and vaping in any vehicle in the presence of minors under 12 years
- Smoking ban and vaping on sport grounds, where young people under 16 years play sports
- Prohibiting of vaping in all the places where smoking is prohibited
- Increase in the legal age of 16 to 18 years for the sale of electronic cigarettes and tobacco products.

The anti-smoking law of 2014 generalised the ban on smoking in all public places. Since January 1, 2014, the prohibition of smoking is widespread in the Luxembourg.

The anti-smoking law prohibits smoking: in cafés, bistros and bars, in nightclubs, in the salons of consumption of pastries, in restaurants, breweries, snacks and all establishments where food can be served or consumed; in commercial or commercial galleries, in covered facilities of sports or leisure activities, in collective accommodation facilities (hotels, inns,...), in all public places already affected by legislation in tobacco control on August 11, 2006

- **Gimb (Ministry of Health) National Health plan (Gesond Iessen Mei Beweegen= Eat healthy and Move more)**

On Friday, July 6, 2018, the Government has agreed to the renewal of the program (GIMB) in a national framework GIMB 2018 - 2025. This agreement allows the ministries of Health, Sports, National Education, Childhood and youth and Family, integration and the greater Region to renew and confirm their collaboration. The goal of this interdepartmental collaboration is to promote overall balanced diet and regular and appropriate physical activity and combat the problem of obesity and a sedentary lifestyle for the entire population. The actions and measures of the new national framework GIMB plan are intended to encourage citizens, whatever their age, to adopt a healthy lifestyle by eating more balanced and by practicing a regular and appropriate physical activity. Emphasis is also placed on collaboration and networking

- **National Cardio-Neuro -Vascular Plan (Ministry of Health)** in elaboration

The plan has one main objective and four secondary objectives. The main objective is formulated as follows: "Reduce morbidity and mortality from cardio-neuro-vascular diseases in Luxembourg".

Four secondary objectives, each corresponding to one strategic axis (part of the national plan) were discussed and approved by the COPIL (Comité de pilotage):

- 1) Coordinate the collection and analysis of data on the MCNV
- 2) Improve primary prevention of NCDs
- 3) Improve screening for NCDs
- 4) Improve the management of the MCNV

## **ORGANISATIONS**

- **World-Heart Day (Societe Luxembourgeoise de Cardiologie)** Organised in the Center of Luxembourg City with all the stake-holders of Prevention and Cardiology



- **“Diabetes Day” (Journée du Diabète) (ALD)** Organised by the **Association luxembourgeoise du Diabète**



Source: <https://www.ald.lu/fr>

- **Bletz (Stroke and Post Stroke Rehabilitation)** Yearly conference on Stroke day, Multiple interventions in Rehabilitation



## The Burden of Stroke in Luxembourg

Based on the findings of *The Burden of Stroke in Europe* report conducted by King's College London for the Stroke Alliance for Europe



Population: 512,000

Healthcare cost of stroke in Luxembourg = €24.0 million (€43 per capita)

### Treatment landscape:

3 stroke units in operation which adhere to the recommendations of the European stroke organisation and the national scientific council

The National Neurological Society has established a national plan of stroke care

Medical education emphasises stroke as a medical emergency, and emergency services are trained to screen for stroke

National guidelines that cover stroke prevention and risk factor management as well as acute care, have been established

Established multiprofessional rehabilitation which includes therapists, psychologists and dietetics

Ongoing communication between stroke units and rehabilitation centres

### Stroke in Luxembourg:

**Incidence:**  
403 strokes per year  
49.3 strokes per 100,000 inhabitants annually

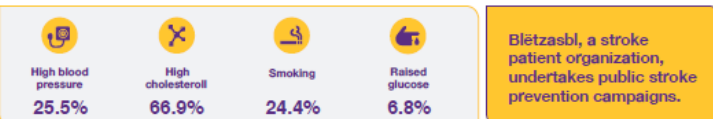
**Prevalence:**  
2,871 strokes  
378.3 strokes per 100,000 inhabitants

**Mortality:**  
326 deaths due to stroke per year  
35.2 deaths per 100,000 inhabitants annually

### Estimated increase 2015–2035:



### Risk factor prevalence:



### Anticoagulant treatment rates:

No data has been published to demonstrate the use of oral anticoagulants in Luxembourg, however:

- In 2010 the national thrombolysis rate was 6.4% (14 out of 220 ischaemic stroke patients)
- Thrombectomy is currently performed in one centre
- Plans for implementing thrombectomy 24/7 are under way




All information contained in this infographic is taken from *The Burden of Stroke in Europe* report conducted by King's College London for the Stroke Alliance for Europe. Information from *The Burden of Stroke in Europe* report was adapted to infographic format with support from Sayer AG.

Source: [http://bletz.lu/wp-content/uploads/2017/12/SAFE\\_STROKE\\_LUXEMBOURG.pdf](http://bletz.lu/wp-content/uploads/2017/12/SAFE_STROKE_LUXEMBOURG.pdf)

- **Reagis (Luxembourg Resuscitation Council LRC)** Prevention and treatment of OHCA, (Restart a Heart day/ CPR Teaching in Secondary schools /Businesses, Country side municipalities, Public administrations, Banking Sector....)

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< Previous Article **September 2018** Volume 130, Supplement 1, Page e62 Next Article >

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## CPR teaching in secondary schools, an national project in Luxembourg

Monique Majerus , Jean Beissel, Carlo Clarens, Pascal Stammet, Jean Uhrig, Philippe Welter

DOI: <https://doi.org/10.1016/j.resuscitation.2018.07.119> 

Soucre: [https://www.resuscitationjournal.com/article/S0300-9572\(18\)30463-5/abstract](https://www.resuscitationjournal.com/article/S0300-9572(18)30463-5/abstract)

### - **Sport-Health**

As of June 15, 2018, the Minister of health, Lydia Mutsch, and the Minister of Sports and social security, Romain Schneider, launched the "Programme National Sport-Santé" (PNSS), initiated by the Œuvre Nationale Grand Duchesse Charlotte, the Luxembourg Institute of Health (LIH) and the Federation Luxembourgeoise des Associations de sport de santé (FLASS).

### - **Hospital Activities**

[Centre Hospitalier de Luxembourg](#) (CHL)

"The fresco": an original tool for education in cardiovascular risk factors

Over the last decade, the prevention of cardiovascular disease has become a major public health issue. Taking into consideration early risk factors to reduce cardiovascular disease and serious complications in the more or less long term the CHL offers comprehensive support to detect, track and accompany patients at cardiovascular risk at best. This support includes a wide education program. Based on a 'motivational approach', this program encourages the patient to invest its own resources to work on its risks and prevent or delay the recurrence of cardiovascular incidents. In this context and in collaboration with other specialties of the CHL, the cardiology department has recently developed, through a partnership with the University of Geneva (HUG) hospitals, an original interactive wall decoration: the CHL fresco, consisting of a series of panels.

### - **MMM18 campaign (2018) LIH**

In Luxembourg, cardiovascular diseases are the leading cause of death approximately and 30% of the adult population suffers from high blood pressure. This proportion is

among the highest in Europe. In addition, force is to note, that often a person does not know that he/she is suffering from this silent disease! " worried Lydia Mutsch (Minister of Health). Between 1975 and 2015, the number of hypertensive patients doubled in Luxembourg. Beyond 60 years, almost 2/3 of the population residents are affected by high blood pressure.

Meanwhile, the Luxembourg Institute of Health (LIH) participated in the study MMM18 (international Society of Hypertension, London), or more precisely, in the campaign world 'May Measurement Month' (measures of the month of May) [1], in order to raise awareness of the risks associated with hypertension. The goal of this international study is to reach 1 million participants and track possible hypertensions. In Luxembourg, this study was conducted in various outreach activities during the month of May 2018 (Hospitals, Shopping Centers, National Health conference, LIH...) with the object of reaching 500 participants

The results were sent anonymously to the servers of MMM18

- **Planned for 2019-20**

#### **Project European Commission YOUNG 50**

- Co-financing for 2 years (Plan national MCNV)
- Beginning in March 2019
- Routine screening for cardiovascular risk factors

## V. Cardiac Rehabilitation (CR)

### Short term CR

#### By whom and how

- CR is performed ambulatory after Acute Coronary Syndrome (ACS)/Myocardial Infarction (MI)/Cardiac Surgery/Heart failure by the 4 Hospital Centers
- Patients are referred by their cardiologists
- Costs are reimbursed by Social security(CNS)
- There is no specialised institution for Cardiac Rehab in Luxembourg
- We do have a Neurology Rehab Center without long term follow-up
- Some patients (elderly/fragile) are addressed to Specialised Centers in the neighbouring countries or other European countries reimbursement is effective after prior approval
- One of the 4 hospital centers has specialised over the years in rehabilitation for Heart failure patients

Publication:

“Strength/endurance training versus endurance training in congestive heart failure”.  
[Delagardelle C<sup>1</sup>](#), [Feiereisen P](#), [Autier P](#), [Shita R](#), [Krecke R](#), [Beissel J](#). Service de Cardiologie, Center Hospitalier de Luxembourg, L-1120-Luxembourg G.D., Europe. charles.delagardelle@santel.lu  
[Med Sci Sports Exerc.](#) 2002 Dec;34(12):1868-72.”

### Long term CR

Patients can be taken in charge by the Luxembourg Association of Cardiac Sports Groups (ALGSC)

Founded in Luxembourg in 1984, the Luxembourg Association of Cardiac Sports groups is a non-profit association that is divided into three regional sections: South, Central and North. The main objective of the ALGSC is to inform on the prevention of cardiovascular disease among the general public and patients with cardiovascular disease, and to offer physical activities for heart patients to increase their quality of life and prognosis.

ALGSC physical activity offers more than 17 hours of classes per week of physical activity each week. These courses are tailored to the capacities of the participants who have cardiovascular disease. Courses are designed to improve fitness and well-being of participants by using adapted exercises that will decrease cardiovascular risk.

Different types of exercises of physical activities are offered by the ALGSC :

- General gymnastics,
- Swimming,
- Aerobics,
- Nordic walking,
- Hiking and
- Road cycling

The intensity and the level of difficulty of the exercises are adapted to the capacities of each participant. All activities are supervised by physiotherapists or specialised teachers. Gymnastics, swimming and water aerobics courses are supervised by a doctor and a nurse with resuscitation equipment and an ECG. Heart rate and blood pressure are measured before each class of gymnastics.

Who can participate?

All persons with cardiovascular disease (coronary heart disease, cardiomyopathies, heart failure, valvular) or patients with cardiovascular risk factors (for example: diabetes, HTA...) can participate in the course. Participants should be addressed by their cardiologists or another doctor. Of course, the participants should not have contraindications to physical activity.

What are the costs? The annual fee is € 20 per person to become a member of the association plus €40 for participation in activities

## VI. The Future

### Needs

- Networking (Cardiology-Diabetology-neurology-Intensive Care/ General Pract/Hospitals)
- Data Collection
- Food regulations
- Exercise for School children
- Reduction of Social Inequalities
- Tobacco pricing

### Future

The Luxembourg health system provides good quality care and has made a major contribution to improving population health. Life expectancy in Luxembourg is among the highest in the EU and amenable mortality rates are among the lowest. Yet there is room for making prevention and treatment of diseases such as diabetes more effective. Behavioral risk factors – smoking, drinking and obesity – are important challenges for the health system and reveal substantial inequalities according to education and income status. Preventable mortality indicators reveal a mixed picture of the effectiveness of prevention policies and suggest that these can be improved further. A comprehensive set of health strategies, targeted health promotion and prevention activities aims to address these risks through raising awareness and public health campaigns. However, careful monitoring will be needed to demonstrate the effectiveness of these programs and to detect health inequalities within the population.

The efficient allocation and use of health care resources could receive higher policy priority. Several efficiency indicators and structural challenges signal room for improvement, as the system is very costly and payment methods do not promote efficiency in service provision. There is considerable room to do more with regular health system performance assessments, particularly when it comes to the monitoring of inputs, processes, outputs and outcomes. Setting up appropriate information systems will be key in this effort.

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- **Healthcare in Luxembourg | Deloitte Luxembourg** | Life Sciences and ... : <https://www2.deloitte.com/lu/en/pages/life-sciences-and-healthcare/articles/healthcare-in-luxembourg.html> The **Luxembourg healthcare** system is one of the most comprehensive systems in the world offering virtually unrestricted access to the population
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- **LISER | Luxembourg Institute of Socio-Economic Research** <https://www.liser.lu/>
- **Luxembourg Resuscitation Council** <http://www.lrc.lu/> **Luxembourg Resuscitation Council**, Conseil Luxembourgeois de Réanimation, Luxemburger Beirat der Wiederbelebung. (French only)
- **Société Luxembourgeoise de Cardiologie:** <http://slcardio.lu> (French only)
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