

CONFIRMED
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"National Cancer Strategy 2007-2015
and the confirmation of action plan 2007-2010"
Appendix 1

National Cancer Strategy 2007-2015

2007

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1. BACKGROUND

1.1. The Description of Cancer Problem

Cancer or malignant tumour is an excrescence of any tissue described by low differentiation level of cells and the ability to invade into surrounding tissues and spread both through blood and lymph into the whole organism. The underlying reason for tumourous process is the malfunction of mechanisms controlling the replication of cells which is caused by different factors (genetic, environmental, nutritional factors etc). The genesis and development of cancer in organism is mostly a long process and when diagnosis has been made at a pre-cancerous stage it gives an opportunity to prevent the formation of malignant tumour. The probability of patient's improvement depends primarily on the developmental stage of tumour. In addition to that it is influenced by the general state of health of a patient as well as the diagnostic methods and availability of an adequate treatment.

Cancer is a prevalent disease, holding the second place among causes of death after circulatory system diseases: 3479 cancer death cases were registered in Estonia in 2005 which is 20% of all death cases (databases of Estonian Statistics, 2006 - Eesti Statistikaameti andmebaas, 2006). On European scale the total cancer incidence is average. At the same time the incidence of preventable malignant tumours should be stressed (Parkin et al, 1997; Bray et al 2002) – the tumours that could be successfully curable if diagnosed at an early stage.

Modern knowledge about causes and prevention of malignant tumours has proved that almost 40% of all cancer cases could be avoided. Considering the fact that cancer is costly illness for society, it is important to invest into preventative work. Therefore attention should be paid on reduction of tobacco and alcohol consumption and also the risks of work environment and living conditions, as well as on increase of a balanced nutrition and physical activity. These measures when implied together could reduce the general burden of cancer illnesses.

Equally with preventive work the effective modern methods of early detection and treatment should be elaborated and implemented to reduce the cancer incidence and mortality. The bases for early diagnosis are both the education of patients and implementing the screening programs that would help to discover cancer before the clinical symptoms occur. More evidence-based are national mass screening programs of servical (cytological tests and HPV DNA tests) and breast cancer (X-ray photograph of mammillary gland or mammography).

The treatment of cancer patients is directed to healing, prolonging life-span and improving life-quality. The accurate diagnosis based on laboratory and clinical tests is prerequisite to assure an adequate treatment. The main cancer treatment methods are surgical treatment, radiation- and chemotherapy.

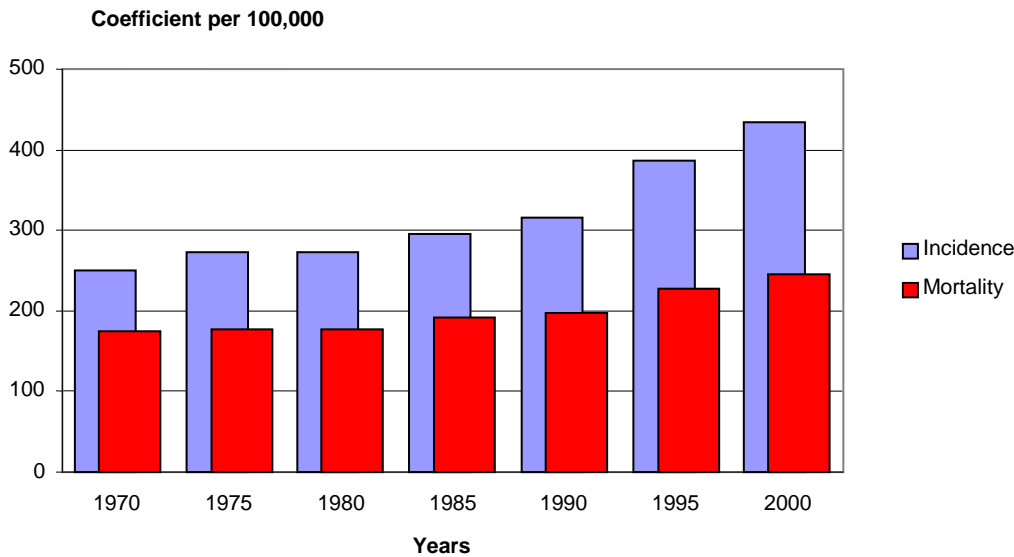
At later-stages of cancer the patients should be guaranteed full palliative or symptoms alleviative care and nursery services that would reduce the patients' complaint and discomfort until 90%.

1.2. Cancer incidence in Estonia

1.2.1. Incidence

Over three decades, in years 1970 - 2000¹ the incidence rate of cancer has increased 1.8 times per 100 000 people (Figure 1). In 2000 the registered number of new cancer cases in Estonia was 6008, which is 1000 cases more than in 1990 (Aareleid and Mägi, 2003; Mägi, 2003) and according to the data of Estonian Cancer Registry the number of primary cases is constantly increasing (the initial data from year 2003². was 5976 cases).

Figure 1. Cancer incidence and cancer mortality in Estonia, 1970-2000



Resource: Cancer Registry

cancer incidence rate is measured with incidence coefficient per 100 000 people. The coefficient increases gradually with age and reaches the peak in 70 years of age (Appendix 8.1). According to the calculation, every third male and fifth female in Estonia becomes ill with a malignant tumor by the age of 75 (Thomson et al, 1996). The incidence of cancer per 100 000 residents is highest in bigger cities (Tallinn, Narva, Tartu, Kohtla-Järve, Pärnu) (Baburin jt, 1997). During the last decade of the previous century breast-, prostate-, colon- and rectum-, bladder-, kidney-, uterus-, thyroid and skin cancer (including melanoma) and lymphoma became significantly frequent in Estonia (Aareleid acc., 2003) (Figures 2 and 3).

According to the initial data of 2003, men had most frequently lung cancer (almost 600 primary cases which is 1/5 of all the new cancer cases among men), prostate cancer (more than 500 primary cases) and colon- and rectum cancer (more than 300

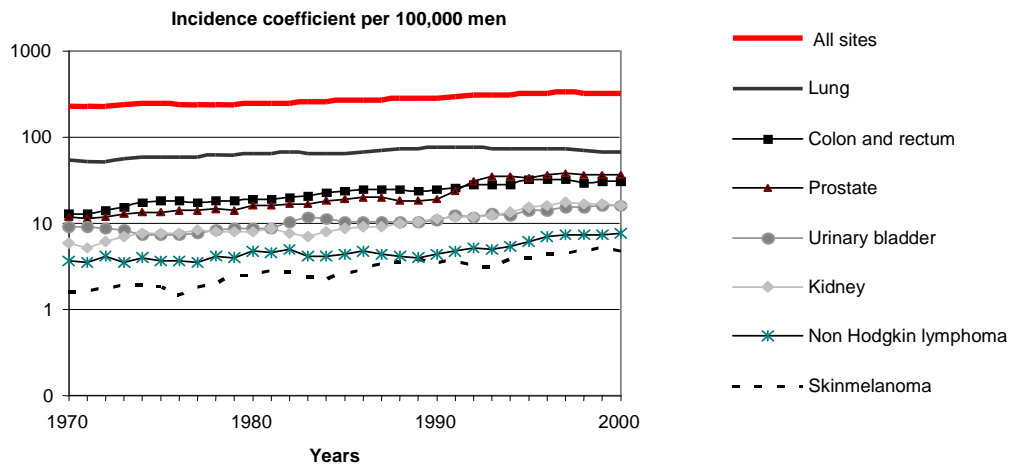
¹ Since 2001 Cancer Registry cannot compare its data with the number of death certificates in the database of Statistical Office due to the absence of legal basis. Information about medical death certificates is necessary to guarantee the completeness and reliability, it is not possible to assess neither cancer incidence nor cancer survival without that data. Last time complete statistics of cancer incidence was published by Cancer Registry was in 2000.

² Data from the year 2003 is initial because of the absence of death certificate information. Approximately 5% of cancer-cases are left out from non-linked death-data registration. The percentage may vary on different cancer locations. The data cross-usage problem will be solved after national cause-of-death registry has been launched.

primary cases) (Appendix 8.2.1). These cancer sites have been at the leading position throughout last three decades (Figure 2).

Men`s lung-cancer incidence in Estonia is comparable to other post-socialist Central and Eastern Europe countries, where the efficient measures for decreasing smoking have been incomplete. The leading riskfactor for lung-cancer and also other malignant tumors is (tobacco) smoke. However, men`s lung-cancer incidence has declined since the middle of 1990s.

Figure 2. Cancer incidence of men in Estonia 1970 – 2000 (selected sites)

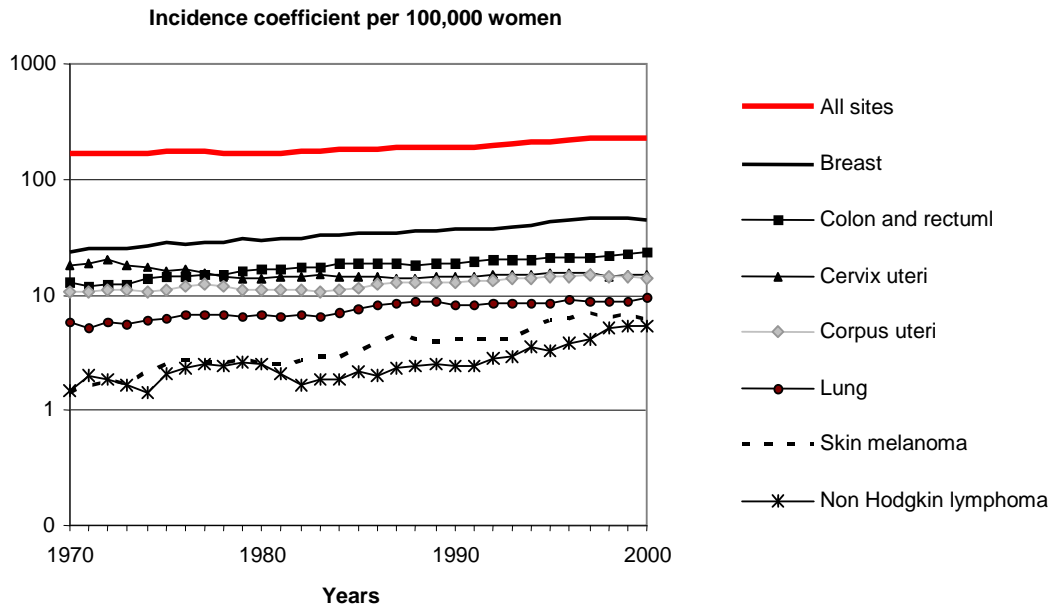


* Standardised by age according to the standard population of the world.

Resource: Cancer Registry

According to the same initial data from 2003 women become ill mostly with breast-cancer (more than 600 primary cases in a year which is up to 1/5 of all the new cancer cases among women), skin melanoma (over 400 primary cases) and colon-and rectum cancer (over 350 primary cases) (Appendix 8.2.2). Throughout the years the incidence of these types of cancer is constantly increasing, and the percentage of lung-cancer is added (Figure 3).

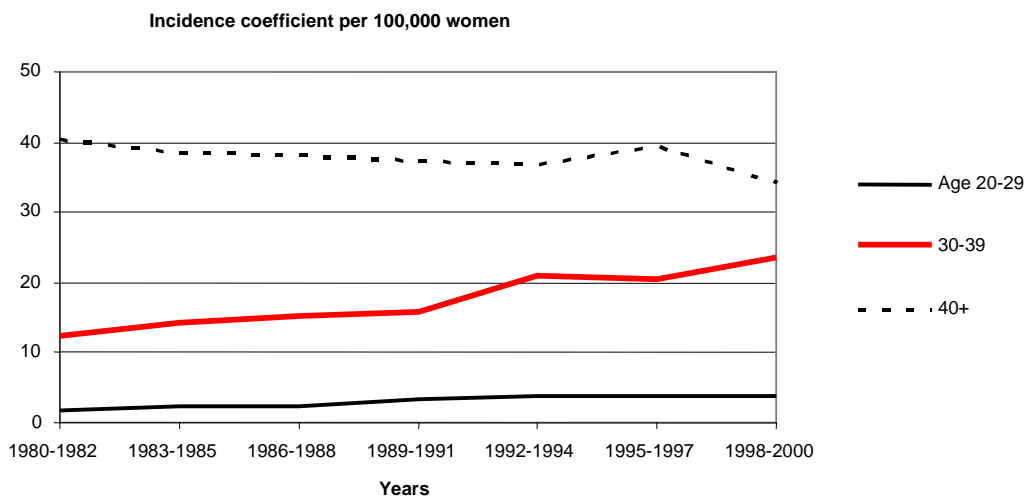
Figure 3. Cancer incidence among females in Estonia 1970 – 2000 (selected sites)



Resource: Cancer Registry

One concerning issue is that cervical cancer has become frequent among younger women, which has been noted since the 1980s (Figure 4). In Estonia cervical cancer incidence rate is four times higher than in Finland, where the national screening program was launched in 1960s (Kibur ja Aareleid, 2000)

Figure 4. Cervix uteri cancer incidence according to age groups in Estonia 1980 – 2000



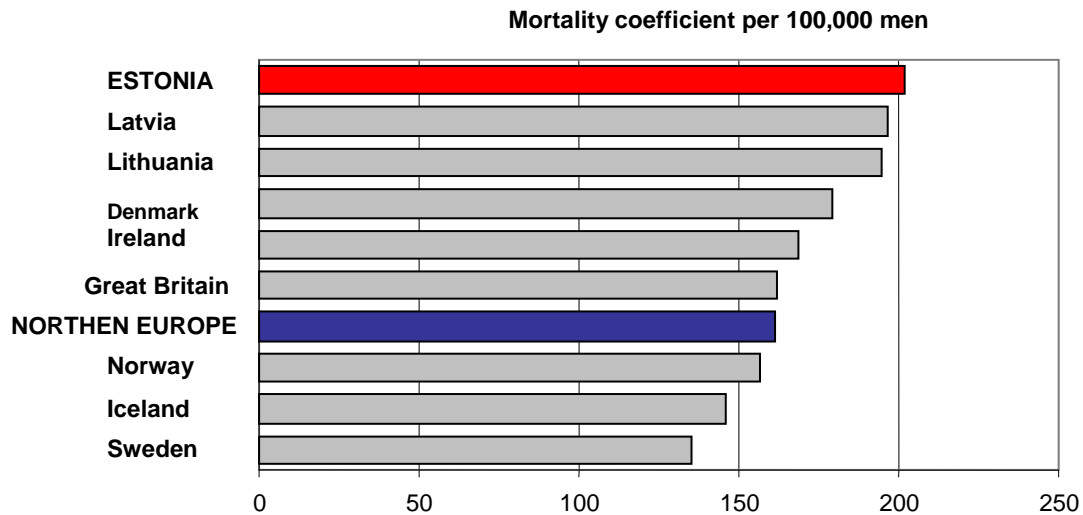
Resource: Cancer Registry

1.2.2. Mortality

National cancer mortality is the most important measure in cancer protection. There are almost 3,500 malignant tumour deaths in Estonia every year and according to the data of the last decade the index has not reduced (World Health Organization Cancer Mortality Database, 2005). The main causes of Estonians' cancer deaths are lung cancer (20% of all cancer death cases), colon and

rectum cancer (12%), liver cancer (9%) and breast cancer (7%) that caused about 1,700 death cases in total in Estonia in 2005.

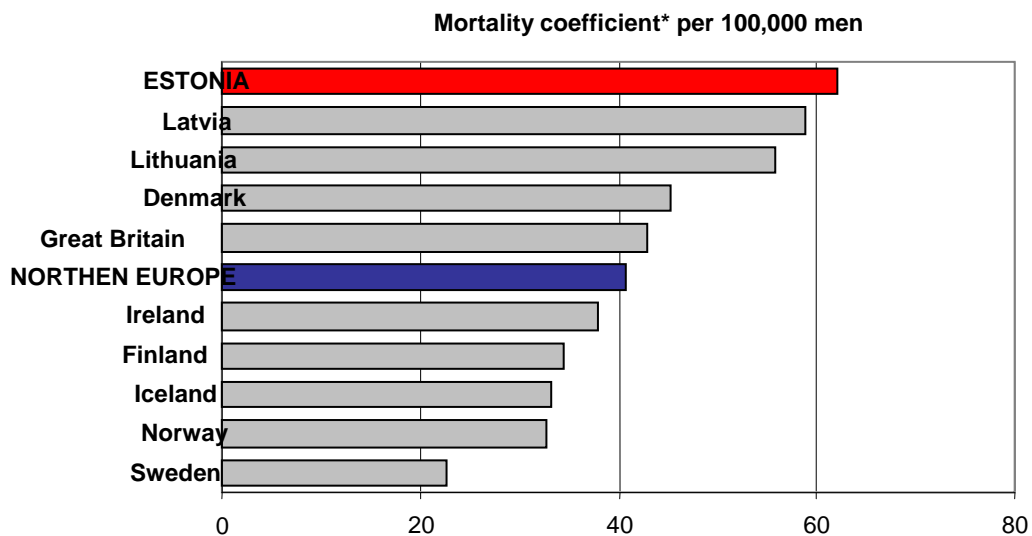
Figure 5. Cancer mortality among men in Estonia and in other Northern European countries



*Standardized by age according to the World standard population
Resource: Ferlay et al., 2004 (GLOBOCAN 2002).

Men's cancer death coefficients in Estonia are one of the highest on a European scale (Bray et al, 2002; Ferlay et al, 2004). Comparing North European indices Estonia has got the highest total cancer mortality (Figure 5) and lung cancer mortality (Figure 6). During the years 1970 - 2000 cancer mortality among men increased 18% in Estonia, whereby among the 34-65 age-group mortality had increased even 26%.

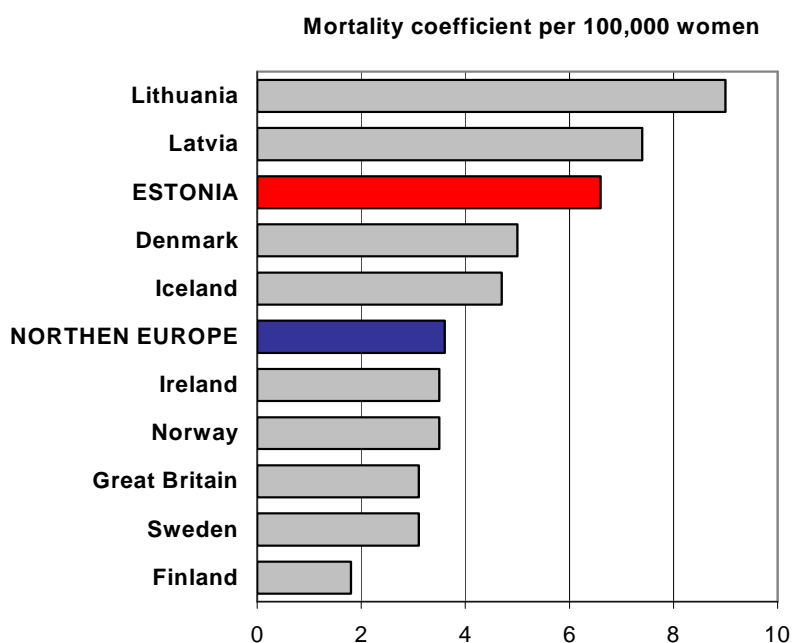
Figure 6. Lung cancer mortality among men in Estonia and in other Northern European countries



*Standardized by age according to the World standard population
Resource: Ferlay et al., 2004 (GLOBOCAN 2002).

Cervix uteri cancer mortality in Estonia is one of the highest in Northern Europe. Thereby the difference between Estonia and Finland is almost 4 times (Figure 7).

Figure 7. Cervix uteri cancer mortality in Estonia and in other Northern European countries



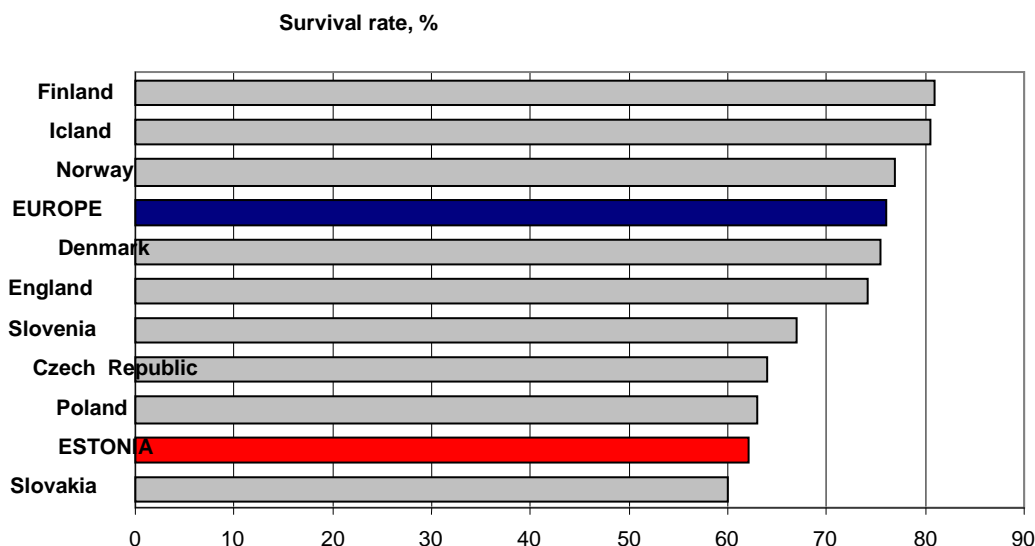
*Standardized by age according to the World standard population
Resource: Ferlay et al., 2004 (GLOBOCAN 2002).

1.2.3. Survival³

Survival of cancer patients in Estonia is remarkably lower than in developed countries in Europe (Sant et al, 2003; Coleman et al, 2003; Aareleid acc., 2005). In Finland the five-year survival rate of breast cancer patients is 1.5 times higher than in Estonia (Figure 9). The lower survival rate results from late diagnosis of caused by the fact that people call the doctor too late but there are also some shortcomings in diagnosis and treatment arrangement.

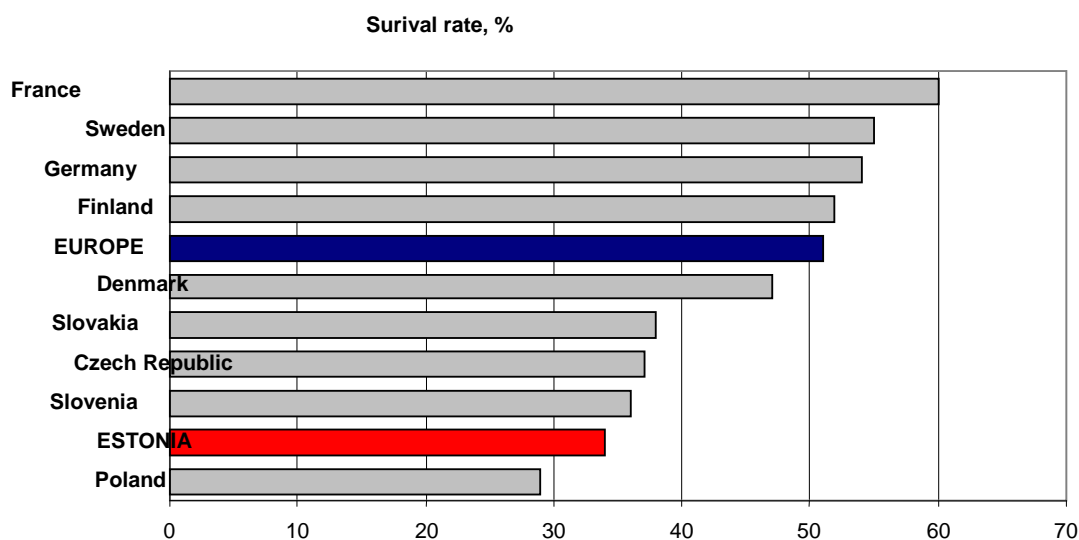
Figure 8. Five-year relative survival rate for breast cancer patients in Estonia and other European countries (survival rate, %)*

³ Survival – the absence of death in certain time period (generally starting from making the diagnosis). Resource: Sant et al., 2003 (EUROCORE-3).



* Diagnosed 1990-1994; monitoring time until 31.12.1999.
Resource: Sant et al., 2003 (EUROCORE-3).

Figure 9. Five-year relative survival rate for colon and rectum cancer patients in Estonia and other European countries (survival rate, %)*



* Diagnosed 1990-1994; monitoring time until 31.12.1999.

1.2.4. Prevalence⁴

According to the data from 2000, there were about 33,000 people living in Estonia who had been diagnosed with having a malignant tumour (Aareleid ja Mägi, 2003). As one person may have more than one malignant tumour, the total number of cases is about 35,000 (appendix 8.3). In 2003 according to initial data there were more than 35,000 people who had cancer diagnosis and 37,500 cancer cases. The most common is skin cancer, breast cancer holds the second place. About 44% of patients have been diagnosed with having a cancer less than five years ago and they need both primary and post treatment. All these patients need simultaneously active

⁴ Prevalence – total number of disease cases among the population at a stated point in time (Medical Dictionary)

cancer recurrence monitoring 56% of patients have been diagnosed having had a cancer more than five years ago and in oncology these patients are considered to be cured although their monitoring for cancer recurrence still continues.

1.3. Cancer Protection Situation in Estonia

Summarizing the facts described above the characteristics of cancer occurrence in Estonia are as follows:

1. Relatively high incidence of preventable malignant tumours.
2. Relatively high cancer mortality.
3. Low survival for cancer patients compared with developed European countries.

Current cancer protection situation could be described by outlining following problems:

1. Low effectiveness of cancer preventive work.
2. Low effectiveness of mass screening programmes, low involvement of target groups and the absence of screening registry.
3. Late detection of cancer and worse treatment results as well as excessive treatment expenses deriving from that.
4. Shortcomings in cancer diagnosis and both in accessibility and quality of active treatment.
5. Shortcomings in accessibility and quality of rehabilitation, palliative care and nursery services.
6. Absence of national cancer strategy (see chapter 6).

1.4. The Importance of National Cancer Strategy

Remarkable success in reducing cancer mortality has been achieved in Europe with the help of national cancer strategies (*cancer plan, cancer programme, cancer strategy*). For example British national cancer strategy that started in 1999 aims to reduce cancer mortality for 20% by 2010 which means about 100,000 death cases less than before – and positive results are clearly seen already now (Richards et al, 2000).

According to the World Health Organization (WHO 2002) cancer strategy should involve all areas of cancer protection: prevention, early detection, screening, healing and supportive care, and corresponding scientific researches. Elimination or reduction of known risk factors (especially smoking and other factors of living or work environment) could avoid remarkably significant share of cases. The number of malignant tumours that could not be prevented may be reduced by early detection (screening programs) and more effective treatment.

Estonia needs well-reasoned national cancer strategy because previous limited measures have not given expected results in reducing cancer incidence and mortality or in increasing the survival for cancer patients. In order to achieve best results concerted measures involving different areas of cancer protection should be applied

1.5. International Trends in Cancer Protection

Most developed regions in the world have worked out their national cancer strategy. The base of their success has been a professional action plan oriented on health policy. The plan that has been elaborated in cooperation with representatives of both

medicine and national stakeholders. The objective of national strategies is to develop evidence-based trends of health policy in every area of cancer protection.

1.5.1. Prevention

International experience has shown that cancer prevention depends mostly on life-style and environment. In many countries anti-tobacco fights, programmes for supporting a balanced nutrition and explaining the effect of ultraviolet radiation and environmental influences have been carried out by national structures in cooperation with the third sector.

1.5.2. Screening

National style and breast cancer screenings are carried out in most of the developed countries, although target groups may differ. Screenings of colon and rectum cancer, as well as pilot screenings of prostata and melanoma cancer have been started in several countries. The experiences of other countries have shown that the most common obstacle to implement the ideas has been a very low participation rate among people with low income and educational level and of those living in regions far from medical centres.

1.5.3. Diagnosis and treatment

The most prevailing reason for a successful cancer treatment has been the idea of having strong treatment centres with sufficient number of cases, multidisciplinary treatment, inter-speciality consulting, specialists' expertise, supportive services (intensive care, nurses and social workers having special training), necessary and good quality equipment, good opportunities for training and scientific researches.

1.5.4. Palliative care

Internationally recognized standard is in progress and therefore it has not been described in all national strategies. Including palliative care in national strategies depends on the needs and opportunities of different regions.

1.5.5. Rehabilitation and supportive care

Many countries have realized the importance of patients' coping training, psychological counselling, physiotherapy, therapy, diet, home-care etc. In many cases these services have been connected with the activities of national and non-profitable companies.

2. OBJECTIVES OF STRATEGY AND INDICATORS

2.1. The main objectives of the strategy

I Objective of strategy (OS) 1: Permanent decreases in the incidences of preventable malignant tumors among population.

Main indicators (compared to year 2000):

1. Incidence

1.1. Decrease in total cancer incidence rate per 5%.

Database: the year 2000 standardised incidence coefficient per 100 000 residents: females 227.6 and males 324.5* (according to the initial data from 2003⁵ females 221.5 and males 312.2)

1.2. Decrease in lung-cancer incidence rate among men per 10% and discontinuing the increase in incidence rate among women.

Database: the year 2000 standardised incidence coefficient per 100 000 residents: females 10.2 and males 63.7* (according to the initial data⁶ from 2003 females 7.8 and males 57.1)

1.3. Decrease in cervical-cancer incidence rate among women per 20%.

Database: the year 2000 standardised incidence coefficient per 100 000 residents: females 15.5* (according to the initial data from 2003 the coefficient 14.1)

II Strategical objective (SO) 2: The increase in cancer patients survival, improved quality of life and decrease in death rate.

Main indicators:

2. Survival (FRS – five-years relative survival)

2.1. Cancer of gastrointestinal organs – increase of FRS among patients with gastric cancer up to 20%; patients with colon- and rectum cancer up to 45%.

Database: Gastric cancer (males – 15.1% and females – 18.2%), colon cancer (males – 38.0% and females – 37%), rectum cancer (males – 32.5% and females – 28.2%)⁷

2.2. Cancer of respiratory organs – increase of FRS among patients with laryngeal cancer up to 60%; patients with lung cancer up to 10%.

Database: Laryngeal cancer (males – 50,6%), lung cancer (males – 6,8%, females – 11,9%)

2.3. Cancer of urinary tract – increase of FRS among patients with bladder cancer up to 65%; patients with kidney cancer up to 50%.

Database: Bladder cancer (males – 42.2%), kidney cancer (males – 33.7%, females – 52.8%)

* Reference: Cancer Registry

⁵ The initial data will be final after Cancer Registry data has been linked to death certificate data, see footnote on page 5.

⁶ Lungs are the most common site of cancer which means that incidence indicators will increase after linked to death data.

⁷ The database shows five years relative survival which is based on data from years 1990-1994 (EUROCARE-project).

2.4. Cancer of male genital organs – increase of FRS among patients with prostate cancer up to 60%; patients with testicular cancer up to 85%.

Database: Prostate cancer – 52.1%, testicular cancer 71.4%

2.5. Cancer of female genital organs – increase of FRS among patients with cervical cancer up to 65%; patients with cancer of corpus uteri up to 75%; patients with breast cancer up to 70%.

Database: Cervix uteri cancer – 53.2%, cancer of corpus uteri – 63.7%, breast cancer – 61.9%

2.6. Malignant tumors of brain and central nervous system – to maintain the achieved FRS level .

Database: Cerebral cancer (males – 18.4%, females – 18.1%)

2.7. Cancer of the lymphoid tissue – increase of FRS among patients with Non Hodgkin lymphoma up to 45% and patients with Hodgkin lymphoma up to 75%.

Database: Non Hodgkin lymphoma (males – 30.7%, females – 37.4%), Hodgkin lymphoma (males – 47.0%, females – 73.3%)

2.8. Leukaemia – increase of FRS among patients with all types of leukaemia up to 40%, patients with severe lymphoid leukaemia up to 20% and with severe myeloidleukaemia up to 10%.

Database: Leukaemia (males – 32.2%, females – 34.9%), severe lymphoidleukaemia (males – 12.7%, females – 10.1%), severe myeloidleukaemia (males – 1.9%, females – 1.8%)

3. Quality of life

3.1. Improvement of cancer patients` life quality (survival is the main indicator).

4. Mortality

4.1. Decrease in total cancer mortality rate per 10%.

Database: year 2005 mortality coefficient per 100 000 residents: females 215.93 and males 315,67

4.2. Decrease in lung-cancer mortality rate among men per 10% and discontinuing the increase (or significant decrease) in mortality rate among women.

Database: year 2005 mortality coefficient per 100 000 residents: females 19.3 and males 80.7

4.3. Decrease in cervical cancer mortality rate per 30%.

Database: year 2005 mortality coefficient per 100 000 residents: females 8.95

3. CANCER PREVENTION

Cancer disease is one of the leading causes of incidence and mortality in the world. Nowadays we know many evidence-based opportunities to lower cancer risks. In order to succeed we need to dedicate enough attention to the factors that are avoidable (see 1.1), and which are mainly associated with risk behaviour and psychosocial environment which promotes it. Therefore it can be said that the basis of reducing incidence and mortality is steady prevention.

Objectives of strategy:

1. To enlarge population awareness of cancer risks, especially of the ones that are avoidable.
2. To achieve permanent positive changes in health-behaviour among adult population (to increase the proficiency of residents to make healthy choices and avoid potentially dangerous technological methods in preparing meals, to decrease the role of smoking, to increase the part of physical activity, to reduce alcohol consumption, to reduce exposure to UV-radiation).
3. To reduce the use of carcinogenetic chemicals in industry (dangerous chemicals should be replaced with less dangerous) and to exclude selling them to ordinary consumers, making supervision and surveillance more effective over the chemicals, to put an end to an ordinary use of type 1 and 2 carcinogenes.
4. To intensify food surveillance and develop monitoring over chemical contaminants in food, to influence producers to enhance technologies in order to increase food safety.

3.1. Health Behaviour of the Population'

Sub-goal 1. Raised consciousness among the population about avoidable cancer risks that is expressed in persistently positive changes in population's health behaviour.

The indicator of effectiveness: the percentage of children smoking once a week or more often reduces to 20% among boys and 16% among girls.
(Basis. Boys – 30.4%; girls – 18.2% Resource: HBSC research 2001/2002)

Measure 1. Reduced consumption of tobacco products

Measure 2. Reduced consumption of alcohol

Measure 3. Promoting healthful and safe food choices

Tobacco consumption

In 2005 668 men and 317 woman per 100,000 residents in Estonia died of reasons connected with smoking (directly or indirectly) that is two times more than in the European Union on average.

Tobacco products contain nicotine that is a nerve poison in essence and causes addiction when regularly consumed – therefore smoking is considered to be a disease and it is fixed as a diagnosis in International Classification of Diseases (ICD-10). At present there are at least 43 known carcinogenic chemical components that are formed in tobacco burning process. There are scientifically proved evidence of causal relationships between smoking and oral cavity, oesophagus, larynx, glottis, lung, pancreas and bladder cancer and also mortality. The monography of International Agency for Research on Cancer (IARC) in 2002 describes the harmful effect of passive smoking on patients who have never smoked themselves. The risk

to fall ill with breast cancer is five times higher for teenage girls when they start smoking during first five years after the beginning of menstruation and that even if they stop smoking at the age of 20. The researches of Canadian Cancer Registry affirm that teenagers who smoke have a 70% higher risk of falling ill with breast cancer before becoming 50 years old than those who have not smoked during their teenage years. In addition to cancer risks, both active and passive smoking during teenage years cause chronic or nonreversible cardio-vascular and respiratory system diseases.

The positive influence of quitting smoking can be observed at every age. While the risk of cardio-vascular diseases diminishes quite quickly, the risk of cancer and respiratory system diseases diminishes more slowly.

Alcohol consumption

Alcohol is an organic compound that has a direct connection with dying for or falling ill with different chronic diseases as well as cancer if being regularly overused. Comparison with the consumption of alcoholic drinks to the so called alcohol unit which contains 8-12 g of ethanol has been taken into use. According to Estonian Food and Nutrition Suggestions the limit of alcohol consumption per a woman is one and per a man two units a day.

Alcohol as the riskfactor of becoming ill and early deaths is in the third place in Europe. According to 200 researches it has been found in the meta-analysis of the connections between alcohol consumption and different cancer types that consuming alcohol increases the risk to fall ill with mouth, pharynx, larynx, oesophagus, colon, liver and breast cancer. The researches reveal that the risk to fall ill with oral cavity and pharynx cancer is 2-5 times higher for those who overuse alcohol comparing with moderate users and 1.4-5.4 times higher in case of laryngeal cancer.

The excessive alcohol and tobacco consumption extremely increases the risk in case of cancer sites in the same area. For example smoking accompanied by alcohol consumption increases ten times the risk of upper intestinal tract or respiratory tract cancer.

Nutrition and Food Safety

Daily choice and consistence of food and also the ways of cooking have the greatest effect on chronic non-infectious diseases, including cancer occurrence. According to research studies, it is estimated that in developed countries the percentage of nutrition factors in developing a malignant tumour is about 30%.

The component predisposing the development of cancer is the fat content in food. In countries having high living standard the percentage of food that contains animal fat is very high and the percentage of fibre is low – therefore the incidence of colon is very high. In addition to that the excessive consumption of food fats predisposes the development of prostate, ovary and breast cancer. At the same time the researches reveal that increasing energy spending and sufficient amount of fruit and vegetables help to reduce the risk of developing cancer. In the countries where a lot of fruit and vegetables and little animal fat is consumed – so called Mediterranean diet - the incidence of colon cancer is very low.

Raw material, the ways of storing and cooking influence significantly the forming of carcinogens. Smoked meat and fish (sprats in oil), grilled meat and chicken skin, dishes cooked in abundant oil at high temperature and meat grilled over an open fire contain carcinogens of a strong effect formed at high temperatures (like

benzopyrenic, dioxine and polycyclical biphenyl) which are considered to be the cause for castric cancer. Strongly smoked and grilled meat, especially when smoked meat and fish have been consumed very frequently, is a remarkable risk factor for colon cancer. In addition to that processing of meat and fish in abundant oil or fat at high temperatures changes the structure of fats and that causes the formation of aromatic heterocyclic amines that are highly carcinogenic. Carcinogens may be produced in intestinal tract due to excessive consumption of salt and pickled food. European scientists have paid much attention to strongly carcinogenic acryl amide formed when polysaccharides or long chain sugars are heated at high temperatures – as in ginger breads, potato chips, toasts, fried bread etc for example. So it may be said that changes in the ways of cooking help to reduce the formation of harmful compound.

When speaking about other carcinogens in food alpha and ohratoxines should be mentioned, which are produced by some kind of aspergillus. The latter mentioned can be found in grain and nuts. Therefore it is important to check grain, grain products and nuts in order to avoid consuming food with mould

Some organic compounds, dioxins and furans that result from human activity and are imputrescible in environment for a long time have a carcinogenic effect. Most of them are formed while plastic wastes containing chlorine are burned, but also in oil, oilshale and paper industry. People get 90% carcinogenic dioxine from food. Dioxines and dioxinical PCB limits have been regulated by the regulation 2375/2001/EU that helps people to avoid excessive contact with contaminated food.

In Estonia the content of radionuclide in ground water is actual in certain regions (especially radium, but also Po 210, Pb 210). It mostly embraces West- and North-Estonia where we consume water of Kambrium-Vendi water complex, as it has got the highest content of natural radinuclides. Researches have revealed that in Northern Estonia the effective-dose in driven wells mostly exceeds the limit (effective dose 0,1 mSv/a) set by EU in the directive 98/83/EU and social minister's regulation nr 82 of July 31 „The quality and control requirements and analysis methods of drinking water“ (RTL 2001, 100, 1369).

In addition to that one of the characteristics of Estonian drinking water is redundant content of iron and nitrates in some regions. Drinking iron-rich water causes positive iron balance and the increase of oxydative stress that are considered to have connection to developing cancers. High content of nitrates is usual to scattered houses in Estonian villages where the wells are low but it may cause formation of carcinogenic nitrites and nitro compounds in intestinal tract and predisposes the incidence of castric, indestinal ja bladder cancer.

3.2. Reduced cancer risks in work and living environment

Sub-goal 2. Reduced cancer risks in work and living environment

Indicator of effectiveness: The population's consciousness about cancer risks in work and living environment increases for 25%.

Basis: Will be studied in 2008.

Measure 4. Guaranteeing healthier physical environment

Measure 5. Increasing the population's consciousness about cancer risks connected with environment, especially avoidable factors (including the effects of ultraviolet-radiation and infections)

Physical environment

In developed countries 5-10% of all cancer cases are caused by occupational and 1-2% by environmental factors. In reality these indices may even be higher, as finding out the ethiological factors of cancer, especially environmental factors, is problematic, because in many cases the malignant tumour appears 20-30 years after the contact with carcinogen. Due to the factors mentioned above the cancer sites may be in almost every tissue, depending on the nature of carcinogen (appendix 8.4). Main resources of pollution are electricity and heating producers, transport, industry, heating in private houses, waste handling, chemicals and products containing them. Human action produces a lot of combustion residues – carbon dioxide, carbon monoxide, hydrocarbons, sulphur dioxide, nitrous oxides, solid particles of different sizes and methane that all may have a connection with cancer incidence. The Centre of Environmental Researches regularly carries out the monitoring of distant transition of pollution substances, monitoring of precipitation, groundwater, surface water and soil, comparison of pollution load and complex monitoring.

One of the most important cause of cancer connected to work and living environment are chemicals. The bases for Estonian protection measures in that field are European unified chemical policy and legal acts. Deriving from that all chemicals that are marketed must be classified. The dangerous qualities of chemicals must be fixed, including their carcinogenic effect. According to the latter the chemicals are divided into three categories (appendix 8.5).

At the moment there are more than 100,000 chemicals available at the market of European Union. 3,000 of them have got sufficient and adequate information in order to assess their possible risk on a person's health. 800 out of 3000 chemicals mentioned above have been classified as substances which are quite probably or have already been proven having carcinogenic effect on humans. In the European Union and hence in Estonia selling such chemicals openly is legally forbidden.

According to WHO the resource of ionised radiation – radon – causes 15% of all lung cancer incidents in the world. The effect of radon is increasing greatly in patients who smoke. Using the risk assessments of International Commission on Radiological Protection (ICRP) and Estonian Cancer Registry and also radon researches – it has been found that in Estonia radon may cause about 100 new lung cancer incidents a year (Pahapill & Rulkov, 2004). These cases could be avoided if radon concentration was regulated in dwelling rooms. At present there is only one suggested standard (EVS 839), where the limit value has been enacted 200 Bq/m³.

In conclusion it may be said that decreasing the concentration and effect of carcinogenic substances and integrated cooperation between different areas is essential. Training, educating and relevant screening and supervisory programmes play also very important role.

Infection diseases and cancer

In many cases cancer incidents are connected with the infections spreading in the environment. Sexually transmitted human papilloma virus (HPV), especially its subtypes 16,18, 31, 33, 45, 51, 58 etc which are known as the main causes of cervical cancer. Nowadays we have the vaccines against subtypes 6, 11, 16, 18 and therefore it is important to find out the types of the virus in Estonia. The analyses of distribution of HPV subtypes would help to assess the necessity of vaccinating against the relevant stems. There are more incidents of catching the infection among young women. The questions concerning the causes of persistence of virus and falling ill with cancer need more specific researches (IARC 1995). In addition to cervical cancer the HPV infection is connected to anus, vulva, vaginal, penis, oral cavity and skin cancer.

The primary carcinoma of liver is one of the human body's malignant tumours, which etiogenetic factors are hepatitis B and C virus (IARC 1995), but so far the incidence of this type of cancer in Estonia has been low. From other viruses the Epstein-Barr virus has been associated with the Burkitt lymphoma, nasopharynx cancer, Hodgkin disease and gastric cancer. Helicobacteria pylori has also been associated with gastric cancer.

In relation to AIDS and HIV-infection high prevalence in Estonia one has to keep in mind, that for 10 % of European patients with the disease it manifests as Kapos' sarcoma (IARC 1997). AIDS might be the cause of the Non Hodgkin lymphoma genesis as well.

Ultraviolet radiation

Ultraviolet radiation is major risk factor in the genesis of skin cancer as well as melanoma. The standardised incidence rate of skin cancer in Europe is 30-100 cases per 100,000 residents. The standardised incidence rate of melanoma in Europe is 5-15 cases per 100,000 residents. Total skin cancer incidence among white population during last 50 years shows rapid increase. In Estonia however one of the concerning issues is the constant increase in skin melanoma (figure 2, 3). The cause could be prevalingly immoderate sunbathing both in child- as well as in adulthood. There are some clinical studies that confirm the correlation between tanning, skin phenotype and genesis of skin cancer and melanoma.

The most effective prevention method in this field is to enlarge the population awareness of the effects of ultraviolet radiation and to amend certain attitude, which also includes parents protective behaviour towards their children. This could be achieved especially by decreasing the exposure to UV radiation and by using special sun lotions with protective factors. It is important to monitor consciously skin changes by individuals themselves as well as by general practitioner. In order to diagnose dangerous skin changes at an early stage it is important to pay attention to the specialists (including dermatologists, general practitioners, oncologists) training as well as usage of contemporary diagnostic methods.

4. EARLY DETECTION OF CANCER

In order to detect cancer at an early stage, population based screening programs are carried out.

Prerequisites for screening:

- 1) it is an important health problem;
- 2) there is an acceptable treatment for patients with the disease;
- 3) a proper network for diagnosis and treatment has been established;
- 4) it is possible to diagnose the illness at an early stage;
- 5) an adequate test for early detection is possible;
- 6) test is acceptable for the population;
- 7) the genesis and pathogenesis are adequately comprehensible;
- 8) there are proper treatment guidelines;
- 9) the cost of the program is explained and adequately reasoned;
- 10) screening is a long-term and not one-time project;
- 11) there is a proper screening registry.

According to the international experience and local cancer statistics cervix uteri and breast cancer screening tests are indicated in Estonia.

Sub-goal 3. Early stage cancer finding through screening

Indicators of effectiveness:

Decrease in cervical cancer mortality rate (see goal 4.3)

Decrease in cervical cancer incidence rate for 20%

Target group (30-59-year-old females) involvement up to 70% in cervical cancer screening program

Target group (50-59-year-old females) involvement up to 75% in breast cancer screening program

4.1 Cervical cancer screening

Cervical cancer is one of ten leading death causes among females and holds the second place among deaths caused by malignant gynaecological tumours in Estonia. In 2005 65 women died of cervical cancer. Likelihood to become ill with cervical cancer before the age 75 is 1:63 (according to the data from year 2000). On the year 2000 the standardised incidence coefficient per 100,000 females was 15.5 and standardised mortality coefficient per 100,000 residents was 8.2⁸. The majority of women who become ill are 30 – 59 years old. Cervical cancer five-year survival rate is approximately 62.1% in Europe but 53.2% in Estonia.

A major riskfactor in the pathogenesis of cervical cancer is infection with high risk human papilomavirus, which might cause precancerotic state of cervix uteri while being permanently present in organism and which might predispose tumour growth in the long run. It might take 10-15 years from the precancerotic state till the formulation of malignant tumour. To discover the precancerotic states of cervix and cervical cancer the PAP – test has been used, which gives the opportunity to diagnose the disease in an early stage and therefore begin proper treatment in time. In some countries (the USA, European countries, Australia) the HPV DNA test has been used together with the PAP-test if available, because of the higher sensitivity (see the last

⁸ The number of primary cases is insufficient since the cases in 2001, because of the absence of legal basis the Cancer Registry is not able to compare its database with the medical death certificate database of the Statistics Office.

section) (Cuzick et al 2006, Kitchener et al 2006). In Nordic Countries, Netherlands, Germany and also in some other European countries there have been great results in cervical cancer screening and diagnostics with the HPV DNA test.

Despite the PAP-tests done by gynaecologists and taken from women, who went to see the doctor, the incidence and mortality of cervical cancer in Estonia has not decreased during past 25 years (see figures 3, 4, 7). A well-organised screening program will help to cut down both incidence and mortality rates more than 80%. To show the effectiveness of the cervical cancer screening let us look at the situation in Finland, where in 1960s the standardised (world population standard) primary cases incidence coefficient per 100,000 females was 15.4 (the same as Estonia has today) and after the national cervical cancer screening program was carried out in 1991, the number dropped to 2.7. The mortality rate decreased in the same proportion. In 1960s it was 6.6 and in 1991 it was 1.4. Besides that it is important to say that a systematic, well functioning screening program will bring down all the expenses in healthcare as the expense of avoided cases declines (Appendix 8.6).

A cervical cancer screening preproject (2003-2007) carried out in Estonia among women aged 25-54, funded by the Estonian Health Insurance Fund, has unfortunately a low participation rate. In 2006 in an opportunistic screening project the participation rate was only 31% of all the invited participants. In order to raise the rate it is necessary to inform women widely and improve the availability of quality service.

Target group and methodology of a planned screening: the screening target group involves women aged 30-59 living in Estonia, who will be invited personally by the screening registry in a five-year interval to the domiciliary healthcare facility, in order to make the PAP test which will be carried out by a specially trained mid-wife. The material is sent to a reference laboratory, where the test results will be sent to screening registry and healthcare facility that performed the test. The screening registry will notify in a written form a woman about the test results. When an abnormality is detected, particular guidelines for further activity are added. For successful screening sufficient number of specially trained pathologists are needed. Therefore attention has to be drawn for training specialists at that field. At present the screening registry in Estonia is absent, the detailed planned will be worked out in the year 2008 and the screening should start in the year 2009.

4.2 Breast cancer screening

Breast cancer is the most common malignant tumour among Estonian women. According to the initial data⁹ from 2003 according to the Cancer Registry 611, cases were diagnosed (the number may rise when death data has been added). The standardised primary cases coefficient by age per 100,000 females was 43.8. We must outline that incidence rates in Estonia have doubled during the three decades. In 2005, 242 women died of breast cancer (Estonian Statistical Office database, 2006). Probability to become ill with breast cancer before the age of 75 is 1:20 in compliance with the data from year 2000.

According to the data from EURO CARE project the highest breast cancer five-year survival rates were in Nordic Countries (in Sweden 82.6%; in Finland 81.4%) out of 22 European countries, as also in the majority of other Western Europe countries (80%). The lowest rates were in five Eastern Europe countries (60-70%), including

⁹ The number of primary cases is insufficient since the cases of 2001, because of the absence of legal basis the Cancer Registry is not able to compare its database with the medical death certificate database of the Statistics Office.

Estonia (61.9%). The cause of low survival lies mainly in the late diagnosis of a disease but also in treatment differences according to additional analysis.

In Estonia the mammographical screening pilotprojects were first activated in Tallinn in 1996 and in Tartu in 1998. The early breast detecting project for 2002-2006 was financed by Estonian Health Insurance Fund and composed by the leadership of Estonian Cancer Fund. The target group of the project were women aged 45-59. In addition to screening mammography is carried out when complaints about breasts are present. Under these circumstances woman will be sent to a survey, having accompanying letter from their general practitioners or gynaecologists, .

Compared to Europe, including Nordic Countries, the incorporation of Estonian women in mammographical survey is very low. According to the results of a random sampling study by Health Insurance Fund in 2005, the mammography paid by Health Insurance Fund was performed only to 3.8% of all the 45-59-year-old women. In year 2006 in oportunistic screening project the participation rate among called females was 53%. According to the Estonian Adult Population Healthbehavioural Study year 2004 data 21.8% of women aged 45-59 (including 25.5% of 50-59 year-old women) had visited mammography during the previous year. In order to raise the participation rate, it is necessary to widely inform women and improve the availability of a quality service as on cervical cancer screening.

Target group and methodology: women aged 50-59, who will be actively invited through a planned screening registry to mammography in two years interval. The aim is to expand the agegroup of the target group.

4.3 Early detection of other cancer sites

Prostate cancer: prostate cancer is the most common type of malignant tumour among Estonian men. At present a screening method by international consensus for diagnosing this type of cancer is absent. On the other hand in many countries success has been achieved in early detection and treatment with specific programs. According to that a model should be worked out in Estonia, which would provide the availability of tests and would make possible to diagnose prostate cancer at an early stage.

Cancer of the intestine: according to the results of international researches, the fecal occult blood test could decrease the mortality of intestinal cancer. Still a proper method for screening has not been established yet.

Lung cancer: lung cancer is the main cause of deaths among malignant tumours, here five-year survival rate is only 9%. In many countries scientific researches have been carried out in order to detect lung cancer at an early stage, but an efficient method for lung cancer screening has not been found out yet.

Although the incidence rates on cancer sites mentioned above are high and cancer would be detectable at an early stage with screening, unless the tests measure up to the ten universal prerequisites for screening it is possible to carry them out only as a pilot or scientific project in Estonia. With the developement of research methods and population based proof of effectiveness as well as fulfilling the other international criteria set for screening programs, working out and setting in use possible new screening programs should be pondered as well.

5. DIAGNOSTIC AND TREATMENT OF TUMOURS

5.1. Cancer diagnosis

Sub-goal 4. Quality cancer diagnostic.

Indicator of effectiveness:

The proportion of local cancer cases in detected primary cases will decrease
(Database: 46 % year 2000, resource: Cancer Registry)

Measure 7. To introduce quality diagnostic methods and provide the availability.

The first step while suspecting a cancer is the correct and evidence based diagnosis using various contemporary methods. It is based on clinical features, radiographic imaging, endoscopical procedures, lab analysis and histological tests synthesis. The accurate detection of cancer spread (stages) is a prerequisite for further action plan, including choosing the treatment method and evaluating its effectiveness, prognosis as well as treatment termination.

The reason why cancer has been diagnosed at a late stage is frequently due to a belated visit to a doctor, but also due to an initial non-effective diagnostics. With the help of contemporary visualised imaging methods (ultrasound, mammography, X-ray, radiological procedures, computed tomography, magnet tomography etc) it is possible to detect many cancer cases very accurately and at an early stage. Specific lab tests which have been worked out in order to detect cancer at an early stage give an important information as well as endoscopical procedures. The diagnostic- and treatment guidelines adjusted to Estonia need to be updated, taken into consideration the possibilities mentioned above, and widely introduced to specialists. As a member of European Union it is necessary to take into consideration certain cancer diagnostic accustoms and guidelines, by showing the use of radiological equipment surveys. High cost of diagnostics is relative, because in the long run it pays off itself, if we consider the results (an optimised planning of an expensive chemotherapy, correct evaluation of treatment efficiency, less expensive treatment due to early diagnosis, increase in survival etc). On the whole it can be said that proper and wide-spread use of high-quality diagnostics is a prerequisite to achieve better long-term results.

5.2. Cancer treatment

Sub-goal 5. Adequate, quality, effectiveness and timely treatment of cancer

Indicator of effectiveness:

Average waiting time in haematology treatment decreases

(Database: according to the 11 month data from year 2006 it is 21.1 days ambulatory care; 16.5 days stationary care).

Average waiting time in oncology treatment decreases

(Database: according to the 11 month data from year 2006 it is 7.2 days ambulatory care; 48.4 days stationary care)

Measure 8 To provide quality multimodal (including all the treatment methods) cancer treatment in optimal range.

Surgical therapy in oncology

Surgical therapy is the main treatment for solid tumours which is more often combined with medications and radiation therapy. Surgical oncology is meant for treating gastro-intestinal, glandular tissue- and endocrine organs-, skin and mesenchymal-, nervous tissue, bone- and soft tissue solid tumours (*European Society of Surgical Oncology, ESSO*). Besides treatment, surgical oncology comprises prevention of tumours, genetic counselling, specific diagnosis and procedures to assess the stage of a tumour, but also post treatment rehabilitation and monitoring. Surgical oncology is an inseparable part of multimodal cancer treatment (www.esso-surgeonline.be).

In order to increase the surgical effectiveness of malignant tumours and to improve survival rate, to decrease mortality rate it is important to centralize the oncospecific operations into specially trained clinics and departments (See 5.3). Scientific research and experience of European leading cancer centers confirm good results in treatment because of these kind of special facilities. In Estonia the need for centralizing surgical oncology into certain centers is especially important because of the relatively small absolute number of cancer incidence.

Surgical oncology training: In European countries medical training in surgical subjects is carried out following organ-oriented principles, which means that both treatment of tumorous and non-tumorous diseases are taught. Considering the increasing incidence in malignant tumours and the complicated treatment of tumours, it is very important for all surgeons, on the background of deepening specialisation, similar oncological training and quality control. In Estonia surgical oncology training could improve the treatment results (Appendix 8.7)

Radiation therapy

Radiation therapy is used both for curative and palliative purpose, alone or combined with other cancer treatment methods. More frequently used are the external radiation- and close-radiation therapy. At present in Estonia radiation therapy is administered in two regional hospitals: in North Estonia Medical Center and in Tartu University Hospital in Haematology and Oncology Clinic.

Compared to some European countries the possibilities of radiation therapy in Estonia has been underused and it is been administered only for 25-30% of cancer patients (1600-1700 patients). In some European countries the number is 50-55% and in the United States of America up to 60%. According to international consensus (World Health Organisation/Pan American Health Organisation-WHO/PAHO Report 1997) 50% of primary and 15% of recurrent cancer patients need radiation therapy. Recent scientific studies show in addition to some cancer sites (breast, prostate, large intestine and rectum) the increased need for radiation is up to 70% of patients. The main reason for small radiation usage in Estonia is the depreciated and inadequate gear, which are not sufficient to apply contemporary effective radiation therapy for necessary number of cancer patients. Another reason is shortness in qualified personell. In the experts opinion QUARTS (June, 2005) ESTRO (European Society of Therapeutic Radiology and Oncology) published that the number of linear particle accelerators needed in Estonia is 5 per one million residents.

The aim of the strategy in this field is to carry out contemporary evidence based, quality and safe radiation therapy and to assure optimal availability for the cancer patients, which is a prerequisite for increasing survival rate and improving life quality.

New opportunities in cancer treatment

New technologies have been brought into clinical practice such as procedural radiology, procedural endoscopy, isotope- and biological treatment, cancer-removal surgery with radio-waves and so on. The opportunity to apply these methods broadens cancer treatment and enables in some cases to replace traumatic methods with less invasive ones, that way sparing the patient and the healthcare financial means.

At the moment applying innovative treatment methods in Estonian healthcare has stopped, for instance procedural radiology and isotope treatment. In order to solve the problem it is necessary to improve doctor's undergraduate and continuing education but also to find resources in order to establish necessary infrastructure and apparatus base.

Systemic treatment of tumours

The basis of tumours systemic treatment is the medications oral, subcutaneous, intra venous- or intramuscle administration, after which the released active metabolic substances are transported through the bloodstream into different target organs and tissues. Systemic treatment plays the most important role in the treatment of malignant haematological tumours. During years of tumours systemic treatment a sub-specialty of clinical oncology has come out, which is called oncotherapy (Medical oncology). It's main aim is to diagnose cancer as well as to carry out cancer patients systemic-, rehabilitation- and supportive care and clinical scientific studies.

Oncotherapy training

According to the data published in ESMO (European Society for Medical Oncology; ESMO Newsletter, January-March 2005) oncotherapy has been accepted as individual medical specialty in 24 countries, among them 18 European countries. Still in Europe on the whole it has not been accepted as an individual speciality yet. Considering its extremely rapid development it is quite realistic that in near future it is going to be added in the list of European medicine specialities (UEMS -European Union of Medical Specialists). After it has been approved by the European Union it should be considered to open oncotherapy as an individual speciality in Estonia as well (Appendix 8.8)

5.3. Cancer treatment organisation

Quality cancer treatment has to be multimodal, combining surgical, radiation- and systemic treatment (See 5.2). Organisation of European Cancer Institutes (OEI) has declared to the European countries health- and social ministries that the cancer treatment organisation assesses the cancer treatment effectiveness and control. The decrease in cancer patients' mortality has been detected mostly in countries, where multidiscipline oncological treatment is provided in cancer centers.

The functions of a cancer center are:

- cancer cases registration and documentation as well as epidemiological and statistical activity (in Estonia it is completed by the Estonian Cancer Registry);
- to work out, introduce and regularly update evidence based oncological guidelines, to guarantee cancer patients monitoring and surveillance;
- organizing contemporary and quality cancer treatment based on combining various oncological treatments;
- to guarantee clinical oncological training and additional training for the cancer treatment personnel ;
- to carry out clinical and basic scientific studies;
- to inform and counsel doctors, health-organisations and population about cancer and themes related to that;
- psychosocial counselling of cancer patients and their relatives ;
- participation in working out and applying national cancer strategy;
- early detection of cancer, screening programs coordination;
- cancer prevention.

At present there are two local hospitals in Estonia that measure up to the requirements of all-round cancer center: Tartu University Hospital and North Estonia Medical Center. Besides this Tallinn Children Hospital deals with children`s systemic chemotherapy and biological therapy. The development of the network of cancer treatment institutions has been regulated by the social`s ministers regulation nr. 103 of 19.08.2004 "The requirements for different types of hospitals".

Financial policy of healthcare plays an important part in accessibility of cancer diagnostic and treatment. Different aspects of the whole system must be considered with (for example the effect of screening on medicine production). The important part of financial policy is the formation and introducing (in a proper amount) expenses based prices of evidence based diagnostic and treatment services.

One of the prerequisites for accessibility of cancer diagnostic and treatment of good quality is the training of sufficient number of specialists. In the process of making up training programs it is reasonable to consider the recommendations of relevant organisations in Europe (for example ESTRO, ESMO, ESSO, ESGO, EANM etc) (See appendices 8.7 and 8.8.)

6. REHABILITATION AND PALLIATIVE CARE, NURSERY SERVICES

Subgoal 6. Guaranteeing rehabilitation and palliative care of good quality for cancer patients from the first tests to the end of life

Measure 9. Guaranteeing rehabilitation and palliative care services by competent service providers

Rehabilitation care of cancer patients

Rehabilitation care of cancer patients is directed to rehabilitation or recovery of functions damaged by oncological disease and/or treatment, and also to adopt with disability using different rehabilitation methods parallel to specific tumour treatment or after that in order to assure maximal quality of life. Commonly used rehabilitation methods are physiotherapy, occupational therapy, psychotherapy and speech therapy. The concept of physiotherapy embraces therapeutical massage (including manual lymph drainage therapy), physical activeness, physical therapy (including warm, cold and water therapy).

Rehabilitation care services for cancer patients are mostly provided by trained specialists at rehabilitation centres or in some cases in county centres as well - the oncologist's reference letter is required.

Palliative care of cancer patients

Palliative care of cancer patients is an active and wholesome treatment directed to achieving the best possible quality of life possible. The purpose of palliative care is to improve the life quality of cancer patients from the first tests up to the end of their life (WHO 2002), to teach patients living with their disease and to support their families. The patients' discomfort is alleviated and they are supported till death. Palliative care includes supporting families also during their mourning period.

The services of palliative care may be divided into two groups according to their concept and supportive network: palliative care services offered by specialist doctors and nursery care services.

6.1. Palliative care services offered by specialist doctors

Palliative care offered by specialist doctors is divided into two parts by its character:

- Oncospecific palliative care, directed to patients who cannot pass radical cancer treatment. The surgical, chemo and/or radiation treatment is palliative by its nature i.e. alliviating patient's discomfort
- Non-oncospecific palliative care is alliviating the discomfort caused by cancer and/or cancer treatment (pain, weakness, powerlessness, queasiness, dyspnea etc) starting from detection period until curing or death. It can also be used after cancer treatment in cases when discomfort is caused by cancer treatment methods used.

Non-oncospecific palliative care should be provided at cancer centres in pain and/or palliative care cabinets both ambulatory and stationary palliative care departments. In stationary palliative care departments the focus is on reducing pain and other kind of discomfort, so that the patient could continue the best possible life at home. One of the essential components of palliative care is reducing pshychological and psychosociological stress, to provide emotional support (new situation for both the

patient and his/her inmates) and practical help (laws, support, legal defence) and forming a safe union between treatment and everyday life environment.

The rehabilitation treatment and palliative care is much more effective when based on teamwork, involving different professionals from medical field as well as the professionals from fields abutting on medicine (cooperation between doctors, nurses, caregivers, rehabilitation care specialists, health protection and social workers, psychologists, clerks etc).

6.2. Palliative care services provided in the form of nursery care

Nursery care involves supporting cancer patient at home, nursery services and stationary nursery services the part of which are also hospice services.

Nursery care at home is provided only by good specialist-teams. It is aimed to diminish the discomfort of cancer patient in terminal stage of cancer and also to counsel patient's family members. The treatment plan must be worked out for a patient and all necessary procedures are carried out at home at the fixed time. Patient could be hospitalized if necessary. Nurses can similarly support the care at home providing all services that have been indicated by doctor.

In hospitals nursery care is provided for 24 hours and all procedures prescribed by the doctor are done for patients whose multimodal treatment has been finished or the perspective to continue is not sufficient. Nursery care is provided in nursery hospitals and in nursery care units in hospitals of active treatment.

It is important to provide hospice services for patients reaching terminal stage. Hospice treatment is a form of holistic palliative care, that prepares patients and his/her inmates to accept death and tries to assure the best positive life quality for supporting the dignified passing away. Hospice services embrace supporting inmates in their mourning period. Hospice services can be provided at home or the patient may be hospitalized if necessary.

The palliative and nursery care of oncological patients is still a problematic issue in Estonian medicine as there is not enough staff members or resources and finances. In conclusion it may be declared that in order to create well-functioning good quality palliative and nursery care network that could be accessible for everybody in need and guaranteeing the best possible life for cancer patients or for patients at a terminal stage - the dignified passing away.

7. Strategy Implementation and Assessment

7.1. Strategy implementation

The Ministry of Social Affairs is responsible for coordination and achieving the goals of national cancer strategy. The serving unit of the strategy is the department of public health at the Ministry of Social Affairs and the executive unit is the National Institution for Health Development. The executive unit has to carry out the activities designated in action plan in order to achieve the objectives of the strategy and to work out and present annual analytical report of cancer strategy to social minister by February 1st. The requirements for the content and structure of the report are confirmed by social minister's order. The annual action plan is worked out by executive institution and the plan for the following year has to be presented to social minister no later than November 1st of the current year.

For organizing the cancer treatment the committee of cancer treatment quality is established. It has to coordinate the working out the instructions for diagnostic and treatment; monitor treatment queues, -quality and -arrangement; as well as for rehabilitation and palliative care and to make relevant suggestions to social minister. The committee is accountable to social minister once a year. The staff and work procedure is confirmed by social minister's order. The serving unit of the committee is the health department. The work of the committee is reverberated in action plans and gets its finances from strategy fund. The committee has the right to make suggestions to social minister in order to change the action plan.

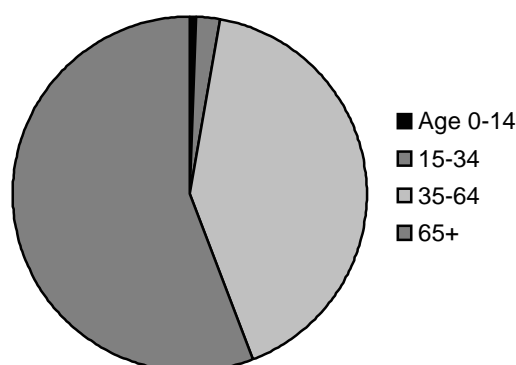
The action plan of the strategy is financed from state budget funds by the Ministry of Social Affairs, but also by Estonian Health Insurance Fund and by donations to non-profitable organizations. The activities and effectiveness of strategy are discussed at round-table meetings every second year, where besides Ministry of Social Affairs and its sub-units (Health Care Board, Health Care Inspection, National Institution of Health Development, Chemicals Notification Centre), the representatives of partner organizations – Cancer Registry, Estonian Oncologists Club, Estonian Health Insurance Fund, regional hospitals, local administrations, NPO Cancer Union, Cancer Screening Foundation, Domestic Supportive Care Foundation etd non-profitable organisations take part in as well.

7.2. Strategy assessment, cancer screening and scientific researches

The effectiveness of strategy is assessed by the indicators of effectiveness. The department of health information and analysis at the Ministry of Social Affairs, the department of epidemiology and biostatistics at National Institute of Health Development and Cancer Registry are responsible for the assessment of strategy. In order to assess the strategy and find out the effectiveness of applied measures the results of many researches (including the research about adults' and children's health behaviour, analytical epidemiological researches, treatment audits etc) must be put together. The central role in the assessment of strategy effectiveness has the database of Cancer Registry. The goal of Cancer Registry is to guarantee the processing of data of all cancer cases in Estonia which forms the basis for general cancer statistics in the Republic of Estonia and also for analysis of cancer incidence and survival for cancer patients, for studying the causes of cancer, for giving prognoses of trends, for developing health care and directing health policy, for planning cancer protection measures and for assessing their effectiveness based on internationally accepted criteria. It is important to assure the continuity of scientific researches, especially registry-based researches and to continue the studies of cancer risk factors in Estonia. One of the goals of the studies is to find out and analyze the late diagnosis of cancer and the causes of low survival for cancer

patients, in order to make the suggestions that would improve the situation considering the local conditions. Besides assessing cancer diagnosis and treatment quality helps to make suggestions that would improve treatment arrangement and the life quality of cancer patients. National epidemiological and other health studies give the opportunity to find out the prevalence of more important cancer riskfactors; questionnaires give a survey of the knowledge of Estonian people about cancer riskfactors and also cancer protection and early symptoms of cancer, as well as about the possibilities of prevention and early detection of the disease and the causes why people call the doctor so late. The researches among cancer patients and their family members help to assess the necessity and state of palliative care.

8. APPENDICES



8.1. Differentiation of primary cancer cases by age groups in Estonia, 2000

More than half (56%) of the patients with cancer are over 65, rest of the patients (4%) are under 65 years of age. There are registered about 40 cancer cases among children every year, and in the leading position there are malignant tumors of nervous system and lymphatic tissue.

8.2. Ten leading primary sites of cancer among males and females in Estonia in 2000

8.2.1. Ten leading primary sites of cancer among males in Estonia in 2000

Primary site	ICD-10	New cases/primary cases		Incidence rate/incidence rate (per 100 000)	
		Number	%	Common	Age-standardised*
Lung	C33-C34	579	20.1	91.7	63.7
Prostate	C61	367	12.8	58.1	39.2
Colon- and rectum	C18-C21	313	10.9	49.6	34.0
Stomach	C16	274	9.5	43.4	30.7
Skin	C44	264	9.2	41.8	29.5
Kidney	C64-C65	149	5.2	23.6	17.2
Bladder	C67	148	5.2	23.4	16.3
Pancreas	C25	95	3.3	15.0	10.7
Larynx	C32	71	2.5	11.2	8.3
Non-Hodgkin lymphoma	C82-C85/96	64	2.2	10.1	8.0
All sites	C00-C97	2873	100.0	454.9	324.5

*Standardised to the World standard population by age.

8.2.2. Ten leading primary sites of cancer among females in Estonia in 2000

Primary site	ICD-10	New cases/primary cases		Incidence rate/incidence rate (per 100 000)	
		Number	%	Common	Age-standardised*
Breast	C50	538	17.5	72.9	43.8
Skin	C44	381	12.4	51.6	24.7
Colon- and rectum	C18-C21	359	11.7	48.5	21.9
Stomach	C16	217	7.0	29.4	14.6
Corpus uteri	C54	184	6.0	24.9	14.0
Cervix uteri	C53	162	5.3	22.0	15.5
Lung	C33-C34	161	5.2	21.8	10.2
Ovary	C56	151	4.9	20.5	12.5
Kidney	C64-C65	100	3.2	13.6	7.2
Pancreas	C25	98	3.2	13.3	6.0
All sites	C00-C97	3081	100.0	417.5	227.6

*Standardised to the World standard population by age.

8.3. Cancer incidents by the time after diagnosis in Estonia, 2000

Primary site	Years from diagnosis				
	Less than 5 years		5 years and more		Total
	Number	%	Number	%	
Skin (except melanoma)	2880	38	4602	62	7482
Breast	2071	40	3066	60	5137
Colon- and rectum	1634	50	1602	50	3236
Stomach	733	44	923	56	1656
Prostate	997	66	519	34	1516
Lung	691	67	334	33	1025
All sites	15147	44	19373	56	34520

8.4. Interrelations between tumors and environmental factors:

<u>Tumor</u>	<u>Evidenced correlation</u>	<u>Major predisposer</u>
Bladder tumor	Aromatic amines (4-aminobifenylyl, auramine, benzidine etc.), colorants that contain derivates of benzidine, coal tar, nitrobifenylyl, tobacco smoke, trihalomethanes	Arsenic, benzo(a)pyrenic, PAH-s, chlorofenol, ionised radiation, metylendianiline, organic solvents, o-toluidine
Breast tumor	Oestrogens, ethanol, ionised radiation	Aromatic amines, etylen-oxide, PAH-s, tobacco smoke
Tumors of the intestines		Acrylonitril,alachlor, aromatic amines, ionised radiation, organic solvents, trihalomethanes
Tumor of the lung	Aluminum, arsenic (including pesticides), asbestos, atapulgitis, , benzo(a)pyrenic, PAH-s, beryllium, cadmium, chloromethylaethers, chrome, cole tar, diesel effluvium, ionised radiation, mineral oils, yperite, nickel, radon, silicium, soot, tobacco smoke, uranium	Acid aerosol, acrylonitril, aromatic amines, chlorofenol, cole tar, copper, dimethylsulfate, formaldehyde, solvents, nitrosoamines, PAH-s, bensoanthracene, benso(a)pyrenic, dibens(a)anthracene
Prostate tumor		Acrylonitril, aromatic amines, cadmium, organic solvents, PAH-s
Skin tumor (except melanoma)	Arsenic, cole tar, ionised radiation, mineral oils, oil shale oils, UV-radiation	Aromatic amines, creosols, etylen oxide, mineral oils, PAH-s (anthracene, benso(a)pyrenic, dibensoanthracene), pesticides (including arsenic)

8.5. The bases for dangerous chemicals classification and legal principles to regulate their use

Chemicals are classified based on unified principles that are enacted in the Social Minister's Regulation No 122 , December 3rd, 2004: "The requirements and order for identification, classification, packing and labelling dangerous chemicals¹" (RTL, 21.12.2004, 154, 2326). Chemicals are divided into three categories according to their carcinogenic effect:

Category 1 carcinogens

Substances which carcinogenic effect on humans as been proved by i.e. the casual correlation between the contact with the substance and the occurrence of malignant tumour has been found.

Category 2 carcinogens

Substances which are probably carcinogenic to humans i.e. there are some evidence allowing to assume that the contact with the substance may cause the occurrence of malignant tumour. The bases of this evidence usually are:

- long term relevant animal tests
- another relevant information

Category 3 carcinogens

Substances that may cause damage to people's health due to the supposed carcinogenic effect but the existing evidence is not sufficient to draw reasonable conclusions.

In the European Union and therefore in Estonia marketing carcinogenic chemicals of Category 1 and 2 in public i.e. to common consumer is forbidden and so is their usage in cosmetic products. As the use of carcinogens by common consumer cannot be controlled, safety can be guaranteed only by limited marketing of these products and their substances. The limits have been imposed by:

- 1) Social Minister's Regulation No 36, February 28th, 2005 „Limits of handling chemicals that are dangerous for population and nature¹ (RTL 15.03.2005, 29, 407);
- 2) Social Minister's Regulation No 21, February 23rd, 2007 „Requirements for cosmetic products and their handling“ (RTL, 2007, 20, 341).

In addition to cited legal acts the Strategic Plan for Chemical Safety is being worked out by Social Ministry. Its main goal is to apply the chemical policy of the European Union, considering the individuality and needs in Estonia.

8.6. Treatment expenses of cervix uteri cancer

According to the price list of Estonian Health Insurance Fund the treatment of style cancer at pre-cancer or at an early stage in stationary care department in a hospital costs about 3,500 EEK. The treatment of stage I and II cancer costs 28,000 and of stage III cancer 65,000 EEK, at later stages of cancer palliative radio-chemotherapy costs 46,000 EEK; the expenses on incapacity to work, disability, supportive- and rehabilitation care accrue to treatment costs.

8.7 Surgical oncology training

The European Association of Medical Specialists (Union Européenne des Médecins Spécialistes, UEMS; European Board of Surgery) recognizes surgical oncology as one of the sub-subjects of surgery and relevant qualification could be obtained in the subject. UEMS has elaborated a recommended curriculum for surgical oncology in Europe (www.uemssurg.org). Multimodal cancer centre where both chemo- and oncotherapy could be used in addition to surgical treatment is one of the most essential prerequisites for surgical oncology training.

8.8 Oncotherapy training

In 2004 ESMO (European Society for Medical Oncology) and ASCO (American Society for Clinical Oncology) specialists worked out a joint programme for oncotherapy residents that is called "A Global Core Curriculum in Medical Oncology" (Annals of Oncology 2004, vol.15; www.esmo.org; www.asco.org). This program is forming the basis for theoretical and practical training of oncotherapists both in North-America and Europe, including Estonia.

8.9 Abbreviations used

AIDS	<i>Acquired immune deficiency syndrome</i>
ASCO	<i>American Society for Clinical Oncology</i>
EANM	<i>European Association of Nuclear Medicine</i>
ESGO	<i>European Society of Gynaecological Oncology,</i>
ESMO	<i>European Society for Medical Oncology</i>
ESSO	<i>European Society of Surgical Oncology</i>
ESTRO	<i>European Society of Therapeutic Radiology and Oncology</i>
HBSC	<i>Health Behaviour in School-aged Children</i>
HPV	<i>Human papilloma virus</i>
IARC	<i>International Agency of Reasearches of Cancer</i>
PAH	<i>Pan American Health Organisation</i>
PAH	<i>Polyaromatic carbohydrates</i>
PAP-test	<i>Papanicolaou test</i>
RT	<i>Riigi Teataja (State Gazette)</i>
RTL	<i>Riigi Teataja lisa (State Gazette appendix)</i>
UEMS	<i>Union Européenne des Médecins Spécialistes</i>
WHO	<i>World Health Organisation</i>
FRS	<i>Five-year Relative Survival</i>

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