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APEC Conference on Cooperation Initiatives for Non-Communicable Diseases (NCDs) Prevention and Control

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APEC Conference on Cooperation Initiatives for Non-Communicable Diseases (NCDs) Prevention and Control

Wednesday October 16, 2019		
20:30-23:30	**Welcoming reception**	
Thursday October 17, 2019 Kolomenskaya Street 26, Krasnoyarsk		
Time	**Subject**	**Speaker/Moderator**
09:00–09:30	Registration	
09:30	Opening ceremony. Welcoming speech.	Vladimir Uyba – Head of the FMBA of Russia
		Aleksandr Uss – Governor of the Krasnoyarsk Territory
		Alexey Kiselev-Romanov – Director of the Department of Public Health and Communications, the Ministry of Health of the Russian Federation
		Johnny Lin Hung-hsun – Health Working Group Program Director, APEC Secretariat
09:45–10:00	Group photo	
10:00-13:30	**Plenary 1: The global trends in NCDs prevention and control**	Moderator: Alexey Kiselev-Romanov – Director of the Department of Public Health and Communications, the Ministry of Health of the Russian Federation
10:00–10:20	Speaker 1 Report on the promising practices of NCDs prevention and control in the Russian Federation	Alexey Kiselev-Romanov – Director of the Department of Public Health and Communications, the Ministry of Health of the Russian Federation
10:20–10:40	Speaker 2. Prevention of noncommunicable diseases (NCDs) to achieve the Sustainable Development Goals (SDGs)	Dr Joao Breda – Head of the WHO European Office for the Prevention and Control of Noncommunicable Diseases
10:40–10:50	Speaker 3 Thailand's experience in NCDs prevention and control	Churit Tengtrisorn – Medical Officer (Expert level), Department of Disease Control, Ministry of Public Health, Thailand
10:50–11:10	Speaker 4 NCD Control Situation and Healthy Nation Work Plan and Strategy in China	Jixiang MA – Deputy Director of NCD Division, China
11:10–11:30	Speaker 5 Plans of the Department on the recently passed NCD Laws in the Philippines, the Cancer Law, Mental Health Law and Sin Tax on Alcohol and Tobacco	Dr Napoleon Arevalo – Director IV, DOH, The Philippines
11:30–12:00	Discussion	All participants

12:00–13:30	Lunch break	
13:30-20:00	**Plenary 2. International cooperation in the field of healthcare NCDs prevention and control in APEC economies**	
	Session 1. Experience of implementing programs for NCDs prevention and control and cancer services in the APEC economies: - creation of a medical expert network aimed to identify and to recommend for implementation best practices in the field of NCDs prevention and control. - creation of a united information system for medical specialists of APEC economies as a resource for providing remote consultations, webinars, online conferences	Moderators (co-chairing): Marina Popovich – Head of the Department of Integrated Prevention Programs of the NMIC PM; Andrei Kostin – Deputy Director General, Federal State Financed Institution Scientific Research Center for Radiology, Ministry of Health of Russia
13:30–14:00	Speaker 1 CT Lung Screening in Japan. Accreditation Council for Lung Cancer CT Screening	Dr Ryutaro Kakinuma – Department of Pulmonology, Tokyo Clinic, Division of Remote Diagnosis, e-Medical Tokyo, Japan
14:00–14:20	Speaker 2 NCD prevention and control in Chinese Taipei - From Diabetes to Complications	Mai-Szu Wu – superintendent, Shuang Ho Hospital, Chinese Taipei
14:20–14:40	Speaker 3 Experiences of initiatives for NCDs prevention and control in Peru	Janeth Tenorio – Universidad Peruana Cayetano Heredia, Peru
14:40–15:10	Discussion	All participants
15:10–15:40	Coffee break	
	Session 2. Innovative technologies of nuclear medicine in NCDs prevention and control.	Andrei Kostin – Deputy Director General, Federal State Financed Institution Scientific Research Center for Radiology, Ministry of Health of Russia
15:40-16:00	Speaker 1 The Use of International Telemedicine and Telehealth in the Management of Non- Communicable Diseases	Dale C. Alverson – Strategic Telehealth Consultant, the United States of America
16:00–16:20	Speaker 2 Low-dose computed tomography in lung cancer screening in the Krasnoyarsk Region	Dr. Ivan Safontsev – A.I. Kryzhanovsky Krasnoyarsk Regional Clinical Oncology Center
16:20–17:00	Discussion	All participants
19:00–22:00	Welcome Dinner	
Friday **October 18, 2019**	**Partizana Zhelezniaka Street 1, Krasnoyarsk**	
Time	**Subject**	**Speaker/Moderator**

09:40–10:00	Registration	
	Plenary 3. Problems and prospects of cooperation in providing training for medical specialists of NCDs prevention and control	Moderator: Irina Kupeeva – Director of the Department of Medical Education and Personnel Policy in Health Care, Ministry of Health of the Russian Federation
10:00-10:10	Welcoming speech	Aleksey Protopopov – Rector, Krasnoyarsk Medical University
10:10–10:30	Speaker 1. Prevention of NCD's in the context of health services with the focus on primary health care	Dr Joao Breda – Head of the WHO European Office for the Prevention and Control of Noncommunicable Diseases
10:30–10:50	Speaker 2 Human resource development in oncology	Dr Andrey Modestov – Head of A.I. Kryzhanovsky Krasnoyarsk Regional Clinical Oncology Center
10:50–11:10	Speaker 3 Ten years of experience in training engineering and medical personnel for nuclear medicine	Galina Kodina – Head of the Department of Radiochemistry and Radiopharmaceuticals in the Biomedical University of Innovation and Continuing Education Burnazyan SRC-FMBC of the Federal Medical Biological Agency
11:10–11:40	Coffee break	
11:40–12:00	Speaker 4 Public Awareness as a Factor of Influence on the Fight with Non-communicable Diseases Control (results of the sociological study)	Dmitry Borisov – Executive Director, Non-commercial Partnership "Equal Right for Life"
12:00–12:20	Speaker 5 NHI MediCloud System for NCD Management	Ms. Chun-Fu Lee – Director, Ministry of Health and Welfare, Chinese Taipei
12:20-12:30	Speaker 6 The Nuclear Medicine Master Program of SibFU and FSRCC	Andrey Shuvaev – Lecturer in common physics in the Federal Siberian University, Russia
12:20–13:00	Discussion	All participants
13:00–14:00	Round table Discussion of the draft APEC Joint Action Plan for the NCDs Prevention and Control	Moderator: Alexey Kiselev-Romanov – Director of the Department of Public Health and Communications, Ministry of Health of the Russian Federation
14:00–14:10	Closing remarks	
16:00–18:00	Farewell Dinner	
Saturday, October 19, 2019		
	Conference participants departure	

REPORT PRESENTATIONS

Below are the summaries of the presentations delivered during the event sessions.
The visual presentations for the reports made by the Speakers can be found in Appendix 1.

Day 1: October 17, 2019
Plenary 1: The global trends in NCDs prevention and control Speaker 1
Alexey Kiselev-Romanov
Director of the Department of Public Health and Communications, Ministry of Health of the Russian Federation
Report on the promising practices of NCDs prevention and control in the Russian Federation

In his report, Alexey Kiselev-Romanov focuses on four main health risk factors since they contribute to 56% of mortality from non-communicable diseases in Russia. At present, the government is taking various steps to improve the situation.
The first factor is tobacco consumption. Tobacco control started with Russia joining WHO Framework Convention on Tobacco control and is still ongoing with a number of regulations and restricting laws issued. The main aims are to decrease the availability of the tobacco products and launch strong communication campaigns among school and university students. According to studies, the prevalence of tobacco use by gender is decreasing (as for 2016, compared to 2009). The remaining challenge is the other means of tobacco delivery (electronic nicotine delivery systems, systems for heated tobacco products, hookahs, etc.).
Alcohol abuse is a key source of preventable causes of mortality, morbidity, injuries, accidents, crime, homicides, suicides, orphanage and social problems. It accounts for 12% of mortality in Russia. For this issue, the policy is the same as it is for tobacco: decrease in availability and strong campaigning. The remaining challenges are the popularity of alcohol among young people, high burden of alcohol-related pathologies for healthcare system and the expanding circle of places of alcohol sale.
The third risk factor is unhealthy diet. Since 2012, the country officials have started massive work to change the situation with the new strategy on food quality improvement, issuing orders and federal projects to strengthen public health. One of the main results is that the amount of fruits and vegetables consumed has increased compared to 2000. The remaining challenges still are the children obesity, high consumption of salt and the insufficient iodine consumption.
The last key risk factor is the lack of physical activity. The main aim is to create more opportunities for people, especially for those of risk groups and from rural areas, so that they could do sport more often which might be the easiest way to get rid of bad habits such as drinking and smoking. A number of federal laws, regulations and projects have been introduced since 2006.
The main federal project "Strengthening public health" aims to increase the proportion of citizens leading a healthy lifestyle, to decrease the mortality of working-age men and women, to decrease the retail sales of alcohol products per capita and to decrease the growth rate of primary incidence of obesity.

Speaker 2
Dr Joao Breda
Head of the WHO European Office for the Prevention and Control of Noncommunicable Diseases
Prevention of noncommunicable diseases (NCDs) to achieve the Sustainable Development Goals (SDGs)

Dr Joao Breda starts his presentation saying that many things related to health are actually "outside" of health itself (nutrition, environment, physical activity, etc) so it is important for all the structures to work all together in order to achieve SDGs. And in order to do that there should be a certain list of priorities. Now there is a Global action plan "For healthy lives and well-being for all" which aims at strengthening collaboration among multilateral organizations to accelerate country progress on the health-related SDGs. NCDs is one of the factors to tackle in order to achieve SDGs for they still remain one of the biggest healthcare issues. Thus the global community has set 9 global targets in the sphere of NCDs (to achieve by 2025): to reduce premature mortality

caused by the cardiovascular, oncological, chronic respiratory diseases or diabetes, to reduce alcohol consumption, to increase world population's physical activity, to reduce salt/natrium consumption, to reduce the number of smokers, to decrease the prevalence of hypertension, to stop the growth of number of cases of obesity and overweight, to provide at least 50% of world population with the proper medication therapy and consultation for stroke and heart attack prevention and to achieve the 80% level of provision with the basic technologies and basic medications require to treat the most prevalent NCDs in both private and public hospitals. All of the goals mentioned are health-related, however, the initial causes for the issues related lay outside the "health" so it is important to collaborate with the institutions of other spheres to achieve proper results in the sphere of public health.

Speaker 3

Churit Tengtrisorn

Medical Officer (Expert level), Department of Disease Control, Ministry of Public Health, Thailand

Thailand's experience in NCDs prevention and control

In his report Mr Churit Tengtrisorn described the model for NCD prevention and control used by WHO/UN (2 Diseases X 4 Biological changes X 5 Behavioral risks) and showed the NCDs Profile for Thailand which included the data on the situation on NCDs and the targets to achieve for such aspects as the risk of premature death between 30 and 70 years, prevalence of raised blood pressure, prevalence of Diabetes in persons aged 18 or older, prevalence of Obesity in persons aged 18 or older, mean population intake of sodium (mg/day), prevalence of current tobacco use in persons aged 15 or older and the harmful use of alcohol in persons aged 15 or older. The list of National NCDs Strategic Plans was presented which included the past, current and future campaigns and the main NCD Prevention and Control Operational Plan (2017-2021) consisting of 6 strategies was described as a possible means of problem solution. The strategies referred to the spheres of policies and laws, community/local administration and management system development. Then the Speaker outline the concept of the *NCD Clinic Plus* consisting of 6 components including various systems and basing on 4 core activities such as comprehensive care, care coordination, continuity of care and community participation. The final suggestion for problem solution was to interact directly with the community by the means of the appointment of the special working group for assessment and analysis of the community related to NCDs for the further plan development and implementation.

Speaker 4

Jixiang MA

Deputy Director of NCD Division, China

NCD Control Situation and Healthy Nation Workplan and Strategy in China

The presentation of Mr Jixiang Ma was divided into two parts. In the first part he spoke about the situation on chronic diseases control in China starting with the statistics on mortality for the most widely spread types such as the infectious diseases, tuberculosis, heart diseases, cerebrovascular diseases and cancer for rural and urban areas. He then also provided main statistics on the awareness, treatment and control rates for such major diseases as hypertension, diabetes and obesity with such influencing factors as the fat and carbohydrate energy supply ratio, main food intake, condiment intake, highlighting that one major factor for development of chronic diseases in China was the lack of physical activity. In the second part of the report dedicated to the strategies and countermeasures for chronic disease management Mr Ma outlined the key features of the new era health policies and outlined the main plan for the country – "Healthy China 2030" which included addressing the concept of "overall health" and shifting focus from treatment to prevention, introducing the full-cycle health management for entire population, systematic continuous and integrative health services and comprehensive health impact and assessment and evaluation system. Among the main indicators of the plan, he pointed out the life expectancy and the premature mortality from NCDs and marked their targets. It was followed by the description of the

scheme for the risk factor control for health and disease management and the main countermeasures for chronic disease control were the health promotion as a primary measure and the health management as the secondary. The next idea was the integration of the intelligent health monitoring equipment available both for patients and doctors and saving the data in the specialized Health Management Data center thus creating a comprehensive health promotion network working population-wide. In the very end of the presentation, the Speaker summarized the whole plan for management strategy as a pyramid based on health assessment, focused on the integration of prevention and treatment and integrated management as a tool.

Speaker 5

Dr Napoleon Arevalo

Director IV, DOH, The Philippines

Plans of the Department on the recently passed NCD Laws in the Philippines, the Cancer Law, *Mental Health Law and Sin Tax on Alcohol and Tobacco*

In the very beginning of the report, the structure of the Philippine Public Health System was described along with the statistics on life expectancy and the leading causes of death in the Philippines (including cardiovascular diseases, communicable, maternal perinatal and nutritional conditions, cancer, injuries, diabetes, chronic respiratory diseases and other non-communicable diseases). The main risk factors for the population of the Philippines were smoking, overweight and obesity, and elevated blood pressure. Then the Speaker explained the existing legislation on NCDs and proceeded with the NCD targets and indicators achieving which could improve the current situation. Solution also included the Health Strategy Map in the basis of which were four key points: financing (sustainable investments to improve health outcomes), service delivery (accessibility of essential quality health services at appropriate levels of care), regulation (high quality and affordable health products, devices, facilities and services) and governance (strengthening of leadership and management capacities, coordination and support mechanisms in order to ensure functional health systems).

Plenary 2. International cooperation in the field of healthcare NCDs prevention and control in APEC economies

Session 1. Experience of implementing programs for NCDs prevention and control and cancer services in the APEC economies

Speaker 1

Dr Ryutaro Kakinuma

Department of Pulmonology, Tokyo Clinic, Division of Remote Diagnosis, e-Medical Tokyo, Japan

CT Lung Screening in Japan. Accreditation Council for Lung Cancer CT Screening

The presentation was divided into two main parts. The first one was about the CT lung cancer screening in Japan which included the statistics on the trends in lung cancer incidence and mortality (according to age) showing the scale of the problem nation-wide, the evolution of CT technology and CT lung cancer screening. Dr Kakinuma mentioned one of the steps previously taken in order to improve the situation and that step was the creation of the Anti-Lung Cancer Association in 1975 conduction semiannual screenings which resulted in the higher detection rate for this disease (0.16 to 0.39). Then the Speaker proceeded with the modern day population-based study designed for evaluation of the effectiveness of lung cancer screening using low-dose CT conducted in Hitachi city in Japan the objective of which was to compare the mortality rate for citizen who underwent at least one CT screening with that of those who underwent CXR. The result of the study was the lung cancer mortality reduction of 20% at 6.5 year of follow-up and eventually in the end of the project there was a 51% reduction in lung cancer mortality. The second part of the report was dedicated to the Accreditation Council for lung cancer CT screening which was established in 2009 and whose goals are to develop the HR involved in CT screening

and promote CT screening with appropriate accuracy. The Council provides textbooks and lectures for radiological technologists and teaching software for nodule detection. It is believed that radiologists and technologists working together may increase the accuracy of lung nodule detection thus increasing the overall detection rate for this disease.

Speaker 2
Mai-Szu Wu,
Superintendent, Shuang Ho Hospital, Chinese Taipei
NCD prevention and control in Chinese Taipei - From Diabetes to Complications

Cardiovascular diseases, diabetes, chronic respiratory diseases and cancer account for 60% of death toll in Taiwan. Four major risk factors for development of the NCDs are tobacco use, harmful use of alcohol, unhealthy diets and physical inactivity. The current framework of integrated NCD care includes primary prevention (control of the risk factors, encouraging healthy lifestyle, setting approach) and secondary/tertiary prevention (integrated screening, adult prevention healthcare, cancer screening, treatment, "Pay for Performance", guidelines, disability prevention). With diabetes being one of the most urgent healthcare issues in the country, a lot is being done in order to prevent and treat it timely. For instance, it starts with the risk factor management (healthy diet, physical activity and obesity control), then the early detection is important (regular screening after the age of 40), diabetes management (diabetes shared care, certified diabetes health promotion institution, diabetes support group, treatment guidelines and "Pay for Performance") and ICT based smart healthcare. However, even with the extensive plan for prevention and treatment, the Taiwan Diabetes care system still faces a number of challenges (Diabetes incidence and prevalence has been increasing; microvascular complications have been reduced but not enough compared to the declining rate in the USA; inadequeate use of insulin for diabetes treatment; diabetic kidney disease has been increasing; the DM P4P program is cost effective). Among the complications of diabetes are the dialysis (the most frequent), blindness, acute MI, strokes, amputation, composite outcomes. Traditional risk factors for dialysis are hypertension, hyperglycemia, dyslipidemia, aging, gender and life style; non-traditional include type of CKD, degree of GFR, inflammation, oxidative stress, malnutrition, calcium and phosphate, anemia, rennin-angiotensin and uremic toxins. It is a wide range so it is important to take care of all risk factors at the same time and for that you need to integrate various specialists in the process (cardiologists, nurses, dieticians, social workers, surgeons, pharmacies).

Speaker 3
Janeth Tenorio Mucha
Universidad Peruana Cayetano Heredia, Peru
Experiences of initiatives for NCDs prevention and control in Peru

In the beginning of the presentation, she described the major research group of the institution named the Center of Excellence in Chronic Diseases and the three main research projects with international cooperation: ACCISS, COHESION and Salt Reduction Policies in Latin American Countries. As for the first project, the ACCISS (Addressing the Challenge and Constraints of Insulin Sources and Supply) unites four countries and aims to improves access to insulin in Peru, raise awareness of the need to improve diabetes care and develop a plan to improve the availability of insulin and for that purpose they conducted studies for insulin availability and affordability to find the flaws of the system that are to be targeted for improvement. The next project in function is the COHESION (COmmunity Health System InnovatiON) unites three countries and aims to generate evidence and develop interventions to control NCDs and NTDs in the primary healthcare level in rural populations (Hypertension, Diabetes and Neurocysticercosis). The project established that there are certain community issues including proper diagnosis constraints due to poor access to healthcare services, poverty, difference in disease experience for men and women, poor understanding and knowledge of the diseases and difficulties in medicine and healthcare services access that are to be addressed by means allocation of finances for universal health coverage improvement, healthcare professional training, introduction of reference systems and increase of healthcare professionals' responsiveness. The final project, Scaling-up and evaluating policies and programs for reduction of salt in Latin American countries, aims to explore the knowledge, attitudes and

behaviors reported by the consumers with respect to sodium and apply social marketing principles to develop a plan and strategy of implementation. The results of this research will help to reduce salt intake by means of developing a social marketing strategy. The Speaker proposed that international cooperation in all the projects will be beneficial through joint work, learning from each other's previous experiences and exchange of plans, ideas and expertise.

Session 2. Innovative technologies of nuclear medicine in NCDs prevention and control

Speaker 1
Dale C. Alverson
MD, Strategic Telehealth Consultant, the United States of America
The Use of International Telemedicine and Telehealth in the Management of Non-Communicable Diseases

As it was stated, the most vivid example of the chronic NCDs for treatment of which Telehealth can be used are the diabetes, hypertension, congestive heart failure, COPD, asthma, genetic disorders, mental illnesses and dementia. As the Speaker stated, in order to develop a proper Telehealth Network it is required to take a number of important steps which include building relationships, team building, assessment of needs and cultural perspectives, planning and implementation, knowledge sharing and cultural exchange, data collection and analysis, and sustainability. Thus in order to get started with the Telehealth Network nations should build on relationships, develop concrete programs for Telehealth to add value and mutual benefit, recognize cultural and socio-economic perspectives and utilize emerging new information communication technologies and build upon existing infrastructure, and with everything mentioned above the Network will allow for the joint clinical service and consultation, public health services, disaster preparedness and response, education, training and research which will be beneficial for all the participants and will improve the quality of the medical services provided.

Speaker 2
Dr Ivan Safontsev
A.I. Kryzhanovsky Krasnoyarsk Regional Clinical Oncology Center
Low-dose computed tomography in lung cancer screening in the Krasnoyarsk Territory

In the beginning of the presentation, the Speaker provides the statistics for the new cancer cases in the region showing that lung cancer is one of the most frequently occurring thus it is important to increase the accuracy of diagnosis in order to decrease mortality rate. At present, fluorography remains the most widely used method for active diagnosis of lung cancer in Russia, however, there is the need for more accurate detection of the disease foci. A number of studies showed that CT may act as a more accurate screening method since it helps to detect 3-4 times more foci than the X-ray even with the foci being significantly smaller in size. Thus by the Order of the Ministry of Health of the Krasnoyarsk Territory, the city of Krasnoyarsk was appointed the pilot district for the low-dose CT screening program. As a result, the low-dose CT screening has significantly increased the detectability of lung cancer: 17,1 per 1000 examined compared to 0,039 for the preventive medical examination program meaning that this method can be used as a more accurate screening technique for earlier detection of the disease.

Day 2: October 18, 2019
Plenary 3. Problems and prospects of cooperation in providing training for medical specialists of NCDs prevention and control

Speaker 1
Dr Joao Breda,
Head of the WHO European Office for the Prevention and Control of Noncommunicable Diseases
Prevention of NCD's in the context of health services with the focus on primary health care

Ensuring UHC through NCDs sensitive Primary Healthcare
In his presentation Dr Joao Breda states the importance of primary care is based on the concept that "Health is a human right" which makes it connected with the SDGs, so it is crucial to ensure universal health coverage. It is stated that the primary healthcare can address the vast majority of people's health needs throughout their lives. It is also the most efficient and effective way to achieve health for all, but too often it is the most under-resourced part of the healthcare system with the biggest gaps in poor and marginalized countries so it is important to act so that nobody is left behind. The speaker also points out that it is crucial to reinforce healthcare systems to tackle NCDs because it is generally capable of tracing person's health condition from even before the person was born till death and in this account people-centredness is the key in prevention and care. Base interventions on people then: health services should enable people to receive a continuum of different levels of services according to their needs making it so that it is system that needs to adapt to people and not vice versa. Another important point is that primary healthcare specialists have to be first-class doctors so that they could see the overall picture and there would not be as much need to address other specialists. Thus it is vital that the specialists working in the sphere of the primary health care were highly competent, the institutions should also organize their work in such a way that they could have enough time to attend to the patient in a proper way and systematize the further follow up.

Speaker 2
Dr Andrey Modestov
Head of the A.I. Kryzhanovsky Krasnoyarsk Regional Clinical Oncology Center
Human resource development in oncology

In his report, Dr Modestov states that deaths from the non-communicable diseases of four groups (cardiovascular, oncological, respiratory diseases and diabetes) account for 80% of all deaths nation-wide. Thus the sphere of oncological medical service provision is one of those of priority. Two main current issues of the sphere that the National Cancer Program aims to resolve are the lack of oncologists and oncological dispensaries. Dr Modestov provides information on the institutions providing medical services for oncological patients in the Krasnoyarsk Territory (1 oncological dispensary, 6 medical organizations with beds for oncological patients) but then focuses on the problem of HR in the sphere (114 oncologists and 24 radiotherapists in the region). With the need to open more OCCCs (outpatient cancer care centres), the demand for even more practitioners specializing in oncology is even higher. And with this growing demand a system of Continuing Medical Education is being introduced (2016-2021), and it is based on a new system of specialists training and assessing their competence with the help of professional standards. In the end of the presentation Dr Modestov suggests that new forms of training should be introduced so that the doctors could choose their own learning paths and that there is a need to create distance learning modules, full-time modules (up to 36 hours), internships at the workplace and mentoring system.

Speaker 3
Galina Kodina
Head of the Department of Radiochemistry and Radiopharmaceuticals in the Biomedical University of Innovation and Continuing Education. Burnazyan SRC- FMBC of the Federal Medical Biological Agency *Ten years of experience in training engineering and medical personnel for nuclear medicine*

The presentation of Ms. Galina Kodina is dedicated to the experience of the Department of Radiochemistry and Radiopharmaceuticals (the Biomedical University of Innovation and Continuing Education), created ten years

ago, in training of the medical personnel. It was established due to the lacked some specialists in the field of nuclear medicine, the Department is one among the few universities who started teaching such specialists a few years ago. The speaker stated that even though now there is a number of institutions training specialists in the sphere, it is still impossible to train hundreds of them at once because you have to work with each specialist individually in many aspects. The training cycles (Fundamentals of Nuclear Medicine, Chemical technology of radiopharmaceuticals, Production and quality control of radiopharmaceuticals in a medical institution, Radioisotope diagnostics and radiation therapy, Positron-emission tomography, Binary radiation technology in nuclear medicine) mostly contains engineering subjects which are vital for specialists to use radiopharmaceuticals. Ms. Kodina stated that among students also are the practicing specialists that come for retraining. As of today, the Department has already trained 135 engineers in the field of production and quality control of radiopharmaceuticals, 100 people for nursing stuff and 5 doctors (most of them were Russian specialists, but some came from the nearby countries such as Belarus, Kazakhstan, Kyrgyzstan and Uzbekistan). The speaker also mentions the fact that the existing textbooks were not numerous so the specialists of the department have prepared and published some of their own. In the future the Department aims to develop and provide preclinical and clinical studies for new radiopharmaceuticals, provide nuclear medicine personnel training on production technologies and methods for the manufacturing and quality assurance of radiopharmaceuticals, as well as medical personnel training in modern methods of diagnosis and treatment in the field of nuclear medicine.

Speaker 4
Dmitry Borisov
Executive Director, Non-commercial Partnership "Equal Right for Life"
Public awareness as a factor of influence on the fight with non-communicable diseases control (results of the sociological study)

The study described in the report of Mr Dmitry Borisov was conducted by the Non-commercial Partnership “Equal Right for Life” and was designed to include the population living in cities with various population sizes and different administrative-territorial subordination and focused on 4 key blocks (general health assessment, assessment of cancer care in the region, women’s health assessment and assessment of the impact of conditions and duration of tobacco consumption on the NCDs development). The research showed that vast majority – almost half of the population (54% and 57% for men and women correspondingly) – would seek medical care only in cases of emergency, while those undergoing medical examination regularly are the minority (3% for men and 6% for women). Three most frequently stated reasons for not undergoing medical examination are the lack of information on where to go, no need or lack of time. Also according to the statistics the situation with the cancer prevention awareness in various spheres is not much different: for instance, up to 49% of women older than 55 did not realize the necessity to undergo cytological screening for cervical cancer, 45% of women were unaware of the connection between HPV and cervical cancer and 50% of smoking patients did not associate health problems with smoking. Even though there is a number of methods for cancer prevention and treatment (the speaker provides an example of methylation), it is still important to raise people’s awareness of the problem and for that it is crucial to conduct further study in regions of Russia and start international cooperation with the purpose of studying factors of raising public awareness for a more effective NCDs control.

Speaker 5
Ms. Chun-Fu Lee
MOHW, Chinese Taipei
NHI MediCloud System for NCD Management

The report of Ms. Chun-Fu Lee titled "*NHI MediCloud System for NCD Management"* consisted of three main parts. She started with the introduction of the National Health Insurance (NHI) system, providing its main characteristics, information about its usage, performance and outcomes. One peculiar feature of the system is the "pay for performance" (P4P) program focusing on diseases that are of high expenditure, cover big part of the population and have care models have room for improvement. Ms. Chun-Fu Lee provides the example of outcome for patients diabetes whose examination rates were significantly higher for those taking part in this program than for those who were not. In the second part of the report, the NHI MediCloud System is described. It allows medical specialists to have online access to patients' medical record containing information on surgical records, examination records, dental care, laboratory examination results, discharge summary, rehabilitation records, allergic substances and care list for specific drugs prescribed. It has a number of advantages, one of which, for instance, is the fact that with the list of drugs prescribed, the number of duplicate prescriptions (of drugs with the same pharmacokinetic features) has decreased significantly which is not only financially beneficial but also works for patient's safety. The third part of the report was dedicated to My Health Bank, a tool for managing personal health established in 2014 providing people with their medical data for the past 3 years and reminders to visit physicians in case of presence of chronic diseases. Since 2014 a lot of functions have been added to the system and the application has been downloaded by 1,5 million people.

Speaker 6
Andrey Shuvaev
Lecturer in common physics in the Siberian Federal University, Russia
The Nuclear Medicine Master Program of SibFU and FSRCC

The report of Mr Shuvaev on the Nuclear Medicine master program of the SibFU and the FSRCC was divided into two main parts. In the first part he spoke about the history of creation of the master program in question and its design (the 2-year program includes such subjects as the Medical tracer kinetics, Medical data analysis, Positron-emitting isotopes generation, Synthesis of the radiopharmaceuticals, Radiopharmaceuticals quality control , Dose managing and the Area of irradiation modeling). As for the second part, it was dedicated to the ways of future development. Mr Shuvaev spoke about the features of the educational process (including the benefits of the Bologna process and the sufficiently equipped practical module of the program) and employment (mentioning that however important this topic was, there was a barren choice of employers). It was also said that with the Nuclear Medicine master program offers a number of opportunities for international cooperation (English-language master program in cooperation with the Philippines, extensive exchange programs and the trilateral agreement (SibFU – FSRCC – Department of Science and Technology and Department of Health of the Philippines); cooperation with the medical institutions of Kazakhstan).

RECOMMENDATIONS

made by the participants of the APEC Conference on Cooperation Initiatives for Non-Communicable Diseases (NCDs) Prevention and Control

(October 17-18, 2020, Krasnoyarsk, Russia)

The Conference participants proposed some initiatives on joining efforts for effective management of NCDs and the list of recommendations on possible ways for fostering effective cooperation among APEC members was formed. It includes proposals to create an APEC Health Expert Network on NCDs, a platform for training of the medical specialists from the APEC economies, a joint information system for medical practice. A detailed description of the mentioned cooperation options is provided below.

1. APEC Health Expert Network on NCDs:

Purpose of the Network is to increase the efficiency of the APEC economies NCDs prevention and control programs through providing the economies with advanced analysis of the actual situation in the stated areas. This analytical data can be also used as a basis for the creation of the new APEC projects that will meet the needs of the APEC economies.

Goals:

- Identification of challenges in NCDs prevention and control in APEC economies;
- Exchange of the best practices in the field of NCDs among APEC economies;
- Strengthen the research collaborations among APEC economies in the area of NCDs prevention and control;
- Fostering the spreading of E-Health technologies for NCDs control among APEC economies.

Structure and operating procedure:

1. The Network is composed of officials, researchers, representatives of academic and educational institutions from APEC economies that are officially designated by the APEC economies in HWG.
2. The themes for research are defined during HWG meeting as well as the leading economy(ies).
3. The Network examines the themes during the intersessional period and makes presentations on the challenges and opportunities for the APEC economies in a defined areas of interest.

A potential input of Health Expert Network:

The joint analysis and research on the NCDs situation conducted by the Network will define the common approaches to the challenges and meeting the needs.

The results of Network activities can be a basis for further APEC projects preparation, will make them more focused, challenging and timely launched for a majority of APEC economies.

2. A platform for training of the medical specialists from the APEC economies:

Since creation and development of the information systems for healthcare providers are considered as a relevant topic, the second initiative proposed was to create a platform for training of the medical specialists from the APEC economies.

Purpose of the training platform is to meet the needs of the APEC economies in advanced training and exchange of experience among the medical specialists of the member economies, increase the availability

and broad access to the new developments, applied research works which will allow to implement and use the best practices in the process of NCDs diagnosis and treatment with the prior on-the-job training.

Goals:

- Exchange of the best experiences and the most relevant knowledge on the issues of the current importance;
- Open access to the most recent knowledge and innovative developments for all medical specialists from the APEC economies with the possibility to study without giving up work (on-the-job training).

Structure and operating procedure:

1. The platform will consist of the series of courses that will include a number of lectures and are followed by the practical task with remote supervision.
2. The staff working on the courses will include academicians, lecturers and researchers from the medical institutions of the APEC economies.

A potential input of a platform for training of the medical specialists from the APEC economies:

The educational and advanced training courses will be more available for the medical professionals from the APEC economies as far as concerns expenses involved .

3. A joint information system for medical practitioners

The third recommendation relates to the knowledge exchange on NCDs using the eHealth technologies and creating a joint information system for medical practitioners.

Purpose of the joint information system is to serve as an online source which will allow sharing the knowledge and carrying out of remote consultations, webinars, conferences, and any other events for medical specialists from the APEC economies.

Goals:

- Facilitation of experience and opinion exchange;
- Consideration of the complicated issues concerning NCDs diagnosis and/or treatment;
- Ensuring of the access to the consultation with the leading specialists from different APEC economies.

Structure and operating procedure:

1. The system will allow medical specialists from the APEC economies to discuss relevant issues concerning diagnosis and/or treatment of complicated medical cases in real time.
2. The system will allow to record the discussion process and videos, which will be available online and medical specialists can watch or refer to them in case of necessity.

A potential input of joint information system:

Consultations on diagnosis and/or treatment of complicated NCDs cases and discussion of the relevant medical issues will be facilitated that will increase the accuracy of diagnosis and treatment, thus upgrading the level of health care.

ACTION PLAN

of Joining Efforts for Effective Management of NCDs in APEC Economies

Background:

Good health is a prerequisite for effective economic development as healthy populations live longer and are more productive. One of the crucial threats for present global health is non-communicable diseases (NCDs). The loss in productivity caused by NCDs can be profound, they are the leading causes of morbidity, disability and mortality globally, killing nearly 41 million people each year, while many of them are under the age of 70.

This is not only an issue of health, but it strongly affects the development of the economy. As people are less productive, work for fewer years and die prematurely, the growing burden of NCDs exacts a huge economic cost. Thus, NCDs undermine the quality of life, social development, economic growth of economies and productivity rate. It should be also noted that "15 million of all deaths attributed to NCDs occur between the ages of 30 and 69 years. Of these "premature" deaths, over 85% are estimated to occur in low- and middle-income countries"[1]. Poor population get sick and die sooner than the rich one, as they tend to be exposed to "harmful products, such as tobacco, alcohol or unhealthy dietary practices, and have limited access to health services".[2]

Nevertheless, most of these premature deaths from NCDs are preventable by enhancing national healthcare systems to respond effectively. A range of interventions that exist for addressing NCDs includes responding to the health-care needs of people with NCDs and measures to control risk factors and promote healthy living, and efforts to raise the priority accorded to NCDs at the global and local/domestic levels.

To address the burden of NCDs in developing economies and to ensure the effectiveness of the measures implied in this matter in Asia-Pacific region, the Action Plan «Addressing the Chronic Disease Challenge in the APEC Region: An Innovative Approach to Collaborative Action» was presented on 23rd APEC Ministerial Meeting in Hawaii, the United States 11 November 2011. This document defined the main directions of measures that should have been undertaken by economies to address the problem of NCDs. The list included a whole-of-government and a whole-of-society effort to challenge-response, reduction of the risk factors and creation of health-promoting environments, policies and health systems strengthening, enhancing regional cooperation and collaboration, support of research and development and, finally, providing proper monitoring and evaluation of NCDs. This document provided guidance for reducing a burden of NCDs in APEC economies by presenting a strategic, multicomponent and holistic approach. There was also noted in the document that health and economic benefits from measures applied to health innovation in the context of population ageing and increasing chronic disease were 7 times greater than estimated innovation costs, and total benefits, including the benefits to individuals, were up to 15 times costs. WHO also supported this idea by defining a set of affordable, cost-effective and evidence-based interventions that are known as «Best Buys», which allow yielding a return of at least US$ 7 from every US$ 1 invested in the interventions by 2030.

The Issue and the Action Plan:

The vital part of APEC is project activity, through realizing and financing of that the decisions taken by APEC Economic Leaders and Ministers come into life. Every year there are over 100 projects funded by APEC, with the total financing resources around US$ 16.3 million (2018) and HWG makes a significant input in APEC activity on the projects.

The most popular forms for projects are workshops, symposia, publications and research. During the

[1, 2] World Health Organization 1 June 2018 "Non-communicable diseases", available at: https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases

realization of HWG projects the officials, researches, representatives of academic and educational institutions from all 21 economies meet and they could provide high-quality research outcomes to be used after on the world level. Moreover, as APEC has an efficient funding mechanism it can be used also for supporting innovation interventions that will be extremely profitable in some years. Nevertheless, as there is not enough coherence between the projects, common outcome from them is not so effective as it can be potentially and the results primarily leave on the paper.

To address the issue participants of the APEC Conference on Cooperation Initiatives for NCDs Prevention and Control (October 17-18, 2019, Krasnoyarsk, Russia) proposed to form the Action Plan, which implies creation of the APEC health expert network on NCDs for providing the members with advanced analysis of the actual situation with NCDs in economies, highlighting the most urgent problems and advising the joint evidence-based response in frames of APEC. The outcomes can also serve as a base for project activity in HWG, make it more target, timely and coherent. This approach totally coincides with the mission of APEC by encouraging proper investment, economic and technical cooperation, promoting and accelerating regional economic integration and enhancing human security.

Detailed description of the initiative:

The list of the main needs of the APEC economies mentioned by the experts during the Conference includes:

– Exchange of the best practices and dissemination of research findings in the field of NCDs among APEC economies;

– Conduction of joint high-quality research and elaboration of evidence-based approaches for enhancing on NCDs prevention and control programs for APEC economies;

– Development of APEC healthcare providers skills and competences;

– Development of new information and electronic communication technologies (E-Health) and the use of mobile and wireless devices to advance NCD control measures in the APEC economies.

Priority areas for the cooperation of the APEC economies, which were stated by participants of the Conference include:

– Oncology;

– Reduction of the main risk factors: control of tobacco, alcohol use;

– Proper nutrition and obesity;

– E-Health and Telemedicine.

Taking into account the propositions made during the Conference participants propose to create APEC health expert network on NCDs.

A detailed description of the APEC health expert network on NCDs:

Note: According to the decision of the Conference participants, the health expert network should be divided into sub-networks to realize activities in the stated spheres simultaneously. Nevertheless, to increase the efficiency of the network activities Russia proposes to choose one priority topic for Network consideration during one intersessional period (SOM1-SOM2; SOM2- next SOM1). Thus, the Network can provide the HWG with two advanced reports for one year period. The following description was made in accordance with the Russian proposal.

Purpose of the Network is to increase the efficiency of the APEC economies NCDs prevention and control programs through providing the economies with advanced analysis of the actual situation in the stated areas. This analytical data can be also used as a basis for the creation of the new APEC projects that will meet the needs of the APEC economies.

Goals:

- Identification of challenges in NCDs prevention and control in APEC economies;
- Exchange of the best practices in the field of NCDs among APEC economies;
- Strengthen the research collaborations among APEC economies in the area of NCDs prevention and control;
- Fostering the dissemination of E-Health technologies for control of NCDs among APEC economies.

Structure and operating procedure:

1. The Network is composed of officials, researchers, representatives of academic and educational institutions from APEC economies that are officially designated by APEC economies in HWG.
2. The theme for research is defined during the HWG meeting, as well as a leading economy.
3. The Network examines the theme during intersessional period and makes a presentation on the challenges and opportunities for the APEC economies in a defined area of interest on the next HWG meeting.

The input of health expert network:

The joint analysis and research on the NCDs situation conducted by the Network will prioritize the APEC economies themes of interests and define the common approaches to the challenges and meeting the needs.

The results of Network activities can be a basis for further APEC projects preparation, will make them more focused, challenging and timely launched for a majority of the APEC economies.

The first theme for Health Expert Network consideration:

Obesity is proposed as the first topic for Health Expert Network consideration.

Follow up activities:

November 2019 – circulation of the APEC Action Plan through Secretariat in HWG;

December 2019 – the comments from HWG will be collected;

January 2020 – the final draft of Action Plan will be prepared;

February 2020 – the Action Plan will be presented in HWG Meeting in Malaysia;

March-August 2020 – the call for nominations to Health Expert Network;

August 2020 – the Health Expert Network approve the topic and work plan;

August 2020 – February 2021 – the preparation of the report on the defined topic and its presentation on the HWG Meeting.

Supervising team:

Representatives of the Ministry of Health of the Russian Federation and representatives of other APEC economies.

POST ACTIVITY SURVEY

At the end of the Conference, attendees were requested to provide feedback on the suitability, interest, duration, and topic selection of the workshop among other things by the means of the evaluation form presented in Google Forms. Thus, participants could fill the form in the time the most suitable for them. The attendees filled in the form and the results are as follows.

Most participants were satisfied by the Conference. According to evaluation forms 15 out of 19 participants marked the event as relevant (response "strongly agree"), and 11 out of 19 responded that they will be able to use the knowledge they have acquired during the Conference in their work. Visuals, meeting space, hangouts and the program overall were assessed by participants only as "excellent", "very good" and "good".

The majority of the reviews made by participants were positive. They highlighted the high quality of the logistics, organization and support provided by the whole team, the professionalism of the speakers and usefulness and relevance of the Conference program.

As for the recommendations made by the Conference participants, they include organizational issues such as the compliance with the time requirements for announcement of the meeting venue and accommodation by organizers and provision of some extra time for discussion of the topics with the audience.

Below are the evaluation forms filled in by the speakers and participants.

Name	Ryutaro Kakinuma	Kanchana Srisawat	Churit Tengtrisorn
The content was relevant to me*	2	1	1
The workshop was applicable to my work*	2	1	1
The content was delivered effectively*	2	2	1
The program was well paced*	1	3	1
The instructor was a good communicator*	1	2	1
The material was presented in an organized manner*	1	2	1
The instructor was knowledgeable on the topic*	1	2	1
I would be interested in attending a follow-up, more advanced workshop on this same subject*	3	1	1
Visuals	Very Good	Very Good	Very Good
Meeting space	Very Good	Very Good	Very Good
Handouts	Excellent	Very Good	Very Good
The program overall	Very Good	Very Good	Very Good
What did you most appreciate/enjoy/think was best about the conference? Any suggestions for improvement	Welcome by medical students at Krasnoyarsk State Medical University	I appreciate this well organising staff which ran the conference became impressive. However, I have some points that should be improved i.e., Meeting venue and convenient accommodation should announce as soon as possible. Maybe during the requested for ticket approval regarding individual plan/schedule.	warm welcome and take care
Economy	Japan	Thailand ***	Thailand
Your current position	Private Sector	Government officer (Public Health officer)	Policy officer/advisor
Please describe TWO topics you would like to learn more about in the next 12 months:	Salt restriction and obesity improvement	1. physical activity (sport medicine) 2. cost effectiveness	Technology and information System / Healh Literacy
Preferred level for each topic	Intermediate	Intermediate	Introductory/Intermediate
Please put the most important initiative(s) from the list of initiatives suggested to you the APEC community need to focus on according to the situation in your economy	I can't answer because I don't know the list	Diabetes, Hypertension, physical activity, community based intervention (CBI), cost-effectiveness	Effective Activity To decrease Incident of NCDs

Name	Dale Alverson	Janeth Tenorio	Truong Dinh Bac
The content was relevant to me*	1	1	1
The workshop was applicable to my work*	1	1	2
The content was delivered effectively*	1	1	1
The program was well paced*	1	1	1
The instructor was a good communicator*	1	2	2
The material was presented in an organized manner*	1	1	2
The instructor was knowledgeable on the topic*	1	2	1
I would be interested in attending a follow-up, more advanced workshop on this same subject*	2	1	1
Visuals	Excellent	Very Good	Excellent
Meeting space	Excellent	Excellent	Very Good
Handouts	Excellent	Excellent	Very Good
The program overall	Excellent	Excellent	Excellent
What did you most appreciate/enjoy/think was best about the conference? Any suggestions for improvement	Networking with representatives of other economies	I really appreciate the logistic, organization and the support of all the team. I could suggest for next meetings not only include presentation for speakers or participants, also raise specific topics for discussion and include it in the agenda.	No
Economy	USA ***	Peru	Doctor
Your current position	Policy officer/advisor	Researcher	Policy officer/advisor
Please describe TWO topics you would like to learn more about in the next 12 months:	Artificial Intelligence (AI), Behavioral Health integrated with Physical Health	The implementation of effective intervention for NCDs Strategies to improve the primary level of care in the diagnoses and control of NCDs	To increase capacity and effectiveness of the sytems for prevention, surveillance, detection, treatment and management of cardiovascular, diabetes diseases. Strengthen multi-sectoral collaboration to prevent risk factors of non-communicable diseases
Preferred level for each topic	Introductory/Intermediate	Intermediate	Intermediate
Please put the most important initiative(s) from the list of initiatives suggested to you the APEC community need to focus on according to the situation in your economy	Effective use of Telemedicine	Child obesity and Salt consumption reduction	- Propose, supplement regulations on controlling advertising and tax policy to reduce consumption of tobacco, alcohol, soft drink, processed food and other products that have risks of causing NCDs - Propose, supplement policies to encourage production, provision and consumption of safe and healthy foods; the policy to facilitate people's access to and use of public spaces, sport and gymnasium facilities; promote public transportation and non-motorised transportation

Name	Jenelyn Ellie P. Ventura	Dr Rosnah Binti Ramly	Grace Lovita Tewu
The content was relevant to me*	1	1	1
The workshop was applicable to my work*	1	1	2
The content was delivered effectively*	2	1	1
The program was well paced*	1	1	1
The instructor was a good communicator*	2	1	1
The material was presented in an organized manner*	1	2	1
The instructor was knowledgeable on the topic*	1	1	1
I would be interested in attending a follow-up, more advanced workshop on this same subject*	1	1	1
Visuals	Excellent	Excellent	Excellent
Meeting space	Excellent	Good	Excellent
Handouts	Excellent	Very Good	Excellent
The program overall	Excellent	Excellent	Excellent
What did you most appreciate/enjoy/think was best about the conference? Any suggestions for improvement	Universal Health care and telemedicine but need more time to fully understand and appreciate everything so that we can implement it in our economy. Also with the nuclear medicine but needs more technical training for it.	Sharing experiences	High competency of resource persons, hospitality of the committee, enjoyable meals and cultural performance. Please provide with all presentation materials since there are presentation that are not available in the file. Thank you
Economy	The Philippines ***	Malaysia	Indonesia
Your current position	Junior Management	Policy officer/advisor	Junior Management
Please describe TWO topics you would like to learn more about in the next 12 months:	Universal health care and telemedicine	Community based intervention program for NCD and Policy making in NCD	1. Child and Adult Obesity 2. Active Ageing
Preferred level for each topic	Introductory	Intermediate	Introductory/Intermediate
Please put the most important initiative(s) from the list of initiatives suggested to you the APEC community need to focus on according to the situation in your economy	Tobacco cessation and alcohol consumption	Community based mental health program	Nutrition and lifestyle lead to obesity in children and adult

Name	Mai-Szu Wu	Chun-Fu, Lee	Dr Azriman Rosman
The content was relevant to me*	1	1	5
The workshop was applicable to my work*	1	1	5
The content was delivered effectively*	1	1	5
The program was well paced*	1	1	5
The instructor was a good communicator*	1	1	5
The material was presented in an organized manner*	1	1	5
The instructor was knowledgeable on the topic*	1	1	5
I would be interested in attending a follow-up, more advanced workshop on this same subject*	1	2	5
Visuals	Excellent	Excellent	Excellent
Meeting space	Excellent	Excellent	Excellent
Handouts	Excellent	Excellent	Excellent
The program overall	Excellent	Excellent	Excellent
What did you most appreciate/enjoy/think was best about the conference? Any suggestions for improvement	Thank you for inviting me to the conference, it's a wonderful experience!	Early arrangement the meeting	Appreciated that some documents/ presentations were given at the meeting. Good speakers and learnt valuable lessons particularly on innovative use of IT, behaviors in NCD prevention, epidemiology, trends and collaborative efforts done internationally . Some talks were more clinically orientated but its good to know of advances in screening for example. The conference facilities were great the the supporting secretariat was excellent. Took extra care as far as transport and other arrangements. Perhaps two days seemed to short and more public health topics on NCDs would be good. Overall it was an excellent meeting and a great Siberian experience. Well done to the tireless and always smiling secretariat!!
Economy	Chinese Taipei ***	Chinese Taipei ***	Malaysia
Your current position	Senior Management	Senior Management	Senior Management
Please describe TWO topics you would like to learn more about in the next 12 months:	none	Digital health	Telehealth & Behaviour modification in NCD prevention
Preferred level for each topic	Advanced	Intermediate	Intermediate
Please put the most important initiative(s) from the list of initiatives suggested to you the APEC community need to focus on according to the situation in your economy	none	Digital health	Community and Individual empowerment, Screening and use of IT/Telehealth in NCD prevention

Name	Pathomphorn Siraprapasiri	Lin, Jia-Wei	Cut Putri Arianie
The content was relevant to me*	5	2	1
The workshop was applicable to my work*	4	2	3
The content was delivered effectively*	5	2	2
The program was well paced*	4	1	2
The instructor was a good communicator*	5	1	2
The material was presented in an organized manner*	5	2	2
The instructor was knowledgeable on the topic*	5	2	2
I would be interested in attending a follow-up, more advanced workshop on this same subject*	4	3	3
Visuals	Good	Very Good	Very Good
Meeting space	Very Good	Excellent	Very Good
Handouts	Very Good	Very Good	Very Good
The program overall	Very Good	Very Good	Very Good
What did you most appreciate/enjoy/think was best about the conference? Any suggestions for improvement	Hospitality and friendships between expert and participants from all econimies	I absolutely enjoyed the conference.	The hospitality excellent
Economy	Thailand	Chinese Taipei	Indonesia
Your current position	Policy officer/advisor	Senior Management	Senior Management
Please describe TWO topics you would like to learn more about in the next 12 months:	Geriatrics , palliative care	(1) Neurosurgery and (2) management	Tobacco Control and cancer control
Preferred level for each topic	Intermediate	Intermediate	Advanced
Please put the most important initiative(s) from the list of initiatives suggested to you the APEC community need to focus on according to the situation in your economy	ASEAN countries will go to aging society and Thailand set up Asean Center of Aging Innovation. Our economy needs more collaboration form APEC	OK	Tobacco Control

Name	Borisov Dmitry	Nguyen Tuan Anh	Jixiang Ma
The content was relevant to me*	1	1	1
The workshop was applicable to my work*	1	2	1
The content was delivered effectively*	1	1	1
The program was well paced*	1	1	1
The instructor was a good communicator*	1	1	1
The material was presented in an organized manner*	1	1	1
The instructor was knowledgeable on the topic*	1	1	1
I would be interested in attending a follow-up, more advanced workshop on this same subject*	1	2	1
Visuals	Very Good	Excellent	Excellent
Meeting space	Very Good	Excellent	Excellent
Handouts	Very Good	Excellent	Excellent
The program overall	Very Good	Excellent	Excellent
What did you most appreciate/enjoy/think was best about the conference? Any suggestions for improvement	network opportunities and international experience exchange	These presentations can be sent to medical staff training schools as teaching materials for students, and disseminated at disease management centers in economies (especially in other economies). developing) to help health workers understand / refer to and compare with non-communicable diseases in their economies.	The workshop was well organized on logistic arrangement. Technical communication highlighted cancer screening and treatment technology. NCD risk factor intervention related strategy and experience communication suggest further emphasizing
Economy	Russia ***	Viet Nam ***	China
Your current position	Senior Management	Policy officer/advisor	Policy officer/advisor
Please describe TWO topics you would like to learn more about in the next 12 months:	NCD national policies, inter-sectoral collaboration for NCD programs	1. The promising practices of NCDs prevention and control in the Russian Federation; 2. CT Lung Screening in Japan. Accreditation Council for Lung Cancer CT Screening	1. Risk factor intervention on nutrition and body weight control; 2. Community tele-monitoring and management technology and application on hypertentiosn and diabetes control
Preferred level for each topic	Advanced	Advanced	Advanced
Please put the most important initiative(s) from the list of initiatives suggested to you the APEC community need to focus on according to the situation in your economy	innovative funding mechanisms for NCD programs	APEC needs to strengthen support for Vietnam to improve macroeconomic management, economic development associated with disease control in general and special attention to non-communicable diseases.	1. Reduction of the main risk factors: body weight control through proper nutrition strategy; 2. Use of mobile and wireless devices to advance NCD control measures; 3.Evidence-based approaches for enhancing on NCDs prevention and control.

Name	Miao Xiaoxiang
The content was relevant to me*	1
The workshop was applicable to my work*	1
The content was delivered effectively*	1
The program was well paced*	1
The instructor was a good communicator*	1
The material was presented in an organized manner*	1
The instructor was knowledgeable on the topic*	1
I would be interested in attending a follow-up, more advanced workshop on this same subject*	1
Visuals	Excellent
Meeting space	Excellent
Handouts	Very Good
The program overall	Excellent
What did you most appreciate/enjoy/think was best about the conference? Any suggestions for improvement	I must appreciate the organizers of this conference for their hard work and kind arrangements, especially to Ekaterina Sachek._Everything went well and i think the conference succeeded. I wish the next APEC activity would also be successful.
Economy	People's Republic of China
Your current position	Junior Management
Please describe TWO topics you would like to learn more about in the next 12 months:	1. How to effectively implement prevention and control strategies for NCDs in APEC economies that have different development levels and conditions; 2. Current situation and trend of mental health in APEC economies
Preferred level for each topic	Advanced
Please put the most important initiative(s) from the list of initiatives suggested to you the APEC community need to focus on according to the situation in your economy	Make increase efforts to prevent and control NCDs such as hypertension,diabetes,cancer and mental illness in China.

**The assessments are made from 1-5, where 1 - strongly agree and 5 - strongly disagree*

*** Original answers can be found here:*

https://docs.google.com/forms/d/1hIAuF3xigcNEkh9K3QtspVDd7iv3NxEPUrFJqCaHDR8/edit?ts=5dad2c5b&no_redirect=true#response=ACYDB NizoT-01aNmS-15wyFIMBwXWzsU9k AERtSiiS9NGCpLksO1hSYTQNTIgLfTxVZUQ

**** The original answer was corrected due to incorrect completing by participant*

APPENDIX 1. REPORT PRESENTATIONS

Day 1: October 17, 2019

Plenary 1: The global trends in NCDs prevention and control Speaker 1

Alexey Kiselev-Romanov

Director of the Department of Public Health and Communications, Ministry of Health of the Russian Federation

Report on the promising practices of NCDs prevention and control in the Russian Federation

[no presentation provided for the brochure]

Speaker 2

Dr Joao Breda

Head of the WHO European Office for the Prevention and Control of Noncommunicable Diseases

Prevention of noncommunicable diseases (NCDs) to achieve the Sustainable Development Goals (SDGs)

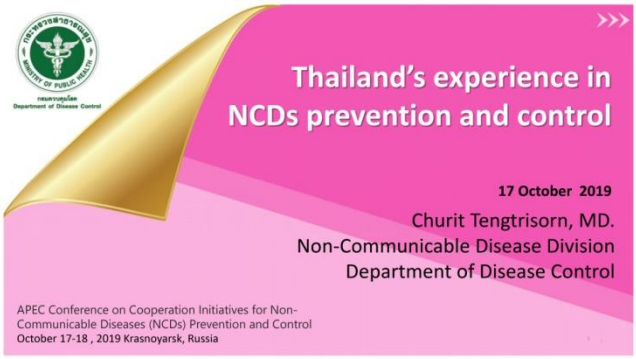
[no presentation provided for the brochure]

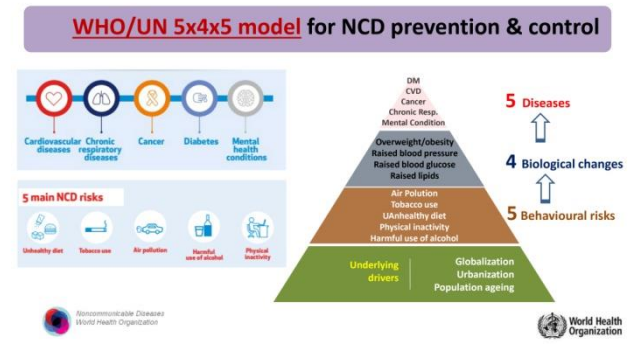
Speaker 3

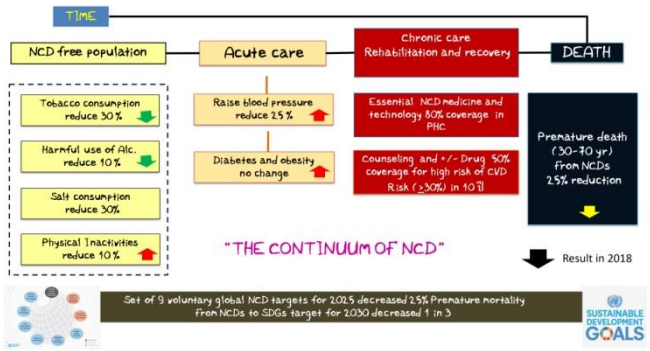
Churit Tengtrisorn

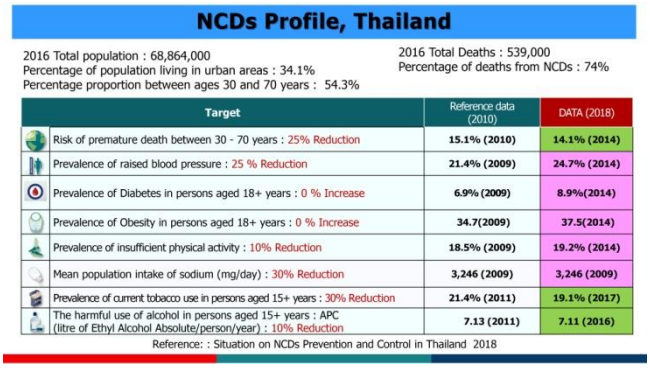
Medical Officer (Expert level), Department of Disease Control, Ministry of Public Health, Thailand

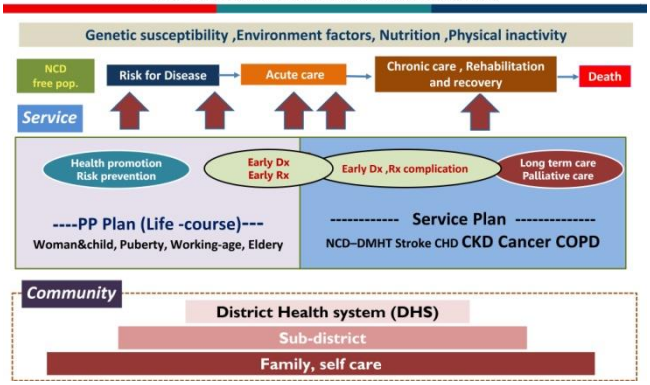
Thailand's experience in NCDs prevention and control

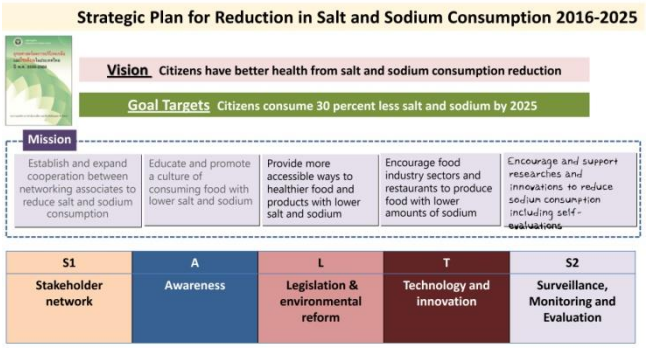


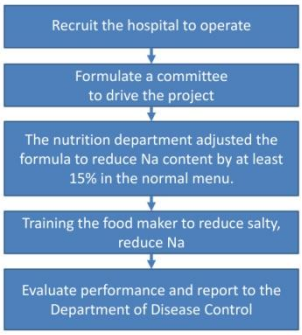












Activities in low salt diet hospital

NCD Clinic Plus

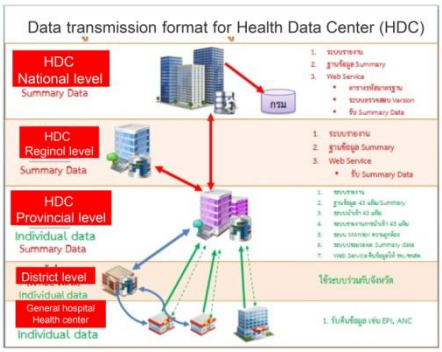
6 Components

1 Directions and policies
2 Information System
3 System and service processes improvement
4 Self Management System
5 Decision Supportive System
6 Management of community-linked services

Core Activitys : 4C

- Comprehensive of care
- Coordination of care
- Continuity of care
- Community Participation

Community Base Intervention process



Thank you

Speaker 4

Jixiang MA

Deputy Director of NCD Division, China

NCD Control Situation and Healthy Nation Workplan and Strategy in China

Situation and Countermeasures of Chronic Diseases Control in China

Jixiang Ma, Ph.D
Division of NCD and Elderly Health Management, China CDC

1

Main Content

Situation of Chronic Diseases Control in China

Strategies and Countermeasures of Chronic Diseases Management

2

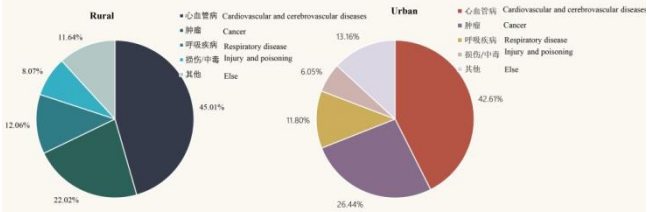
Chronic Diseases Mortality Keep Increasing in China

Disease type	1957	1990		2009	
	National	Urban	Rural	Urban	Rural
Infectious disease	7.90	2.30	3.61	0.77	1.11
Tuberculosis	7.50	1.20	1.86	0.22	0.30
Heart disease	6.60	15.81	10.82	20.77	17.21
Cerebrovascular disease	5.50	20.83	16.16	20.36	23.19
Cancer	6.00	21.88	17.47	27.01	24.26

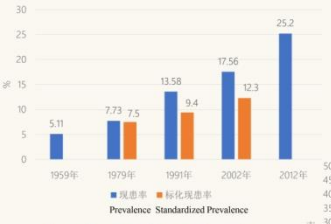
Data source：2010 China Health Statistics Summary, only counted partial cities and counties.

3

Contribution of Mortality in China（2015）

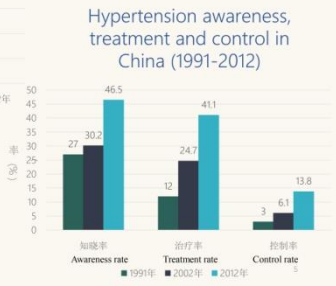


Data source：
China Health and Family Planning Statistics Yearbook（2015）



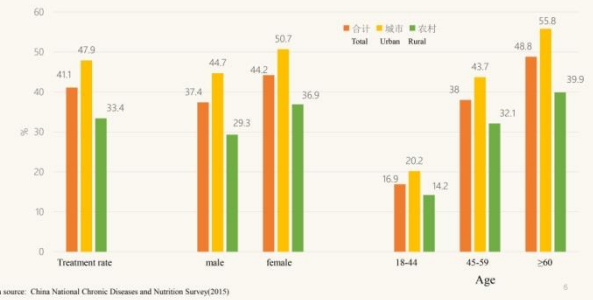
Prevalence of hypertension in Chinese adults (1959-2012)

Data source：China National hypertension survey in 1959 、1979 and 1991.
2002 China National Nutrition and Health Survey.



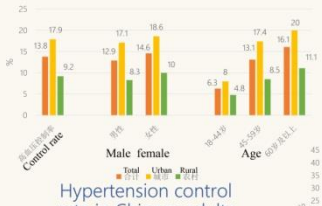
4

Hypertension treatment in Chinese adults (2012)

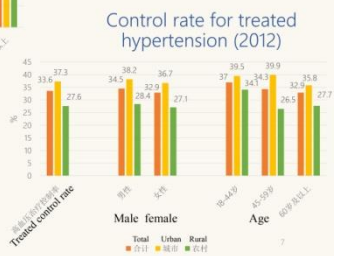


Data source: China National Chronic Diseases and Nutrition Survey(2015)

6



Hypertension control rate in Chinese adults (2012)



Data source: China National Chronic Diseases and Nutrition Survey(2015)

7

30-years changes in the prevalence of diabetes in China

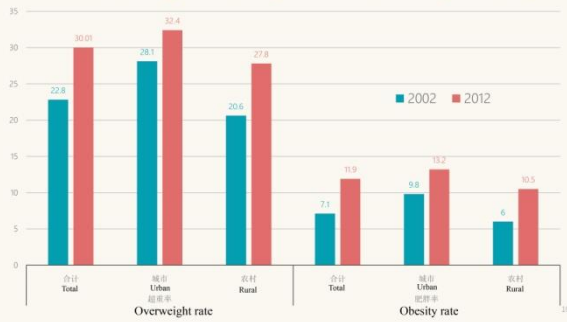
调查年份（诊断标准）	调查人数	年龄（岁）	患病率（%）Prevalence	IGT或糖尿病前及患病率（%）	筛选及诊断方法
1980年 (兰州标准)	30万	全人群	0.67	—	尿糖+馒头餐2hPG 筛选高危人群
1986年 (WHO 1985)	10万	25～64	1.04	0.68	馒头餐2hPG 筛选高危人群
1994年 (WHO 1985)	21万	25～64	2.28	2.12	馒头餐2hPG 筛选高危人群
2002年 (WHO 1999)	10万	≥18	城市4.5 农村1.8	IFG 2.7 IFG 1.6	FPG≥5.5+OGTT
2007—2008年 (WHO 1999)	4.6万	≥20	9.7	15.5	OGTT
2010年 (WHO 1999)	9.8万	≥18	9.7	16.2	OGTT
2010年 (WHO 1999+ADA2010)	9.8万	≥18	11.6	50.1	OGTT+HbA1c
2013年 (WHO 1999)	17.2万	≥18	10.4	16.6	OGTT

Diabetes awareness, treatment and control in Chinese adults (2012)

Data source: China National Chronic Diseases and Nutrition Survey(2015)

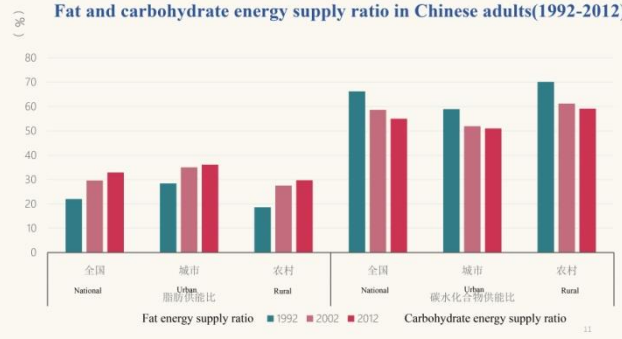
9

Overweight and obesity in Chinese adults (2002-2012)

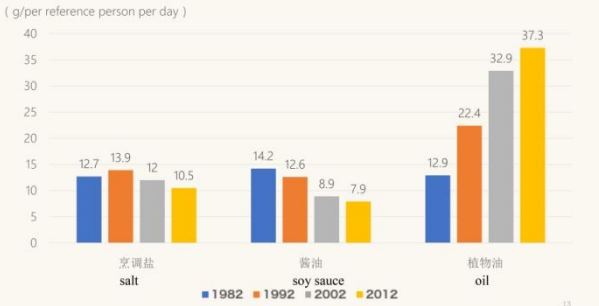


10

Fat and carbohydrate energy supply ratio in Chinese adults(1992-2012)



Condiment intake in Chinese adults(1982-2012)



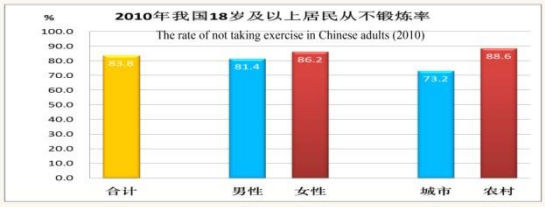
Main Content

Strategies and Countermeasures of Chronic Diseases Management

Main food intake in Chinese adults (1982-2012)

Risk factor of Chronic diseases - physical activity

The rate of not taking exercise in Chinese adults is 83.8%, male (81.4%) is lower than female (86.2%), and urban (73.2%) is lower than rural (88.6%). (2010)



Health policy in new era

- Focus on the community
- Reformation and innovation
- Prevention first
- Integrate health into all policies
- Building, sharing for all

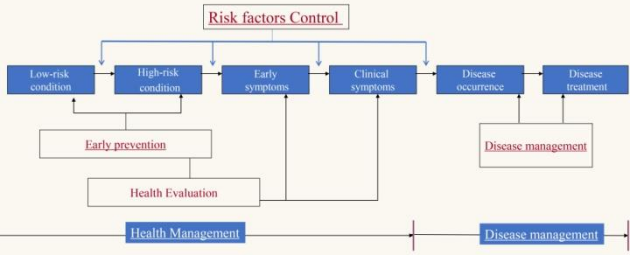
"Healthy China 2030" Planning Outline

- Addressing “overall health" concept, and shift focus from treatment to prevention.
- Whole-life, full-cycle health management for the entire population
- Systematic, continuous and integrative health services
- Comprehensive health impact assessment and evaluation system

Main indicators of Healthy China

Indicator	Target
Life expectancy	2015: 76.34 years 2020: 77.3 years 2030: 79.0 years
Premature mortality from NCD	2015: 19.1% (2013) 2020: 10% reduction than 2015 2030: 30% reduction than 2015

Development stage of health : health management / disease management

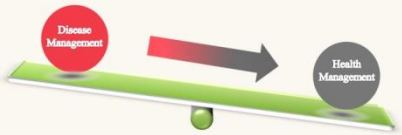


Musich, Burton, Edington. *Disease Management and Health Outcomes* 5: 153-166, 1999

Countermeasures of Chronic Diseases Control

- Health promotion - Primary prevention
- Health Management - Secondary Prevention

Health management model: self-centered, peer assistance, social support, professional guidance



21

China Healthy Lifestyle For All (2007-2015)-Stage I

Initiated by the state and oriented to the entire population nationwide.

Make a breakthrough in diet and physical exercises

Theme

Harmonious life, and healthy Chinese people

Slogan

Take actions, be healthy and happy!

Theme song

Healthy Action 121

Walk 10,000 steps per day,
Keep balanced diet and do physical activities,
And you will be healthy a lifetime

22

China Healthy Lifestyle for All Initiative(2017-2025)

New scheme New stage

国家卫生和计划生育委员会办公厅
国家体育总局办公厅
全国总工会办公厅
共青团中央办公厅
全国妇联办公厅 文件

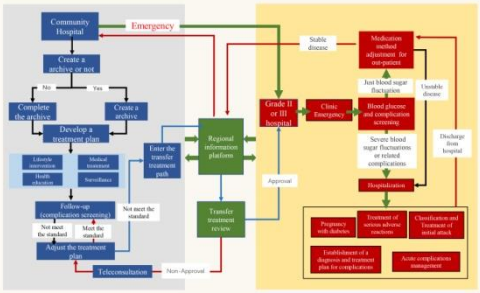
关于印发全民健康生活方式行动方案（2017－2025 年）的通知

23

Overall-Process management of disease (monitoring, evaluation, intervention, service)

- High risk factor automatic screening system
- Chronic disease self-monitoring system, background service system
- Chronic disease automatic sorting management system

Standardized management of diabetes based on graded diagnosis and treatment



Application of intelligent health monitoring equipment

Intelligent health monitoring equipment, APP in mobile phone and big data platform together constitute a chronic disease monitoring service network.

Comprehensive, population-wide and three-dimensional health promotion network

Integrated management strategy for chronic diseases

Based on health assessment, focused on the integration of prevention and treatment, integrated management as tool.

Speaker 5

Dr Napoleon Arevalo

Director IV, DOH, The Philippines

Plans of the Department on the recently passed NCD Laws in the Philippines, the Cancer Law, *Mental Health Law and Sin Tax on Alcohol and Tobacco*

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF HEALTH

Non Communicable Diseases (NCDs) Milestones in the Philippines

Dir. Napoleon L. Arevalo, MD, MPH, CESO IV
Department of Health
Manila, Philippines

Department of Health, Philippines

The Philippines

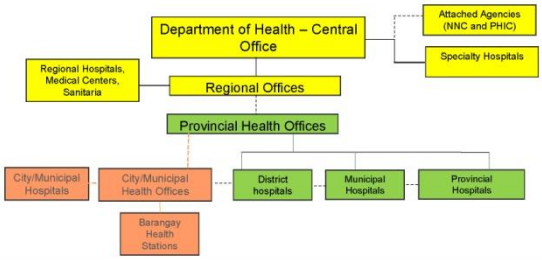
17 Regions
81 Provinces
145 Cities
1,489 Municipalities
42,045 Barangays

2019 Estimated Population: 108,116,615

Source: As of 25 Sept 2019, Department of Interior and Local Government

Department of Health, Philippines

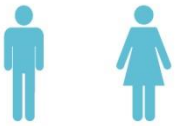
Philippine Public Health System (Republic Act 7160)



Department of Health, Philippines

Life Expectancy in the Philippines

Average: **69.3**



66.2 **72.6**

Source: World Health Organization 2018

Department of Health, Philippines

Leading Causes of Deaths Philippines, 2016

CAUSE OF DEATH	Both Sexes		
	Number	Rate	Percent*
1. Diseases of the heart (I00-I51)	138,230	133.3	23.7
2. Malignant neoplasms (C00-C97)	60,470	58.3	10.4
3. Diseases of the cerebrovascular system (I60-I99)	60,277	58.1	10.4
4. Pneumonia (J12-J18)	57,809	55.7	9.9
5. Accidents ** (V01-Y89)	44,426	42.8	7.6
6. Diabetes mellitus (E10-E14)	33,295	32.1	5.7
7. Tuberculosis, all forms (A15-A19)	25,843	24.9	4.4
8. Chronic lower respiratory diseases (J40-J47)	24,365	23.5	4.2
9. Diseases of the genitourinary system (N00-N98)	23,526	22.7	4.0
10. Diseases of the digestive system (K00-K92)	22,803	22.0	3.9

DOH, Philippine Health Statistics, 2016

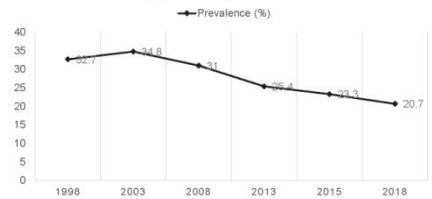
Department of Health, Philippines

Leading Causes of Deaths in the Philippines, 2018

Source: World Health Organization – Non-communicable Diseases (NCD) Country Profiles, 2018

Department of Health, Philippines

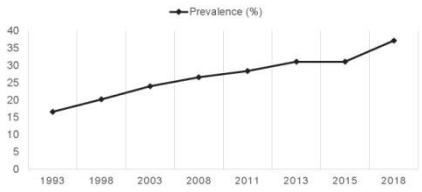
Current Trend in Smoking among Adults (20 years old and above), Philippines, 1993-2018



Source: Food and Nutrition Research Institute, DOST

Department of Health, Philippines

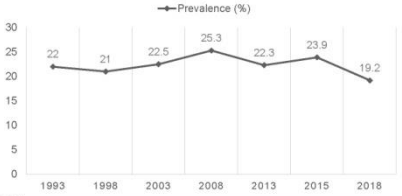
Trend in the Prevalence of Overweight and Obesity among Adults (20 years old and above), Philippines, 1993-2018



Source: Food and Nutrition Research Institute, DOST

Department of Health, Philippines

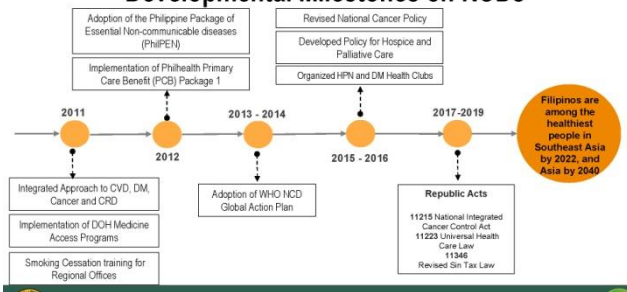
Trend in the Prevalence of Elevated Blood Pressure among Adults (20 years old and above), Philippines, 1993-2018



Source: Food and Nutrition Research Institute, DOST

Department of Health, Philippines

Developmental Milestones on NCDs



Department of Health, Philippines

Legislations on NCDs

Department of Health, Philippines

Gains

The Tax Reform for Acceleration and Inclusion (TRAIN) Act

70% Infrastructure Projects

30% Social Services

Department of Health, Philippines

Gains

Executive Order No. 26 –Establishment of Smoke-Free Environments in Public and Enclosed Places

Significant reduction to exposure of secondhand smoke in Public places

109 Red Orchid Hall of Fame Awardees

116 Red Orchid Awardees

Source: GATS Philippines, 2015

Department of Health, Philippines

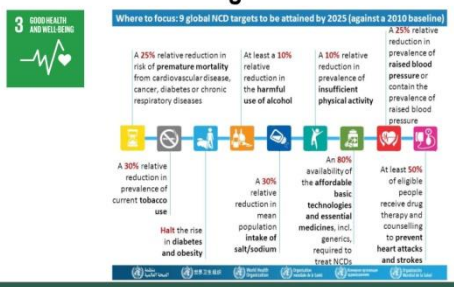
Gains

Graphic Health Warnings (GHW) Law of 2014

Quitline Services rate: 18%

Department of Health, Philippines

SDG NCD Targets and Indicators



Department of Health, Philippines

FOURmula One Plus for Health Strategy Map

Department of Health, Philippines

Ways Forward

Financing

Roles of DOH and LGUs

Pooling funds to PHIC

Simplifying membership

Contracting by network

Department of Health, Philippines

Ways Forward

Service Delivery

Province-wide and **city-wide service delivery networks**

Primary care provider networks, **Epidemiologic surveillance** systems and **Health Promotion**

Income retention through a Special Health Fund

21

Department of Health, Philippines

Ways Forward

Regulation

Transparent Pricing

Basic and non-basic accommodation bed ratio

Benefit Complementation

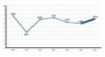
Expansion of scholarship programs
Augmentation of HRH primary care-oriented education and Health Professional registry

22

Department of Health, Philippines

Ways Forward

Governance



submission of **health and financial data, harmonize interoperable system**

Strengthening **medicines procurement**, price negotiation and affordability

Health Technology Assessment and Health Impact Assessment

Streamlining **PhilHealth Board**

23

Department of Health, Philippines

Thank you!

Plenary 2. International cooperation in the field of healthcare NCDs prevention and control in APEC economies

Session 1. Experience of implementing programs for NCDs prevention and control and cancer services in the APEC economies

Speaker 1

Dr Ryutaro Kakinuma

Department of Pulmonology, Tokyo Clinic, Division of Remote Diagnosis, e-Medical Tokyo, Japan

CT Lung Screening in Japan. Accreditation Council for Lung Cancer CT Screening

CT Lung Cancer Screening in Japan

Ryutaro Kakinuma, MD, PhD

Cancer Screening Center, National Cancer Center Hospital
Tokyo Clinic
E-Medical Tokyo

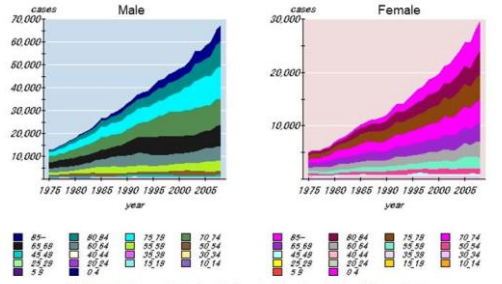
Today's Topics

- CT Lung Cancer Screening in Japan
- Accreditation Council for Lung Cancer CT Screening

Today's Topics

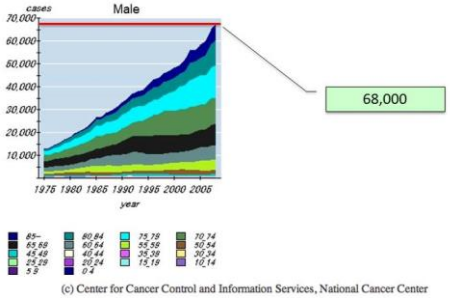
- CT Lung Cancer Screening in Japan
- Accreditation Council for Lung Cancer CT Screening

Trends in Incidence of Lung Cancer According to Age 1975 - 2008



(c) Center for Cancer Control and Information Services, National Cancer Center

Trends in Incidence of Lung Cancer According to Age 1975 - 2008



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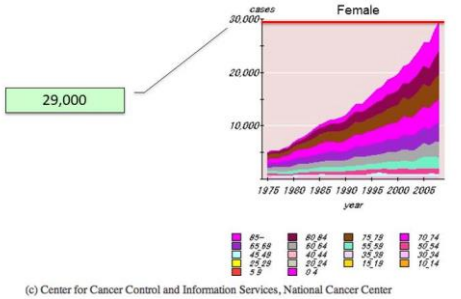
Trends in Incidence of Lung Cancer According to Age 1975 - 2008



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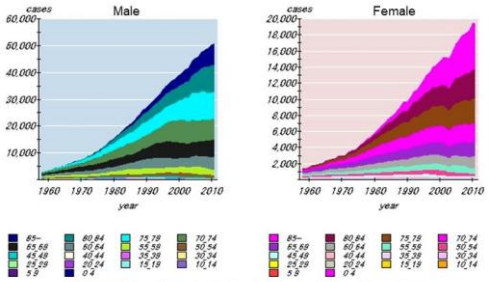
Trends in Lung Cancer Mortality According to Age 1958 - 2011



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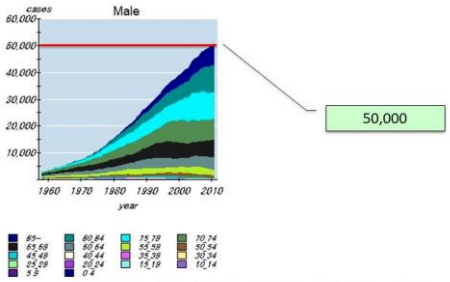

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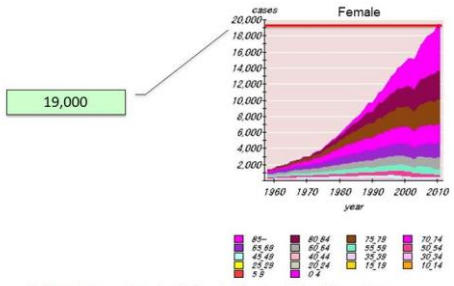
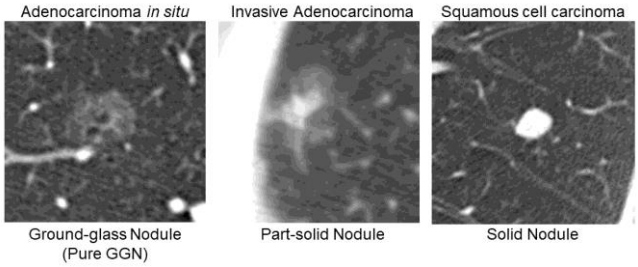


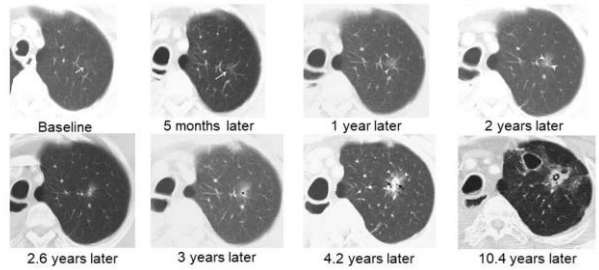
(c) Center for Cancer Control and Information Services, National Cancer Center

Consistency of CT Screening-detected Nodule

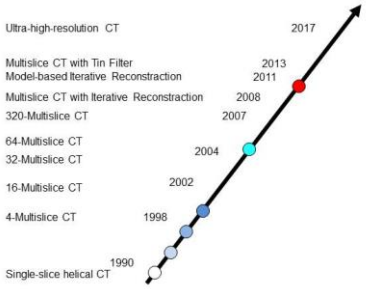


Stepwise Evolution: Pure GGN into an Invasive Adenocarcinoma

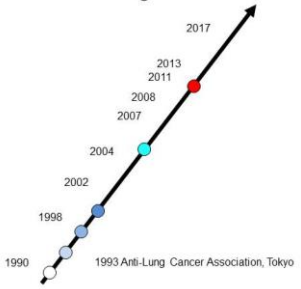
He declined surgery because he had already undergone right upper lobectomy.



Evolution of CT Technology

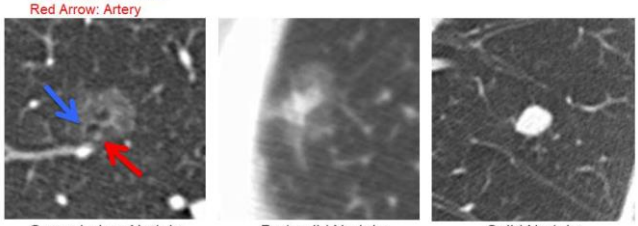


CT Lung Cancer Screening



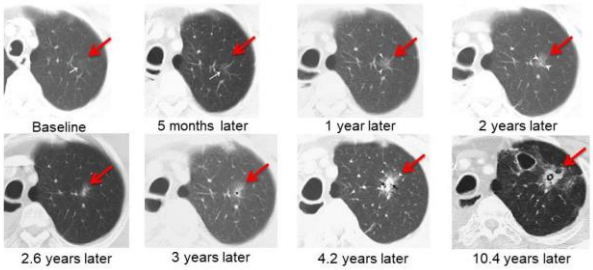
Consistency of CT Screening-detected Nodule

Blue Arrow: Bronchus
Red Arrow: Artery

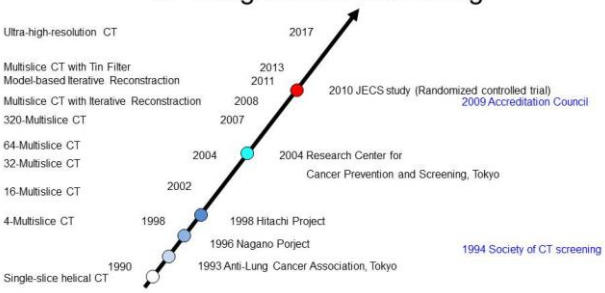


Stepwise Evolution: Pure GGN into an Invasive Adenocarcinoma Observation ≥10 Years

Min et al. Lung Cancer 2010



Evolution of CT Technology and CT Lung Cancer Screening



Evolution of CT Technology

Anti-Lung Cancer Association (ALCA), Tokyo

- A for-profit organization established in 1975
- Annual membership fee 50000JPY ($465)
- Members age ≥40 years; smokers ≥30 pack-years
- Semiannual screening
  - chest X-ray
  - sputum cytology
  - Low-dose CT (LDCT) since September 1993

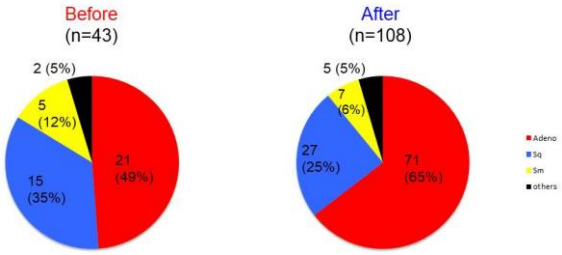
Results of the ALCA

	Introduction of CT	
	Before	After
Screening period	1975 to 1993	1993 to 2013
Total number of screening	26,218	27,173
Lung cancer patients	43	108
Detection rate (%)	0.16	0.39

Provided by Dr. Ohmatsu, Anti-Lung Cancer Association

Histology of Lung Cancers

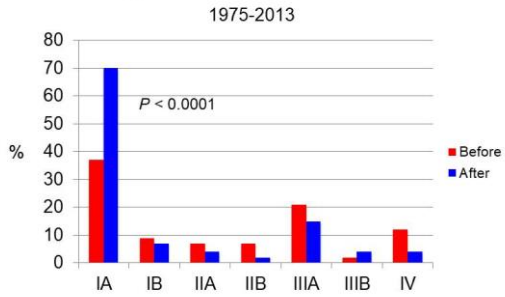
1975-2013



Provided by Dr. Ohmatsu, Anti-Lung Cancer Association

Stages of Lung Cancers

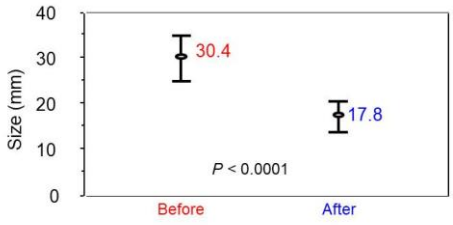
1975-2013



Provided by Dr. Ohmatsu, Anti-Lung Cancer Association

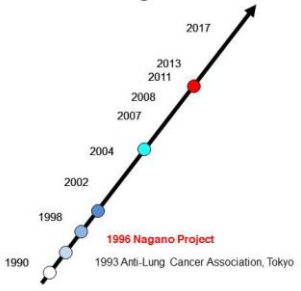
Mean Sizes of Lung Cancers

1975-2013



Provided by Dr. Ohmatsu, Anti-Lung Cancer Association

CT Lung Cancer Screening



Results of the ALCA

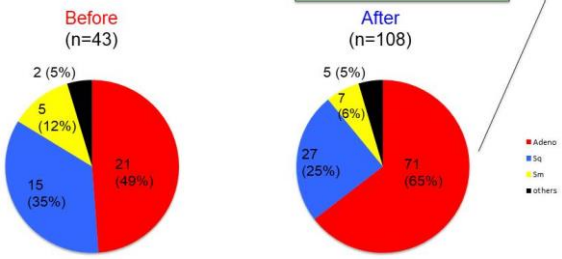
	Introduction of CT	
	Before	After
Screening period	1975 to 1993	1993 to 2013
Total number of screening	26,218	27,173
Lung cancer patients	43	108
Detection rate (%)	0.16	0.39

Detection rate increased

Provided by Dr. Ohmatsu, Anti-Lung Cancer Association

Histology of Lung Cancers

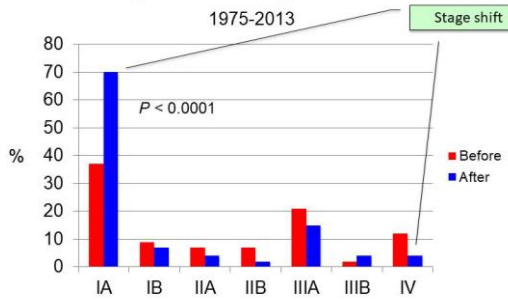
1975-2013 Adenocarcinoma increased



Provided by Dr. Ohmatsu, Anti-Lung Cancer Association

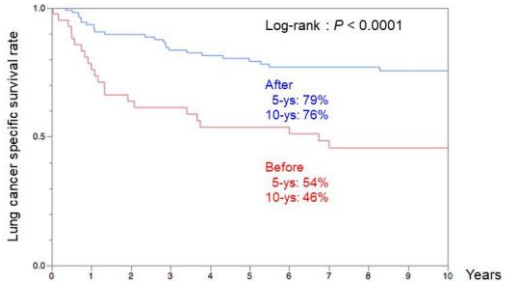
Stages of Lung Cancers

1975-2013 Stage shift

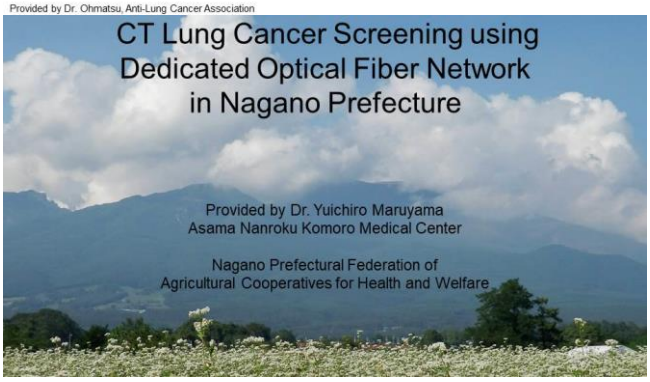


Provided by Dr. Ohmatsu, Anti-Lung Cancer Association

Lung Cancer Specific Survival

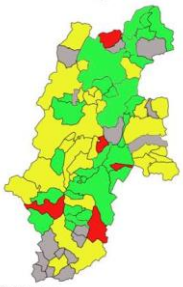


Provided by Dr. Ohmatsu, Anti-Lung Cancer Association



Population-based Lung Cancer Screening in Nagano Prefecture

Implementation Status of Lung Cancer Screening in Nagano Prefecture's 77 Municipalities

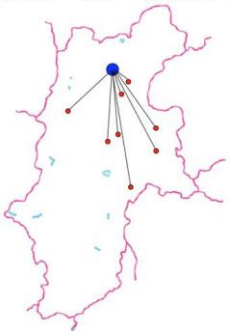


	X-ray	CT
28	n/a	☑
28	☑	☑
16	☑	n/a
5	n/a	n/a

73% (56 out of 77) of municipalities implement LDCT screening

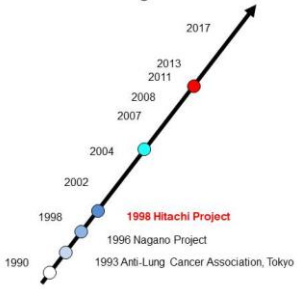
Provided by Dr. Maruyama

Dedicated Optical Fiber Network in JA Nagano



Provided by Dr. Maruyama

CT Lung Cancer Screening



Objective

To compare the mortality rate of citizens who underwent at least one CT screening with that of those who underwent chest X-ray (CXR) screening

Early reports

Mass screening for lung cancer with mobile spiral computed tomography scanner

Shusuke Sone, Shodayu Takashima, Feng Li, Zhigang Yang, Takayuki Honda, Yuichiro Maruyama, Minoru Hasegawa, Takeshi Yamanda, Keishi Kubo, Kazuhisa Hanamura, Kazuhiro Asakura

Figure 2: Mobile CT scanner unit

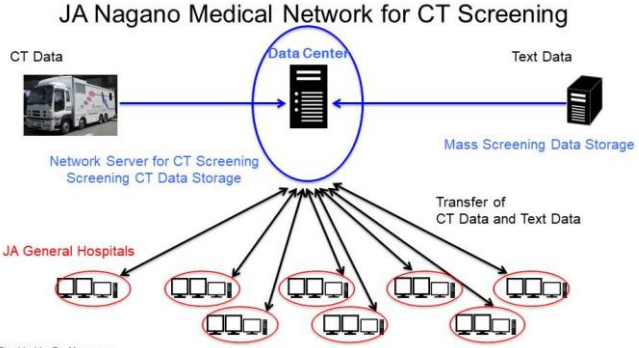
Sone et al. Lancet 1998

Mobile CT Unit in Japan Agricultural Cooperatives (JA) Nagano

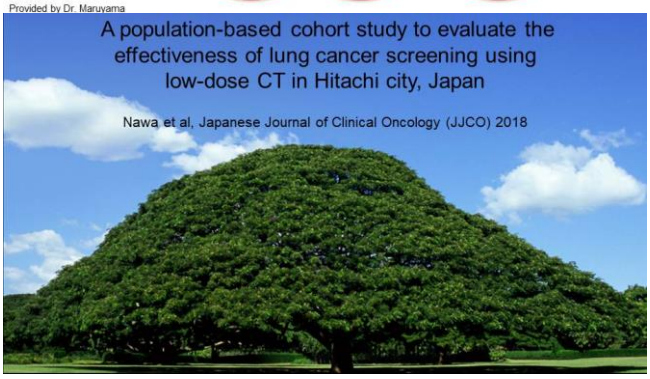
4-Multislice CT; 8mAs; $CTDI_{vol}$, 0.85 mGy; effective dose, 0.6 mSv
Slice thickness of 5 mm

Provided by Dr. Maruyama

JA Nagano Medical Network for CT Screening



Provided by Dr. Maruyama



[Participants Characteristics]

	CT§	CXR¶	p
n	17,935 (100)	15,548 (100)	
Age (mean[SD])	59.1 [6.8]	61.6 [7.4]	<0.001
Male (%)	9,790 (54.6)	6,526 (42.0)	<0.001
Smoking (%)			<0.001
Never	9,751 (54.4)	10,320(66.4)	
Smoker	8,184 (45.6)	5,228 (33.6)	

§ 1998 – 2006 ¶ 2001 - 2006

Nawa, et al. Jpn J Clin Oncol 2018

[Participants Characteristics]

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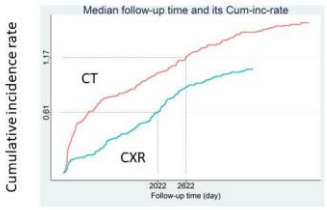
§ 1998 – 2006 ¶ 2001 - 2006

Nawa, et al. Jpn J Clin Oncol 2018

[Cumulative Incidence of Lung Cancer]



Nawa, et al. Jpn J Clin Oncol 2018

[Morbidity and Mortality]

	CT	CXR	p
n	17,935	15,548	
Mean follow up years	9.9 ± 2.7	8.7 ± 2.1	<0.001
Lung cancer diagnosed (%)	273 (1.5)	164 (1.1)	<0.001
Lung cancer death (%)	72 (0.4)	80 (0.5)	0.146

Nawa, et al. Jpn J Clin Oncol 2018

[Morbidity and Mortality]

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n	17,935		15,548	
Mean follow up years	9.9 ± 2.7		8.7 ± 2.1	<0.001
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Nawa, et al. Jpn J Clin Oncol 2018

[Hazard ratios for Lung Cancer Incidence and Mortality]

Multivariate Analysis*	Lung Cancer Incidence		Lung Cancer Mortality	
Method (ref : CXR)	HR	95%C.I.	HR	95%C.I.
CT	**1.23**	**1.00-1.51**	**0.49**	**0.34-0.70**

*Cox proportional hazard model

Nawa, et al. Jpn J Clin Oncol 2018

[Hazard ratios for Lung Cancer Incidence and Mortality]

Multivariate Analysis*	Lung Cancer Incidence		Lung Cancer Mortality	
Method (ref : CXR)	HR	95%C.I.	HR	95%C.I.
CT	**1.23**	**1.00-1.51**	**0.49**	**0.34-0.70**

*Cox proportional hazard model

51% reduction
in lung cancer mortality

Nawa, et al. Jpn J Clin Oncol 2018

Randomized Controlled Trials of CT Lung Cancer Screening

- National Lung Screening Trial in the US
- NELSON Trial in the Netherlands and Belgium

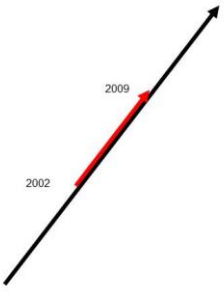
Nawa, et al. Jpn J Clin Oncol 2018

National Lung Screening Trial (NLST)

- 53,454 participants
  - LDCT arm (n=26,722)
  - CXR arm (n=26,732)
- Three annual screening and follow-up

National Lung Screening Trial Research Team. N Engl J Med. 2011 Aug 4

Study Period of NLST



Results of NLST

Lung cancer mortality reduction of 20%
at 6.5 years of follow-up

National Lung Screening Trial Research Team. N Engl J Med. 2011 Aug 4

U.S. Preventive Services Task Force

- Recommendation of annual LDCT screening in 2013

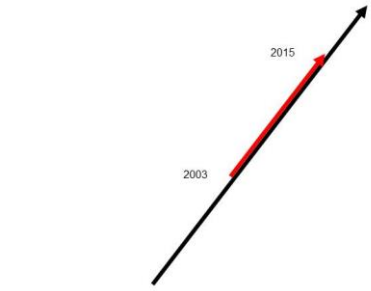
Medicare Coverage

- Start of free annual LDCT screening in 2015

NELSON Trial

- 15,792 participants
  - LDCT arm (n=7,900)
  - No screening arm (n=7,892)
- 4 rounds of LDCT
- Only trial with increasing length of the screening interval: 1 yr, 2 yr and 2.5 yr

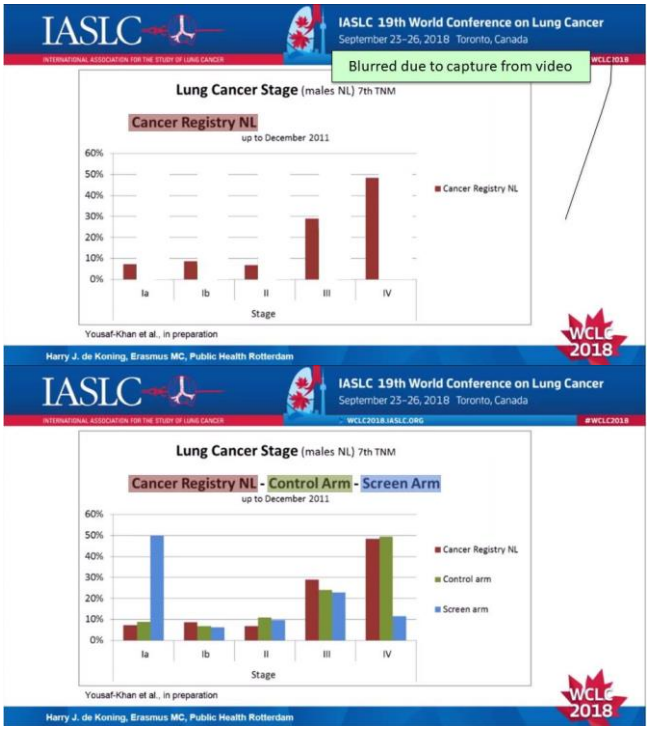
Study Period of NELSON Trial

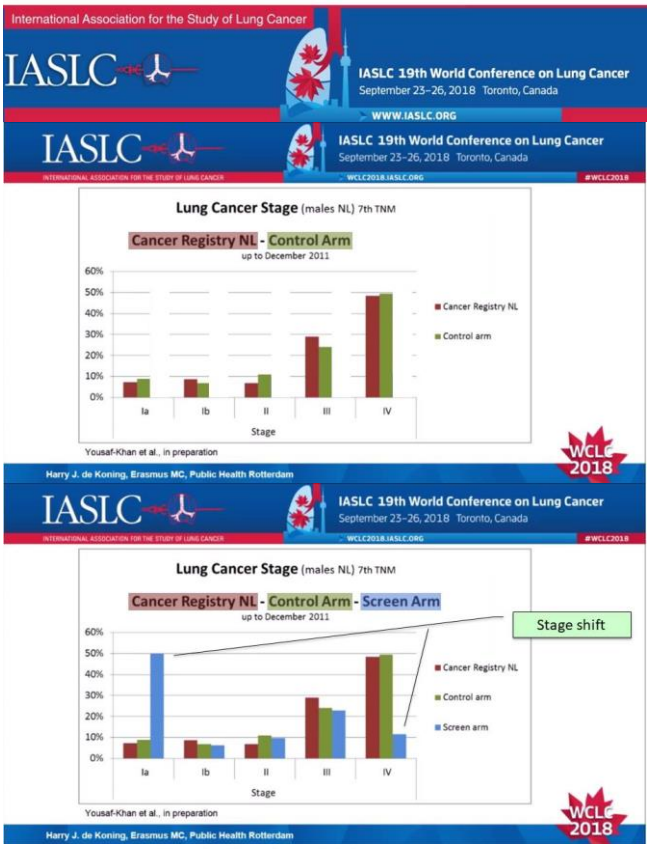


Results of the NELSON Trial

September 25, 2018

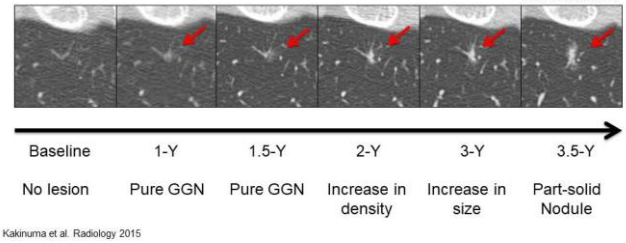
Lung cancer mortality reduction ≥ 25%





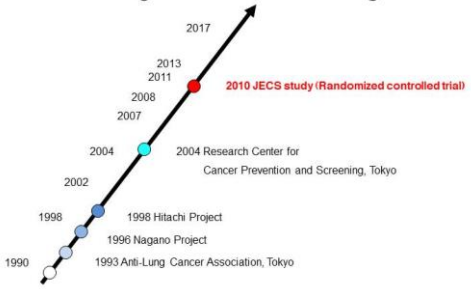
CT Lung Cancer Screening

Newly Developed Adenocarcinoma in Solitary Pure Ground-Glass Nodules 5mm or Smaller: Frequency of Growth

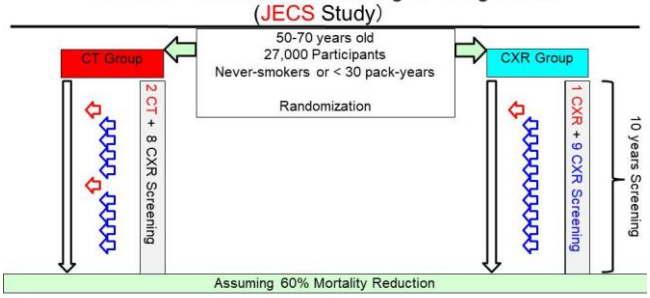


Kakinuma et al. Radiology 2015

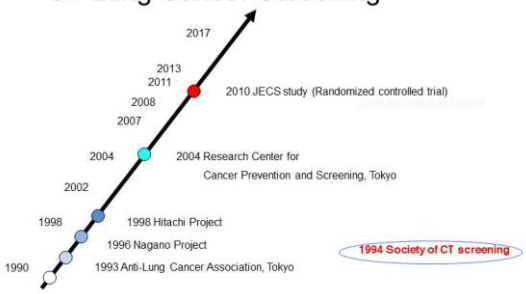
CT Lung Cancer Screening



Japanese Randomized Trial for Evaluating the Efficacy of Low-dose Thoracic CT Screening for Lung Cancer (JECS Study)



CT Lung Cancer Screening



Japanese Society of CT Screening

http://www.jscts.org/

Established in 1994

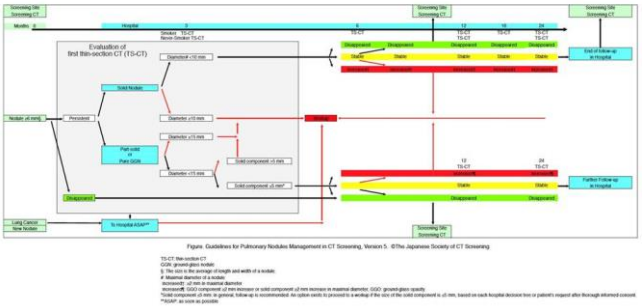
- Academic Meeting
- Seminar
  Nodule management, Emphysema, and Technologist sections
- Journal

Japanese Society of CT Screening

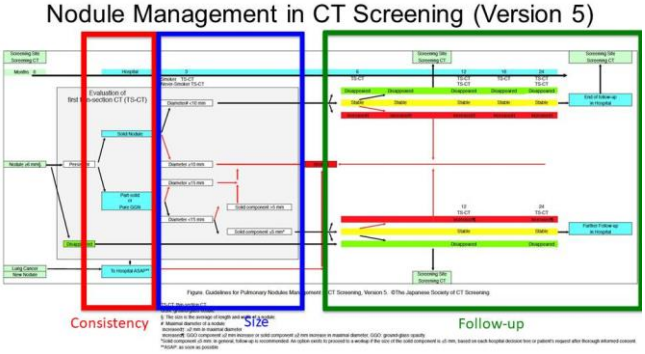
Specialized Committees

- Pulmonary Nodule Management
- Technological Management
- Accuracy Control
- COPD

Nodule Management in CT Screening (Version 5)



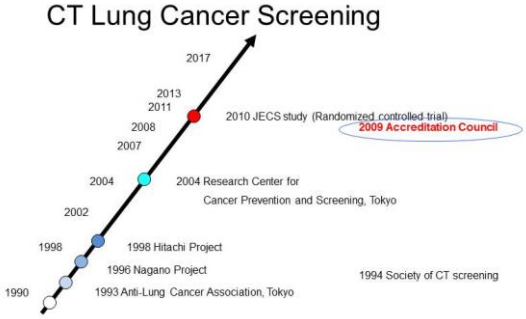
Nodule Management in CT Screening (Version 5)



Today's Topics

- CT Lung Cancer Screening in Japan
- Accreditation Council for Lung Cancer CT Screening

CT Lung Cancer Screening



Accreditation Council for Lung Cancer CT Screening

http://www.ct-kensin-nintei.jp/

Established in 2009

- Accuracy Control
- Certified Radiologists and Technologists (since 2009)
- Facility Certification (since 2018)

Accreditation Council for Lung Cancer CT Screening
Goals

- Develop the Human Resources Involved in CT Screening
- Promote CT Screening with Appropriate Accuracy

Accreditation Council for Lung Cancer CT Screening
Accuracy Control

- Summarize Results of CT Screening
- Analyze Screening-detected Lung Cancers

Accreditation Council for Lung Cancer CT Screening
How to Certify Radiologists and Technologists

- Board-certified Radiologists
  - 1 Day Training Course
- Radiological Technologists
  - 2-Day Training Course

Accreditation Council for Lung Cancer CT Screening
How to Certify Radiologists

- Lectures on Related Topics
  - Diagnosis and Follow-up of Screening-detected Pulmonary Nodules
  - Surgery of Peripheral Small Lung Cancers
  - Radiation Risk

  etc.

Accreditation Council for Lung Cancer CT Screening
How to Certify Technologists

- The 1st Day
  - Lectures on Related Topics
- The 2nd Day
  - Mark Sheet Test
  - Pulmonary Nodule Detection Test using Screening CT Images

Accreditation Council for Lung Cancer CT Screening
How to Certify Technologists

- The 1st Day
  - Lectures on Related Topics
- The 2nd Day
  - Mark Sheet Test
  - Pulmonary Nodule Detection Test using Screening CT Images

Technologists are required to pass both exams in order to be certified.

Textbook published by the Accreditation Council "Knowledge and Practice of CT Screening 3rd Edition"

- Radiation Dose
- Quality of Screening CT Images
- Knowledge about Lung Cancer

etc.

(in Japanese)

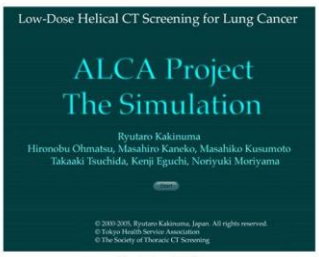
Lectures for Radiological Technologists (1st Day)

Venue: Shiga University of Medical Science

Mark Sheet Test (2nd Day)

Teaching Software for Nodule Detection

- Representative Cases of Lung Cancer
- Simulation of CT Screening
- Detection of Small Nodules
- Threshold Checker of Small Lung Cancers



(in English)

Rationale of Nodule Detection by Technologists

Comparison of Sensitivity of Lung Nodule Detection between Radiologists and Technologists on Low-dose CT Lung Cancer Screening Images

Board-certified Radiologists (n = 11)

versus

Radiological Technologists (n = 10)

Intensively Trained Using the Software

Kakinuma et al. British Journal of Radiology 2012

Comparison of Sensitivity of Lung Nodule Detection between Radiologists and Technologists on Low-dose CT Lung Cancer Screening Images

Board-certified Radiologists (n = 11)

versus

Radiological Technologists (n = 10)

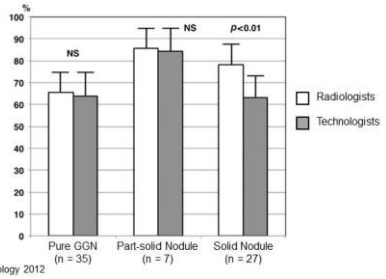
Kakinuma et al. British Journal of Radiology 2012

Comparison of Sensitivity of Lung Nodule Detection between Radiologists and Technologists on Low-dose CT Lung Cancer Screening Images

- Cases of CT Screening Images, n = 78
- Nodules
  - Pure GGN, n = 35
  - Part-solid, n = 7
  - Solid, n = 27

Kakinuma et al. British Journal of Radiology 2012

Comparison of Sensitivity of Lung Nodule Detection between Radiologists and Technologists on Low-dose CT Lung Cancer Screening Images



Kakinuma et al. British Journal of Radiology 2012

Comparison of Sensitivity of Lung Nodule Detection between Radiologists and Technologists on Low-dose CT Lung Cancer Screening Images

In conclusion, well-trained technologists may contribute to the detection of lung nodules ≥5 mm in diameter representing pure GGN and part-solid nodules (which are more likely to be malignant than solid nodules) in low-dose screening CT images.

Kakinuma et al. British Journal of Radiology 2012

Nodule Detection Test for Technologists

100 Computers

- 100 Examinees
- 60 Screening CT Images / 100 Minutes
- Click on the part determined to be a nodule ≥5 mm in size

Server

- Determine whether the clicked part is true positive or false positive (FP)
- Output each examinee's sensitivity and FP

Nodule Detection Test (2nd Day)

Accreditation Council for Lung Cancer CT Screening
Update of Certified Radiologists

- Certification Period: 5 Years
- Required for Renewal Application ≥25 Credits
  - Indispensable Credits
    - Renewal Class (7 Credits)
    - E-Learning about Screening CT Images of Lung Cancers (7 Credits)
  - Other Credits
    - Seminar in Society of CT Screening (5 Credits)
    - Annual Meetings of Related Societies (5 Credits, each)

Accreditation Council for Lung Cancer CT Screening
Update of Certified Technologists

- Certification Period: 5 Years
- Required for Renewal Application ≥25 Credits
  - Indispensable Credits
    - Renewal Class (10 Credits)
    - E-Learning about Nodule Detection on Screening CT Images (7 Credits)
  - Other Credits
    - Annual Meeting or Seminar in Society of CT Screening (7 Credits, each)
    - Annual Meetings of Related Societies (5 Credits, each)

Accreditation Council for Lung Cancer CT Screening
Requirements for Facility Certification No.1
CT Scanner and Scan Condition

- CT scanner with ≥4-Detector Row
- Low-dose CT Scan ($CTDI_{vol}$ ≤2.5 mGy)
- Submission of Low-dose CT Images (DICOM file)
  - 2 Cases (Body Mass Index (BMI) ≈ 22, n=1; BMI ≥25, n=1)

Accreditation Council for Lung Cancer CT Screening
Requirements for Facility Certification No.2
CT Screening Personnel

- Enrollment of One Certified Radiologist and One Certified Technologist
- Double Reading (One of the Readers should be Certified Radiologist.)

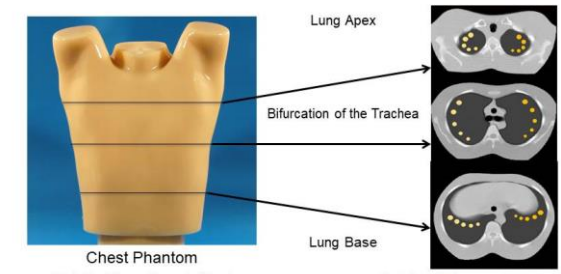
Accreditation Council for Lung Cancer CT Screening
Requirements for Facility Certification No.3
Accuracy Control

- Number of CT Screening ≥50 Cases per Year
- Regular Conference on Results of CT Screening
- Statistical Data of CT Screening

Accreditation Council for Lung Cancer CT Screening
Additional Requirements for Certified Facilities
Submission to the Secretariat

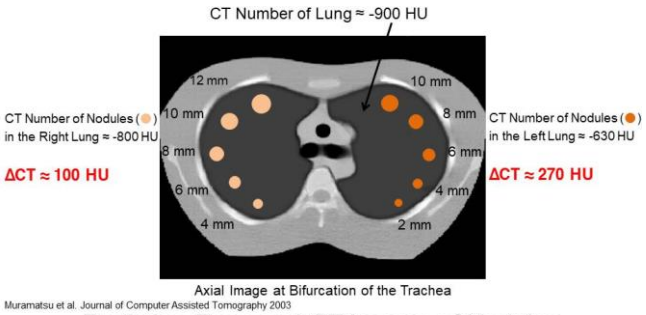
- LDCT Images (Every Year)
  - Sequential 20 Cases with Information of Radiation Dose
- LDCT Images of Dedicated Phantom with Radiation Dose (within 2 Years after Certification)
- Statistical Data of CT Screening (Every Year)

Dedicated Phantom for CT Lung Cancer Screening



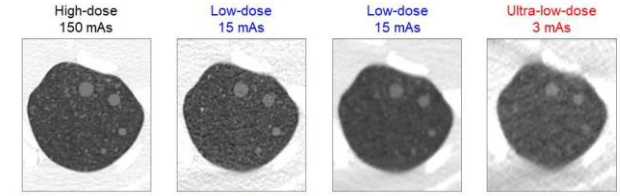
Muramatsu et al. Journal of Computer Assisted Tomography 2003

Dedicated Phantom for CT Lung Cancer Screening



Muramatsu et al. Journal of Computer Assisted Tomography 2003

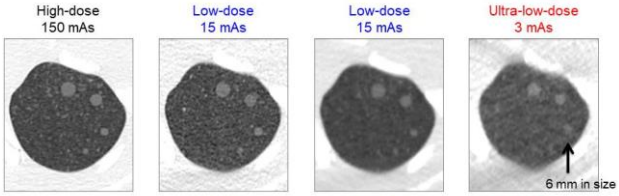
Radiation Dose and CT Images of Nodules in the Phantom



$CTDI_{vol}$ 15.6 mGy	1.6 mGy	1.6 mGy	0.2 mGy
Effective Dose 6.55 mSv	0.67 mSv	0.67 mSv	0.08 mSv
Filter 1	Filter 1	Filter 2	Filter 2

Provided by Muramatsu, PhD; Aquilion PRIME: 120 kV, 1×32 detector acquisition systems, pitch factor 1.48, slice thickness 1 mm, interval 1mm

Radiation Dose and CT Images of Nodules in the Phantom



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Filter 1	Filter 1	Filter 2	Filter 2

Provided by Muramatsu, PhD; Aquilion PRIME: 120 kV, 1×32 detector acquisition systems, pitch factor 1.48, slice thickness 1 mm, interval 1mm

Dedicated Phantom for CT Lung Cancer Screening
Goals

- Optimizing Scanning Techniques on a Variety of CT Scanners for Low-dose CT Lung Cancer Screening

Accreditation Council for Lung Cancer CT Screening
Certification since 2009

- Certified Radiologists: 1,311
- Certified Technologists: 1,435
- Certified Facilities : 25 (since April 2018)

Summary

- CT lung cancer screening can detect smaller and earlier lung cancers than chest X-ray screening.
- The Hitachi project showed a 51% reduction in lung cancer mortality.
- JECS study is ongoing.
- Accreditation Council for Lung Cancer CT Screening certifies radiologists, technologists, and facilities for accuracy control of CT lung cancer screening.

Speaker 2
Mai-Szu Wu,
Superintendent, Shuang Ho Hospital, Chinese Taipei
NCD prevention and control in Chinese Taipei - From Diabetes to Complications
[no presentation provided for the brochure]

Speaker 3
Janeth Tenorio Mucha
Universidad Peruana Cayetano Heredia, Peru
Experiences of initiatives for NCDs prevention and control in Peru

CRONICAS

Experiences of initiatives for the prevention and control of NCD's in Peru

Janeth Tenorio Mucha, Pharm MSc

UNIVERSIDAD PERUANA CAYETANO HEREDIA

CRONICAS
Center of Excellence in Chronic Diseases

- Research center specialized in **non-communicable diseases**
- Based at Universidad Peruana Cayetano Heredia (**UPCH**) – Lima, Peru

- **Multidisciplinary team:** physicians, nutritionists, anthropologists, psychologists, economists, pharmacists, and biologists
- **>** 15 research projects
- **>** 300 scientific publications

Three research projects with international cooperation

- Addressing the Challenge and Constraints of Insulin Sources – **ACCISS**
- COmmunity Health System InnovatiON – **COHESION**
- Scaling-up and Evaluating **Salt Reduction Policies** and Programs in **Latin American Countries**

ACCISS

Addressing the Challenge and Constraints of Insulin Sources and Supply

acciss
Addressing the Challenge and Constraints of Insulin Sources and Supply

ACCISS

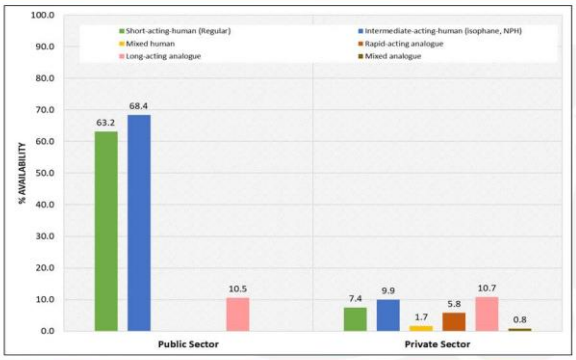
General information:

- **Countries**: Kyrgyzstan, Mali, Tanzania y Peru
- **Objective**: Improve access to insulin in Peru
  - Raise awareness of the need to improve diabetes care and the access to insulin in the national health system
  - Develop a plan to improve the availability and affordability of insulin in the public sector
- **Duration**: 2018 – 2020
- **Funding**: The Leona M. and Harry B. Helmsley Charitable Trust and Stichting ICF

ACCISS activities during 2018

Price, availability, and affordability of insulin in Peru	Rapid Assessment Protocol for Insulin Access - RAPIA
• Assess the Price, availability and affordability of insulin in private and public pharmacies in six Peruvian regions	• Qualitative study involving interviews with patients, care-givers, endocrinologists, patient's associations, healthcare proffesionals, and stakeholders
Same study in Kyrgyzstan	Same study in Kyrgyzstan and Mali

Some Results: Availability and affordability of insulin in Peru (2018)



Results of RAPIA

- **Health insurance** does not cover glucometer and test strips
- **Long waiting times**
- Most **policies and programs** are focused on T2DM
- **Health workers** do not feel competent to diagnose and manage T1DM neither for usage nor storage of insulin
- Lack of interdisciplinary **management**

Cooperation experience with ACCISS

- ACCISS's leads-investigator **visited each country** between 2018 and 2019
- Annual **country meetings** were held to share experiences and **activities plan**
- **Comparison** of preliminary results
- **Discussion** about each country's context and their challenges
- **Experts advice** in regulatory affairs
- Involvement of **policy makers**

COHESION

COmmunity Health System InnovatiON

COHESION

COHESION

General Information:

- **Countries**: Mozambique, Nepal y Peru
- **Objective**: Generate evidence and develop interventions for the control of NCDs and NTDs in the primary healthcare level in rural populations (Hypertension, Diabetes, and Neurocysticercosis)
- **Duration**: 2016 – 2018 (Formative research)
- **Funding**: Swiss National Foundation and Swiss Agency for Development and Cooperation

Activities with COHESION

1: 2016-2018 — Assess the barriers, opportunities and lessons learned in the management of NCDs and NTDs at policy, health system, and community level using qualitative techniques in a rural community in the north of Peru

2: — Develop and test scalable, sustainable, context-appropriate and gender-sensitive intervention packages.

3: Pending — Develop a plan for scaling interventions based on an evaluation of their impact.

4: — Improve the quality of Primary Health Care services with the involvement of political decision makers, health professionals and communities.

Insights from COHESION

COMMUNITY:

- There are **constraints for proper diagnosis** due to poor access to healthcare services
- People live in **poverty**
- There are **differences in experiences with the diseases** between men and women
- **Poor understanding and knowledge** of the diseases as well as a low level of confidence in medical treatments for **cultural reasons**
- **Difficulties to access** health care services **and medicines**

Recommendations from COHESION

IMPROVE:

- Allocation of **finances** for improving universal health coverage and primary care level
- **References** systems
- **Training** to health care professionals to follow Clinical Guidelines
- Health care professional's communication skills → **RESPONSIVENESS**

Cooperation experience with COHESION

- **Country meetings** to share experiences and activities plan
- **Collaborative** scientific writing (papers and grants)
- **Discussion** about better approaches for each population
- **Capacity building** to support junior researchers

Scaling-up and evaluating policies and programs for reduction of salt in Latin American countries

General Information:

- **Countries**: Costa Rica, Brazil, Paraguay, Argentina, and Peru
- **Objective**: Explore the knowledge, attitudes and behaviors reported by the consumers with respect to sodium and apply social marketing principles to develop a plan and strategy of implementation
- **Duration**: 2018 – 2019 (Formative study)
- **Funding**: International Development Research Center

Results of the formative study

- Majority of women make the **decision of what to cook** to their families
- People tend to use **artificial condiments**
- People consider they consume ***normal*** **amounts of salt** (it means not in excess)
- Families with a member (usually elderly) who suffers from a chronic condition tend to **reduce their use of salt in meals**
- The major barrier to reduce salt intake was **change in taste**

Social Marketing Strategy

PRODUCT
Less salt and condiments

PRICE
Change in taste

PLACE
Schools and Health centers

PROMOTION
Spokesperson

Cooperation experience

- **Consultants** from the University of South Florida and PAHO
- Better understanding about **cultural similarities and differences** in Latin-Americans regarding their dietary behavior
- Inputs to **better planning** of social marketing strategies and formulation of a **regional strategy**

FINAL REMARKS

International cooperation allows:

- **Learning** from previous experiences
- **Exchange** plans, ideas, and expertise
- Identification of **similarities and differences**
- **Support** in research and implementation process
- **Joint work**

CRONICAS
CENTRO DE EXCELENCIA EN ENFERMEDADES CRÓNICAS

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Session 2. Innovative technologies of nuclear medicine in NCDs prevention and control
Speaker 1

Dale C. Alverson
MD, Strategic Telehealth Consultant, the United States of America

The Use of International Telemedicine and Telehealth in the Management of Non-Communicable Diseases

"International Telehealth Development in the Global Community"

The Use of Telemedicine and Telehealth in the Management of Non-Communicable Diseases

Krasnoyarsk, Russia
October 17, 2019

Dale C. Alverson, MD
Strategic Telehealth Consultant, Center for Telehealth University of New Mexico
CMIO, LCF Research
Director, Health Information Associates International, LLC
Albuquerque, NM USA
Former President American Telemedicine Association (ATA)

International Telemedicine and eHealth: Transforming Systems of Care in the Global Community

Reasons to do International Telehealth:
Most Health Issues Are Global
Including Chronic Noncommunicable Diseases

The Brave New World

- During this remarkable period of health system transformation, advanced broadband communication networks of networks, along with the advances in technologies will be critical in supporting expanding health applications locally and globally:
  - ➢telemedicine,
  - ➢health information exchange,
  - ➢remote monitoring,
  - ➢knowledge sharing, education, training
  - ➢research
  - ➢public health
  - ➢disaster preparedness and response

Developing Countries are "Leap-Frogging" forward using these new Information & Communication Technology (ICT) Systems

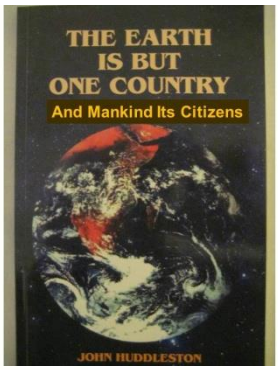
Developing a Telehealth Network

8 Important Steps

1. Build Upon Relationships, Existing Programs, and Systems of Care
2. Team Building
3. Needs Assessment and Cultural Perspectives
4. Planning and Implementation
5. Sharing Knowledge, Cultural Exchange; internal and external
6. Data Collection, Analysis, and Evaluation
7. Sustainability
8. Getting Started

Objectives

1) To discuss and present examples of the effective use of telehealth and related benefits that can be applied to chronic non-communicable diseases
2) To discuss the challenges and potential solutions related to integration of telehealth into the healthcare system
3) To discuss the future direction of telemedicine as part of healthcare in Ecuador and the Global Community



Examples of Chronic Non-Communicable Diseases to which Telehealth Could be Applied

- Diabetes
- Hypertension
- Congestive Heart Failure
- Chronic Obstructive Pulmonary Disease (COPD)
- Asthma
- Genetic Disorders
- Mental Illness
- Dementia

Across the continuum: Pediatrics and Adults,
along with an aging population with multiple diseases

1. Build Upon International Relationships

- Individual Contacts and Potential Champions in Country with Integration into Existing Systems of Care and other Telemedicine Programs
- Possible Industry Partners
- Universities and Medical Schools in Country
- Government: Ministries of Health
- AITT, ATALACC, PAHO

American Telemedicine Association

http://www.americantelemed.org

Telemedicine Consultations

2. Team Building

- Organize teams in collaborating countries with shared vision and goals
- Trans- disciplanary: Primary and specialty care, IT, Public Health, Administration
- Develop agreements; MOU, MOA
- Identify the leaders for the Telemedicine Program and points of contact

3. Needs Assessment and Cultural Perspectives

- Based upon healthcare needs as defined by the country and filling gaps
- Knowledge of other telemedicine activities and making complimentary
- Matching with Global Health Priorities
- Consider other public health issues; water, nutrition, power, waste management
- Understand Indigenous Healing Practices

La Clinica Alternativa

La Lancha Medica en la Amazonia

4. Planning and Implementation

- Survey existing capacity and planned future upgrades
- Identify Existing Technical Infrastructure and Network Connectivity, Facilities available
- Reality Checklist: Assessment of Workforce and Workflow analysis
- Financial support availability; In Country and International
- Pilot highest priorities and likelihood of success
- Form an In-country National Telehealth Consortium to Enhance Internal Collaboration (ACTT)

Nepal's network

Chhukung Relay at 5,100 m

The need for face to face interaction

A *Continuum* of Telehealth Approaches

- Provider Education and Case Reviews (e.g. ECHO Model)
- Specialty Consultation: Specialist Provider to Primary Care Provider
- Direct Patient Care Evaluation and Management
- Real Time Video/audio, or Asynchronous Store and Forward
- Remote Monitoring
- Direct to Consumer Services

Specialty Care

- Sharing knowledge, evidence-based best practices
- Emergencies, Triage and Critical Care
- Specialty Diagnosis and Management
- Chronic Care Management; Office, clinic, home
- Support groups

Primary care

- Direct to Your Patients and Families
- The Medical Home: A Team approach that provides Continuity, Coordination, and Transitions of Care
- Preventive Care
- Education

Involving the Patient

5. Distributed Medical Intelligence
Sharing Knowledge and Experience

- Knowledge Sharing Networks/Just in Time/On Demand
- Evidence based-Best Practices
- Put into Realistic Context
- Based on Available Resources
- Addressing Mutual Needs and Interests
- Applying the most Appropriate Technologies

Tele-mentoring/Tele-supervision

Project ECHO® (Extension for Community Health Outcomes)

Sanjeev Arora, MD, MACP

Distinguished Professor of Medicine (Gastroenterology/Hepatology)
Director of Project ECHO®
Department of Medicine
University of New Mexico Health Sciences Center

Tel: 505-272-2808
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sarora@salud.unm.edu
@UNMProjectECHO
UNMProjectECHO

Methods

- **Use Technology** to leverage scarce resources
- **Sharing "best practices"** to reduce disparities
- **Case based learning** to master complexity
- Web-based database to **monitor outcomes**

Arora S, Geppert CM, Kalishman S, et al: Acad Med. 2007 Feb;82(2): 154-60.

ECHO Hubs and Superhubs: Global

"Child Ready"
Virtual Pediatric Emergency Department Telehealth Network

At the University of New Mexico, the Virtual Pediatric Emergency Department Telehealth Network program connects hospitals, providers, and patients.

- **Education and Simulation**
- **Triage and Consultation**

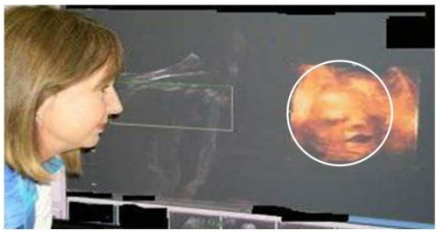
Cook Children's: Tele-Genetics

- 429 Bed Hospital
- 500+ Physicians
- 30+ Specialties
- Regional Clinics

Hours away

- Abilene
- Amarillo
- El Paso
- Midland
- San Angelo
- Waco

Direct Patient Care

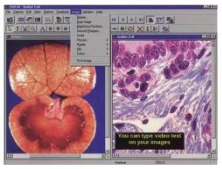


Maternal Fetal Medicine-High Risk Pregnancy

"Store and Forward"

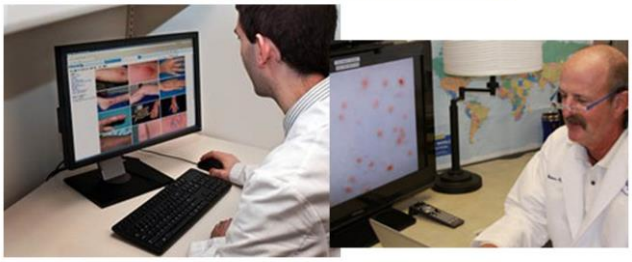
- Capturing an image and ***storing*** it to then be ***forwarded*** for review by a medical specialists
- Examples include teleradiology, tele-pathology and tele-dermatology, tele-ophthalmology (retinal scans)

Teleradiology and Image Transfer



Web-Based Portals

Teledermatology (Store and Forward)



Web-based Solutions:
Swinfen Charitable Trust (SCT)

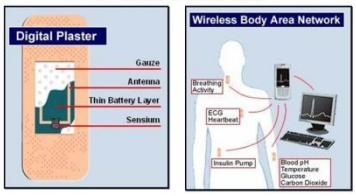
Local doctors can send clinical photos, a patient's history and any other relevant material (such as X-rays) to the Trust.
A secure web-based messaging system is used, see below. This allows referring practitioners access to a panel of over 464 specialists in a wide range of disciplines

www.swinfencharitabletrust.org

Diabetic Retinopathy Retinal Scans:

Remote Monitoring

The "Smart Band-Aid"



Family Visitation

Smart Phone "Snap-Ons" or Blue Tooth to Mobile Devices

Health Information Exchange and Telemedicine : Complimentary Pieces of the Puzzle

6. Data Collection, Analysis, Research and Evaluation

- Develop tools for capturing utilization
- Develop measures and methods for determining impact on health and health outcomes
- Continued Quality Improvement (CQI) and refinement
- Expansion as establish success and address other health care priorities
- Collaborative Research and Exchange

Exchange of Students and Faculty




The Future and Next Steps

Conclusions

Together we have opportunities to integrate Telehealth in a manner that can provide platforms for greater continuity in collaborative efforts within and between countries:

- Clinical service and consultation
- Public Health
- Disaster Preparedness and Response
- Education and training
- Research

"Think Globally but Act Locally"

7. Sustainability

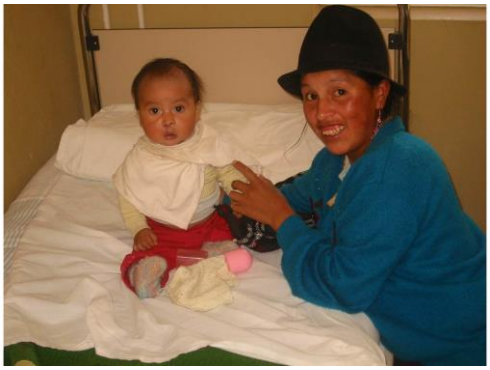
- Identify short term resource availability to get started
- Build local healthcare capacity with integrated education and training; "Tele-mentoring and Tele-supervision"
- Develop dependable schedule of activities with regular bi-national interaction using telehealth/videoconference
- Consider opportunities for student, faculty, provider exchange
- Plan for periodic onsite visits within country
- Integrate emerging new technologies as appropriate
- Promotion and Marketing; Sharing the Experience

8. Getting Started

- Build upon relationships
- Remember, although important, it's more than the Technology
- Develop Concrete Programs where Telehealth adds value and mutual benefit
- Recognize, cultural, socio-economic perspectives
- Utilize emerging new information communication technologies and build upon existing infrastructure.

Promoting Adoption of Telehealth and Overcoming Barriers

- **It takes a Transdisciplinary Team and Collaboration**
- **Belief in the Value**
- **Demonstrating the Value**
- **Dedication**
- **Persistence**



dale.c.alverson@gmail.com

Speaker 2
Dr Ivan Safontsev
A.I. Kryzhanovsky Krasnoyarsk Regional Clinical Oncology Center
Low-dose computed tomography in lung cancer screening in the Krasnoyarsk Territory

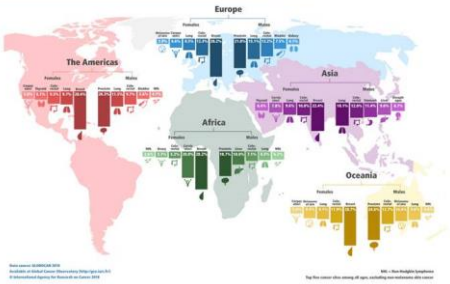
Low-dose computed tomography in lung cancer screening in the Krasnoyarsk Territory

Safontsev Ivan

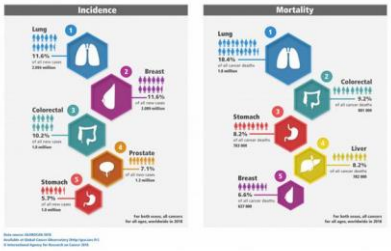
Krasnoyarsk regional clinical oncology center A. I. Kryzhanovsky

Krasnoyarsk
17 September, 2019

GLOBOCAN , 2018

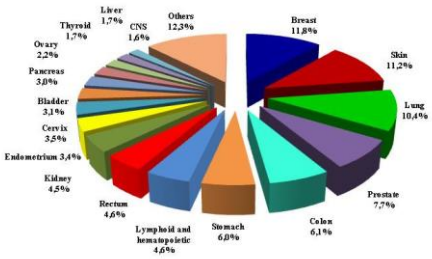


Percentages of new cancer cases and cancer deaths worldwide in 2018



New cancer cases in the Krasnoyarsk Region in 2018 (%)

Site	Cases	%
Man		
Lung	1072	17,2
Prostate	1038	16,6
Skin	551	8,8
Stomach	433	6,9
Colon	380	6,1
Women		
Breast	1575	21,8
Skin	953	13,2
Endometrium	572	7,3
Cervix	468	6,5
Colon	447	6,2

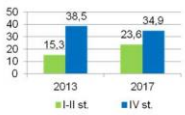


Lung Cancer: Regional Statistics

Diagnosis in I-II stage:
Russia - 29.4%
Krasnoyarsk Territory - 23.6%

Diagnosis in IV stage:
Russia - 40.8% (without stages - 2.3%)
Krasnoyarsk Territory - 34.9% (without stages - 11.6%)

One-year mortality:
Russia - 49.6%
Krasnoyarsk Territory - 49.4%



The status of cancer care for the population of Russia in 2017 / ed. A. Kaprin et al. - M.: P. Hercen MSIO, 2018.

Fluorography

- For the first time as a screening method - 1951 (Philadelphia Neoplasm Research Project)
- No statistically significant differences in lung cancer mortality rates
- Increase in the number of operable lung cancer cases in the screening group
- Fluorographic studies remain the main methods for the active diagnosis of lung cancer in Russia.

Weiss W., Boucot K.R., Cooper D.A. The Philadelphia pulmonary neoplasm research project. Survival factors in bronchogenic carcinoma // JAMA

Screening: sputum cytology and chest radiography

USA National Lung Cancer Trial > 30 000 smokers
(Johns Hopkins, Mayo Clinic, Memorial Sloan Kettering)[1]
Sputum cytology (+ X-ray)

Study in Czechoslovakia > 6 000 smokers[2]
Sputum cytology (+ X-ray)

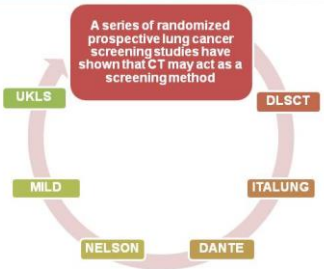
1. Frost ARRS 130: 549, Fontana 1984 ARRS 130: 561, Melamed 1984 Chest 86: 44 2. Kubik & Polack, Cancer 57: 2426

Lung cancer X-ray screening results

- Increased survival
- Disease stage improvement
- Increased Resectability
- No changes in lung cancer mortality rates

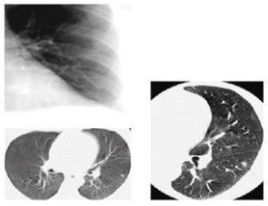
Marcus - J Natl Cancer Inst 2000;92:1308-1316

Low-dose computed tomography in lung cancer screening



CT vs X-ray

- CT diagnoses 3-4 times more foci than chest X-ray
- The average size of foci with CT is half as much



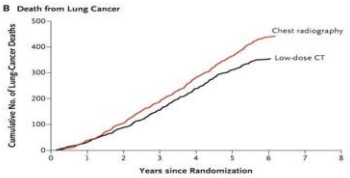
Characteristics of the identified foci

	CT (%)	X-ray (%)
Patients	26 309 (100)	26,035 (100)
Foci in the lungs	7,191 (27.3)	2,387 (9.2)
Lung cancer verified	1,060 (2.4)	941 (5.5)
Of these, stage IA	416 (40.0)	196 (21.1)

The National Lung Screening Trial Research Team
N Engl J Med 365; 5 August 4, 2011

The NEW ENGLAND JOURNAL of MEDICINE

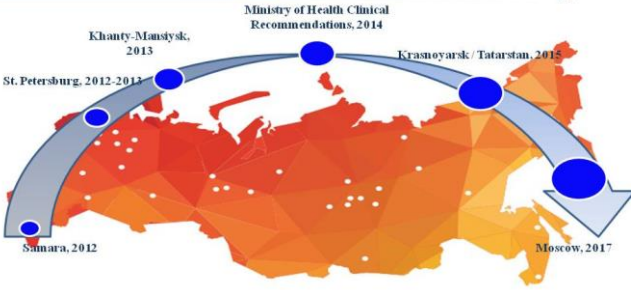
Reduced Lung-Cancer Mortality with Low-Dose Computed Tomographic Screening



There were 247 deaths from lung cancer in the low-dose CT group and 309 deaths per in the radiography group, representing a relative reduction in mortality from lung cancer with low-dose CT screening of 20.0% (95% CI, 6.8 to 26.7; P=0.004).

The rate of death from any cause was reduced in the low-dose CT group, as compared with the radiography group, by 6.7% (95% CI, 1.2 to 13.6; P = 0.02).

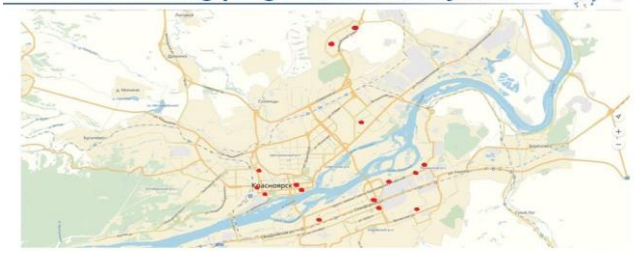
Low-dose computed tomography in lung cancer screening in Russia



Developing low-dose computed tomography screening program of lung cancer in Krasnoyarsk Territory

- Order of the Ministry of Health of the Krasnoyarsk Territory dated May 15, 2015 On Lung Cancer Screening Program
- The city of Krasnoyarsk becomes a pilot district
- Screening guidelines developed for clinics are included in the pilot project

Pilot screening program in Krasnoyarsk



15 clinics in Krasnoyarsk

2 127 planned studies from 2015 to 2017

Target group for low-dose computed tomography screening

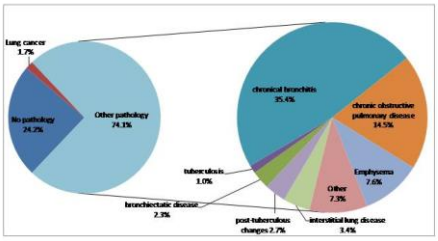
CRITERIA:

- Male
- Age 50-64 years
- Smoker index ≥ 30
- Lack of radiation studies of the lungs over the past year

Results of lung cancer CT screening

2015	2016	2017
316 patients	562 patients	524 patients
Detectability 15.8 per 1000 examined	Detectability 24.9 per 1000 examined	Detectability 9.4 per 1000 examined
Lung cancer stages:	Lung cancer stages:	Lung cancer stages:
I-II st. – 60,0%	I-II st. – 50,0%	I-II st. – 20,0%
III st. – 40,0%	III st. – 14,3%	III st. – 60,0%
	IV st. – 35,7%	IV st. – 20,0%

Pathology detected by CT



The results of the pilot lung cancer screening in Krasnoyarsk (2015-2017)

- **1 402 patients included -**
- **Detectability – 17,1 per 1000 examined**

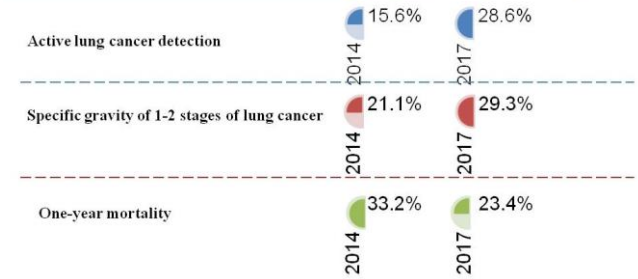
	lung cancer detectability per 1000 examined persons
Preventive medical examination program	0.039
Program «Oncoscreening»	0.57
Low-dose computed tomography in lung cancer screening	17.1

Lung cancer stages
- I-II cr. – 45.8%
- III cr. – 29.2%
- IV cr. – 25.0%

Screening problems

- Mismatch of the number of patients examined to target numbers – 65.9% of the planned amount
- Inclusion of non-target patients – 21.1%
- Use of CT as an additional radiation research method – 2.6%

Dynamics of oncological care indicators before and after screening in Krasnoyarsk



Acknowledgments

Chief Physician of the Krasnoyarsk Territory Clinical Oncology Center
Andrei Modestov

Head of the Department of Oncology and Radiotherapy V.F. Voino-Yasenetsky Krasnoyarsk State Medical University,
Ruslan Zukov

Day 2: October 18, 2019

Plenary 3. Problems and prospects of cooperation in providing training for medical specialists of NCDs prevention and control

Speaker 1

Dr Joao Breda,

Head of the WHO European Office for the Prevention and Control of Noncommunicable Diseases

Prevention of NCD's in the context of health services with the focus on primary health care

[no presentation provided for the brochure]

Speaker 2

Dr Andrey Modestov

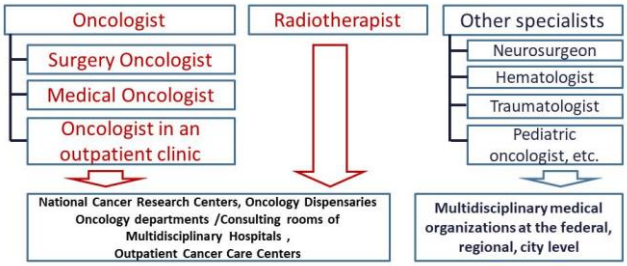
Head of the A.I. Kryzhanovsky Krasnoyarsk Regional Clinical Oncology Center

Human resource development in oncology

Modern trends in oncology

- Epidemic of non-communicable diseases is really growing, and there are four most significant groups among them: cardiovascular, oncological, respiratory diseases and diabetes.
- Over 80% of Russians die from these diseases in total
- Several national projects in priority areas of healthcare have been initiated, including the National Cancer Program
- The key areas of the National Cancer Program were: to increase the main treatment options funding for cancer patients, to modernize oncology dispensaries and to train a large number of oncologists for the work in primary care and outpatient cancer care centers (OCCC)

Who provides cancer care in Russia?



The history of the oncological service implementation in Russia

Alexandr Savitsky

- Oncological service implementation in the USSR during a difficult period for our country (1945-1947)
- Oncology dispensaries became regional service centers, which provided all types of assistance to cancer patients (surgical, medicamental, and radiological) and included methodological departments that organized interaction with primary care physicians.

How many oncologists are there in the Krasnoyarsk Territory?

Russian Federation

- 95 oncology dispensaries
- 35 634 hospital beds for oncological patients
- 7 887 beds for radiotherapy
- 7 963 oncologists
- 1 575 radiotherapists

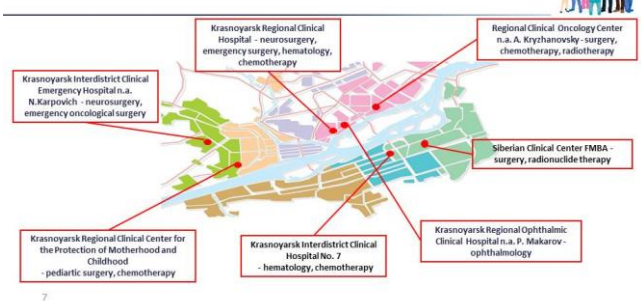
Krasnoyarsk Territory

- 1 Oncology dispensary + 6 medical organizations with beds for oncological patients
- 520 hospital beds for oncological patients
- 155 beds for radiotherapy
- 114 oncologists
- 24 radiotherapists

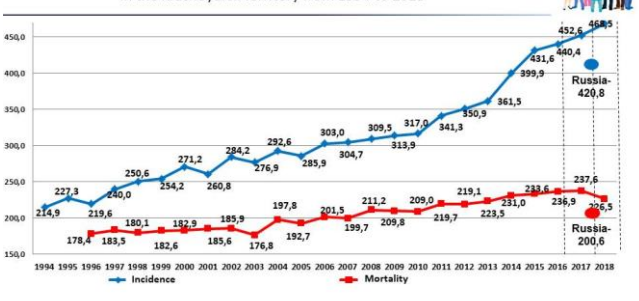
Oncologists / radiotherapists of the Krasnoyarsk Territory

		2016		2017		2018	
		n	‰	n	‰	n	‰
RF	Oncologists	7271	5,0	7353	5,0	7963	5,4
	Radiotherapist	1561	1,06	1570	1,07	1575	1,07
SFD	Oncologists	794	4,6	802	4,7	811	4,7
	Radiotherapists	202	1,18	201	1,17	204	1,19
KT	Oncologists	114	4,1	115	4,1	114	4,1
	Radiotherapists	25	0,85	24	0,85	24	0,85

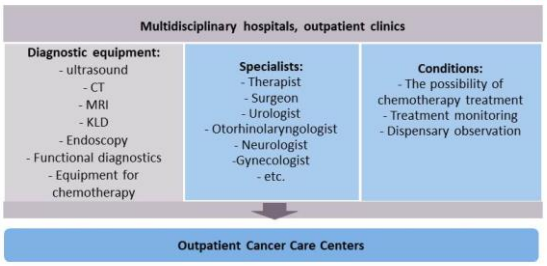
Medical organizations providing medical care in oncology profile



The dynamics of incidence and mortality from cancers in the Krasnoyarsk Territory from 1994 to 2018



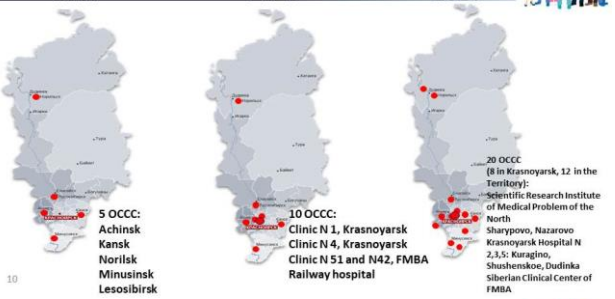
OCCC: new cancer care unit



OCCC: new cancer care unit

- 1 center for ≥ 50 thousand people
- 1 oncologist in the center for 25 thousand people
- By 2022, no less than 60 oncologists should be trained for the work in OCCC

OCCC: new cancer care unit

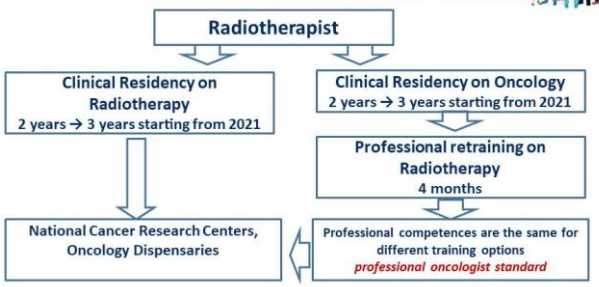


Current challenges for oncology in the Krasnoyarsk Territory

- **Reduction of the number of beds in the oncological clinic**
- **Active introduction of day-time hospitals in close proximity to the patient (implementation of OCCC)**
- **An increase in the rates of cancer incidence**
- **Extended scope of oncological care (surgical, chemotherapy, radiotherapy)**
- **Growing diversity of minimally invasive technologies and drug therapy regimens**
- **The acute need for oncologists for the dispensary and OCCC**

How to train an oncologist in Russia?

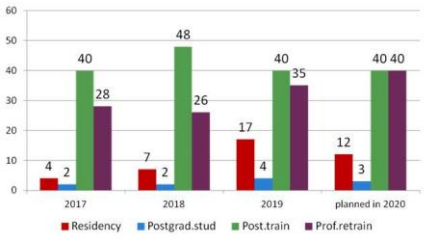
How to train a radiotherapist in Russia?



Training of oncologists in the Krasnoyarsk Territory

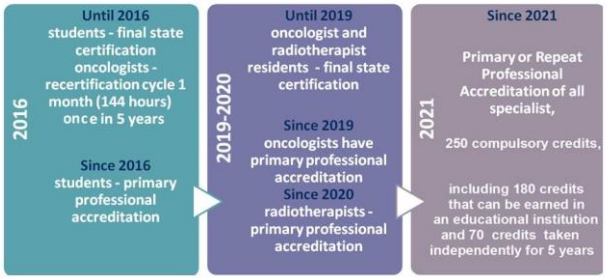
Year	Clinical internship	Clinical residency	Postgraduate studies	Additional professional education
2017	Is not provided since 2016	2 oncologists 2 radiologists	2	postgraduate training – 40 (5 distance learners) professional retraining – 28 (including 20 persons in The Republic of Tyva)
2018	-	3 oncologists 4 radiologists	2	postgraduate training – 48 (3 distance learners) professional retraining – 26 (including 20 persons in The Republic of Khakassia)
2019	-	12 oncologists 5 radiologists	4	postgraduate training – 40 (5 distance learners) professional retraining – 35 (including 20 persons in OCCC)

Training of oncologists in the Krasnoyarsk Territory



Trained at the Department of Oncology and Radiotherapy in 2017-2019
- **clinical residents – 28**
- **graduate students – 4**
- **recertification cycles (post.training) – 128**
- **prof. retraining – 89 (including 40 persons in The Republics of Tyva and Khakassia)**

Continuing medical education system



Educational process evolution

- Phased implementation of the Continuing Medical Education system
- Students' self-determination in their educational path
- Quick change of curricula for the Department of Oncology and Radiation Therapy (Medical University) depending on the needs of practical health care (difficulties in planning the workload and distribution of personnel)
- The need to create distance learning modules, full-time modules (up to 36 hours), internships at the workplace, mentoring system

Department of Oncology and Radiotherapy with a course of postgraduate education

Department staff - 18 employees

- Department Head – 1
- Professor -1
- Associate Professors – 4
- Assistants of the department – 12
- Medical University staff – 5
- Oncology clinic staff - 13

Acknowledgments

Ruslan Zukov
Head of the Department of Oncology and Radiotherapy Professor V.F. Voino-Yasenetsky Krasnoyarsk State Medical University, Russia

CONCLUSION

- **There is a centralized system for cancer care organization in Russia, while oncology clinics play a key role in it**
- **There is active integration of Oncology Dispensary with regional hospitals and large clinical multidisciplinary institutions (opening of oncology departments, OCCC), the Siberian Clinical Center of FMBA (Center for Nuclear Medicine)**
- **From 2016 to 2021 a system of Continuing Medical Education is being introduced, that is based on a new system of specialists training and assessing their competence with the help of professional standards**
- **There is a need to prepare a large number of specialists in the shortest possible time in accordance with the requirements of the National Anti-Cancer Program (2019 – 2024)**
- **New forms of training should be used for the doctor to choose his/her own learning path**

Speaker 3

Galina Kodina

Head of the Department of Radiochemistry and Radiopharmaceuticals in the Biomedical University of Innovation and Continuing Education. Burnazyan SRC- FMBC of the Federal Medical Biological Agency

Ten years of experience in training engineering and medical personnel for nuclear medicine

ФМБА России

APEC International Conference
"Joint initiatives for the prevention and fight against noncommunicable diseases"
October 17-18, 2019, Krasnoyarsk

Ten years of experience in training engineering and medical personnel for Nuclear Medicine

Samoilov A.S., Bushmanov A.Yu., KODINA Galina E.
Head of the Department of Radiation Technologies for Medical Purposes;
Head of the Department of Radiochemistry and Radiopharmaceuticals
in the Biomedical University of Innovation and Continuing Education
SSC Burnazyan Center of Federal Medical Biological Agency

Growing Interest from Pharma Industry

- Bayer Xofigo $ 2.9 B (Algeta)
- Novartis Lutathera $ 3.9 B (AAA)
- 15 different product development study conducts in 5 different cancer types

Eczacıbaşı | monrol

Nuclear Medicine, Edition 2018

- The global market for nuclear medicine reached US$ 4.8 billion in 2017, growing by 7% from 2016.
- The market is expected to reach between US$ 14 and 26 billion in 2030.

MEDraysintell

- PET will not replace SPECT
- ^{99m}Tc will not disappear
- Whenever possible cold kits will be preferred
- Cyclotrons will continue to be needed, but there will be a shift in use
- The number of new ^{18}F-labeled tracers will become too large to be handled at a single site
- All new ^{18}F-labeled tracers are proprietary
- Capacity in excess shifted from ^{18}F-FDG to proprietary tracers
- ^{18}F replaced by ^{68}Ga (?), ^{64}Cu (?), ^{89}Zr (?) whenever needed and possible

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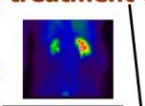
NUCLEAR MEDICINE

The use of radionuclide methods in the diagnosis and treatment of human diseases

Equipment



Radiopharmacy

Specialized staff training

Comparative information on equipment for nuclear medicine in the USA, EU, Russia and the whole world

(MEDraysintell, 2018)

	USA	EU	Russia	World (2017)	World (est. 2025)
Population (thousand)	323 000	620 000	146 000	7 444 000	8 100 000
SPECT (2017)	12500	4305	175	24300	29000
PET (2017)	2320	908	27	5690	8600
Cyclotrons (2015; <25 MeV)	239	222	40	1106	1350
RNT	?	?	?	?	?

If based on USA figures, Russia would need 5,650 SPECT cameras, 1,050 PET and 108 cyclotrons
If based on EU figures, Russia would need 1,000 SPECT cameras, 210 PET and 52 cyclotrons
From a realistic point of view, the needs are more close to 500 add. SPECT, 150 PET and 10 cyclotrons

*MEDraysintell, 2018

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Section IV of the Roadmap - Development of a system for training specialists, advanced training and professional retraining of personnel for nuclear medicine

Specialized training for nuclear medicine personnel

Medical basic education

Doctor Radiologist-

Специалисты всех медицинских направлений

Pharmaceutical basic education (Pharmacist)

Technical basic education

Medical | Physics | Nuclear Physics | Radiochemistry | Organic Chemistry | Analytical Chemistry

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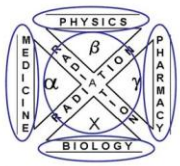
The generally accepted scientific and practical direction for training of engineering and secondary technical personnel in the field of technology development and production of medical radionuclides and radiopharmaceuticals is

Radiopharmaceutical Chemistry

- Radiopharmaceuticals is a rather specific field of application of nuclear energy materials in medicine.
- A specialist radiopharmacist (radiochemist) must have the knowledge necessary at each stage of the creation and use of radiopharmaceuticals - from the nuclear reaction of receiving a particular radionuclide to automated synthesis technology and clinical application methods of the corresponding drug

Scope of Radiopharmacy



Logo of UK Radiopharmacy Group

- A similar specialties is open at several Universities

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Several universities have organized specialized training in the development, production and clinical use of radiopharmaceuticals and nuclear medicine technologies.

University	Course name	Lecturer	Specialty or specialization
RCTU them. D.I. Mendeleev	Chemical technology of radiopharmaceuticals (process engineer)	Bogorodskaia M.A.	Chemical technology of materials in modern power engineering
MSU M.V. Lomonosov	Radiology and nuclear medicine (specialist)	Becman I.N.	Radiochemistry
SPbSU	Methods for the synthesis of radiopharmaceuticals (bachelor). Methods for producing of radiopharmaceuticals, based on cyclotron and generator radionuclides for use in radionuclide diagnostics (master)	Krasikova R.N.	Chemistry, Fundamental and Applied Chemistry
TPU	Technologies for producing radiopharmaceuticals (bachelor, master)	Scuridin V.S.	Physics, Medical Physics
NRNU MEPhI	Pharmaceutical and radiopharmaceutical materials science (specialist)	Epshtein N.B.	Materials Science and Materials Technology
UrFU them. B.N. Yeltsin	В стадии подготовки сетевая магистерская программа «Ядерная медицина»	Bazhukov S.I.	Radiopharmacy

ФМБА России

- License of the Federal Service for Supervision in Education and Science from 29.10. 2012, № 0411
- Certificate of state accreditation from 15.03.2016 г. № 1733

General director Samollov Alexander PhD, MD, Prof.

First Vice-Rector Kuznetsova Olga chief freelance specialist of the Federal Medical Biological Agency of Russia in medical and pharmaceutical education, Ph.D. Email: ippofmbc@mail.ru 190-96-80

•**Biomedical University of Innovation and Continuing Education** (until 12.11.2018 IPPE - Institute of Postgraduate Professional Education) **is a structural unit of the FSBI SSC FMBC named after A.I. Burnazyan FMBA of Russia, relies on its highly professional scientific, clinical potential and is training highly qualified personnel for the needs of Russian science and healthcare, including unique specialists providing nuclear and radiation safety of the Russian Federation.**

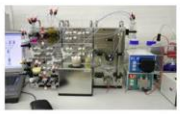
ФМБА России

Department of Radiochemistry and Technology of Radiopharmaceuticals - training of specialists in the field of radiopharmacy

Training cycles:

- *Fundamentals of Nuclear Medicine*
- *Chemical technology of radiopharmaceuticals*
- *Production and quality control of radiopharmaceuticals in a medical institution*
- *Radioisotope diagnostics, radiation therapy*
- *Positron Emission Tomography*
- *Binary radiation technology in nuclear medicine*

Контроль качества РФП



Модули синтеза РФП

Асептическое производство

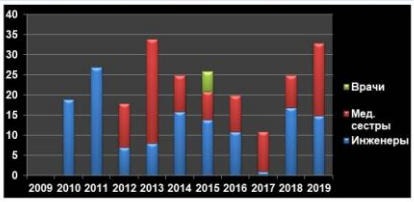
ФМБА России

Department of Radiochemistry and Technology of Radiopharmaceuticals - training of specialists in the field of radiopharmacy

Trained:

- ✓ 135 specialists - engineers in the field of production and quality control of radiopharmaceuticals
- ✓ 100 nursing staff
- ✓ 5 doctors

Russia	Belarus	Kazakhstan	Kyrgyzstan	Uzbekistan
86+100	14+3	22+2	2	11



City	Ing.	Nurs.
Moscow	56	92
Астрахань		2
Красноярск	4	1
Ю-Сахалинск		3
Тюмень	5	
Казань	3	2
Хабаровск	5	
Магнитогорск	2	
Челябинск	2	
Дубна	1	
Чебоксары	6	
Екатеринбург	1	
Ханты-Мансийск	1	
Всего в РФ	86	100

ФМБА России

Department of Radiochemistry and Technology of Radiopharmaceuticals

Text books, Study guides

M.A. Bogorodskaya, G.E. Kodina. Chemical technology of radiopharmaceuticals. Lecture course. M .: FMBC them. A.I. Burnazyan FMBA of Russia, 2010 - 468 p.
M.A. Bogorodskaya, G.E. Kodina. Chemical technology of radiopharmaceuticals. Collection of questions and tasks. M.: NRNU MEPhI, 2011, 112 pp.

Nuclear Medicine. Directory.

Edited by the Honored RF Scientist, Honored Doctor of RF, MD, prof. V.V. Dyba

MPEI Publishing House, 2014

"Methods for producing radiopharmaceuticals and radionuclide generators for nuclear medicine" Kodina G.E., Krasikova R.N. - Winner of the 2011 All-Russian Competition of manuscripts of educational and reference books on nuclear energy in the section "Fundamentals of Nuclear Energy and Technologies"

МИНИСТЕРСТВО ЗДРАВООХРАНЕНИЯ РОССИЙСКОЙ ФЕДЕРАЦИИ

Section IV of the Roadmap - Development of a system for training specialists, advanced training and professional retraining of personnel for nuclear medicine

Name of event, control event	Implementation period	Type of the document	Developer
15. Development and approval of exemplary additional professional programs of medical education and pharmaceutical education in order to train specialists who have a range of modern knowledge, skills and competences in the field of radiopharmaceutical drugs and nuclear medicine technologies	Q2 2016	Report to the Government of the Russian Federation, Order of the Ministry of Health of Russia	Russian Ministry of Health; FMBA of Russia; interested Federal executive bodies and organizations

МИНИСТЕРСТВО ЗДРАВООХРАНЕНИЯ РОССИЙСКОЙ ФЕДЕРАЦИИ

RF – open source of ionizing radiation

Methods and techniques of working with RF in the production process, quality control and clinical use are primarily due to radiation safety requirements

Resolution of the Chief State Sanitary Doctor of the Russian Federation from 26.04.2010 N 40 (ed. 16.09.2013)
2.6.1. IONIZING RADIATION, RADIATION SAFETY BASIC SANITARY RULES of RADIATION SAFETY (ОСПОРБ-99/2010)
Sanitary rules СП 2.6.1.799-99

State sanitary and epidemiological rules and regulations
2.6.1. IONIZING RADIATION, RADIATION SAFETY Radiation safety standards (НРБ-99/2009) СП 2.6.1.758 – 99/2009
Official Edition

Difference of RF from other drugs

RF production is extremely small compared to other drugs

Quite often the number of packages in a series is 3-5 units

The shelf life of the drugs, depending on the half-life of the corresponding radionuclides, is from several minutes to several days.

Therefore, in the quality control of radiopharmaceuticals, express methods should be mainly used, as well as methods providing the ability to reliably determine quality indicators with minimal sample volumes

Evaluation of the equivalent dose for irradiation of the lens of the eye for medical staff at a distance of 20 cm from the primary packaging (vials for medicines), received within 10 min

Isotope	The dose rate of γ-radiation at 20 cm from single source mSv / Bk·h	Packing activity in maximum, Bk	Gamma dose rate at a distance 20 cm from packaging mSv / h	Dose in 10 min due to γ-radiation mSv	Packing activity in minimum, Bk
^{131}I	$1,5\times10^{-9}$	$4,0\times10^{9}$	6,0	1,0	$4,0\times10^{8}$
^{123}I	$1,1\times10^{-9}$	$1,5\times10^{9}$	1,7	0,28	$4,0\times10^{8}$
^{67}Ga	$5,2\times10^{-10}$	$1,5\times10^{9}$	0,8	0,13	$3,0\times10^{8}$
^{201}Tl	$2,7\times10^{-10}$	$3,7\times10^{8}$	0,1	0,017	$7,4\times10^{7}$
^{153}Sm	$2,8\times10^{-10}$	$4,4\times10^{9}$	1,2	0,20	$1,3\times10^{8}$
^{99m}Tc	$5,2\times10^{-10}$	$1,85\times10^{10}$	9,6	1,60	$3,7\times10^{8}$
^{18}F	$3,8\times10^{-9}$	$1,0\times10^{9}$	3,8	0,63	$4,0\times10^{7}$
^{11}C	$4,0\times10^{-9}$	$1,0\times10^{9}$	4,0	0,67	$4,0\times10^{7}$
^{15}O	$4,0\times10^{-9}$	$1,0\times10^{9}$	4,0	0,67	$4,0\times10^{7}$
^{13}N	$4,0\times10^{-9}$	$1,0\times10^{9}$	4,0	0,67	$4,0\times10^{7}$

МИНИСТЕРСТВО ЗДРАВООХРАНЕНИЯ РОССИЙСКОЙ ФЕДЕРАЦИИ

Section IV of the Roadmap - Development of a system for training specialists, advanced training and professional retraining of personnel for nuclear medicine

Krasnoyarsk, October 18, 2019

EURASIAN ECONOMIC UNION TREATY

May 29, 2014
Presidents of Russia, Belarus and Kazakhstan signed an agreement on the creation of the EAEU
On October 10, 2014, the Republic of Armenia and December 23, 2014 the Kyrgyz Republic signed agreements on accession to the Union

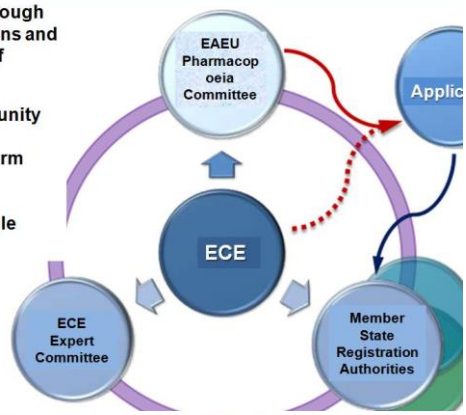
Articles 30 and 100 of the Treaty provide for the establishment within the Union of a common market for medicines, the transition to which should begin on January 1, 2016 in accordance with an international treaty within the Union that defines common principles and rules for the circulation of medicines

December 23, 2014 in Moscow, an agreement was reached on common principles and rules for the circulation of medicines within the framework of the Eurasian Economic Union

Krasnoyarsk, October 18, 2019

Single Market Regulators

1. **Registration through authorized organs and organizations of member states**
2. **The principle of unity of registration: normative (uniform rules and requirements); procedural (single order)**



Transitional provisions for registration rules

Bringing medicines registered in accordance with national regulations to EAEU requirements

Registration in accordance with the rules of the EAEU

Registration of new drugs according to national regulations

Validity of registration certificates issued according to national rules (for urgent RC, renewal is possible according to national rules)

2016 — December 31, 2020 — December 31, 2025

ФМБА России

Медико-биологический университет инноваций и непрерывного образования ФМБЦ им. А.И.Бурназяна ФМБА России

Department of Radiochemistry and Technology of Radiopharmaceuticals

New educational programs

1) QUALIFICATION PROGRAM FOR PERSONS RESPONSIBLE FOR PRODUCTION, QUALITY AND LABELING OF RADIOPHARMACEUTICALS

Persons with higher or secondary professional pharmaceutical, chemical, chemical-technological, biological, biotechnological, medical or veterinary education and persons who have completed the educational program for the professional retraining of specialists in industrial pharmacy are allowed to master the Program.

EXAMPLE CURRICULUM

№	Module name	Total hours
1	The state system for regulating the circulation of medicines, the main legislative and subordinate regulatory legal acts of the Russian Federation and the EAEU	8
2	State policy in the field of handling nuclear materials, radioactive substances and radioactive waste	12
3	The quality management system of the enterprise producing radiopharmaceuticals, taking into account the requirements and standards of radiation safety	36
4	Statistical methods used in the production of radiopharmaceuticals	12
5	Pharmaceutical development of a radiopharmaceutical drug	36
6	Production of sterile radiopharmaceuticals	8
7	Pharmaceutical analysis and quality control of radiopharmaceutical drugs	36
	Final examination	2
	TOTAL	**144**

Krasnoyarsk, October 18, 2019

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Медико-биологический университет инноваций и непрерывного образования ФМБЦ им. А.И.Бурназяна ФМБА России

Department of Radiochemistry and Technology of Radiopharmaceuticals

New educational programs

2) QUALIFICATION PROGRAM FOR PERSONS RESPONSIBLE FOR THE PREPARATION AND QUALITY OF RADIOPHARMACEUTICALS, BASED ON GENERATOR RADIONUCLIDES, DIRECTLY IN THE MEDICAL ORGANIZATION

Persons with higher or secondary professional pharmaceutical, chemical, chemical-technological, biological, biotechnological, medical or veterinary education

EXAMPLE CURRICULUM

№	Module name	Total hours
1	The state system for regulating the circulation of medicines, the main legislative and subordinate regulatory legal acts of the Russian Federation and the EAEU	8
2	State policy in the field of handling nuclear materials, radioactive substances and radioactive waste	12
3	Fundamentals of radionuclide diagnostics	24
4	The basics of radiation therapy	24
5	Physicochemical fundamentals and practical methods of working with radionuclide generators	30
6	Preparation and quality control of radiopharmaceuticals based on radionuclide generators directly in a medical organization	36
7	Quality assurance system for radiopharmaceuticals manufactured directly in a medical organization based on radionuclide generators	8
	Final examination	2
	TOTAL	**144**

Krasnoyarsk, October 18, 2019

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Медико-биологический университет инноваций и непрерывного образования ФМБЦ им. А.И.Бурназяна ФМБА России

Department of Radiochemistry and Technology of Radiopharmaceuticals

New educational programs

4) RE-TRAINING PROGRAM FOR SPECIALISTS ON REGULATORY ISSUES OF THE RADIOPHARMACEUTICAL MEDICINES IN THE EAEU

EXAMPLE CURRICULUM

№	Module name	Total hours
1	Legal aspects of industrial pharmacy and state regulation of drug circulation in the EAEU countries	12
2	State policy in the field of handling nuclear materials, radioactive substances and radioactive waste	12
3	Strategic management (planning) of regulatory activities	24
4	Operational management of regulatory activities	18
5	Regulation of the circulation of radioactive pharmaceutical substances	30
6	Regulation of radiopharmaceutical drug circulation	36
7	Quality assurance and quality management systems in radiopharmacy	24
8	Regulation of Clinical trials for radiopharmaceuticals	24
9	Упаковка и маркировка радиофармацевтических лекарственных средств	12
10	Pharmaceutical Microbiology	6
11	Regulation of Preclinical trials for radiopharmaceuticals	24
12	Pharmacovigilance	12
13	Biostatistics	6
	Final examination	6
	TOTAL	**250**

Krasnoyarsk, October 18, 2019

ФМБА России

Медико-биологический университет инноваций и непрерывного образования ФМБЦ им. А.И.Бурназяна ФМБА России

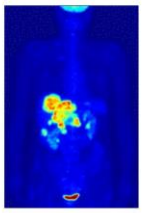
In the future - an organization in FMBC them. A.I. Burnazyan FMBA of Russia Scientific and Practical Center for Nuclear Medicine

Providing of preclinical and clinical studies for new radiopharmaceuticals, expert support during their state registration

Nuclear medicine personnel training on production technologies and methods for the manufacture and quality assurance of radiopharmaceuticals, taking into account current requirements for the production of medicines, including the current regulatory framework in the field of circulation of radiopharmaceuticals

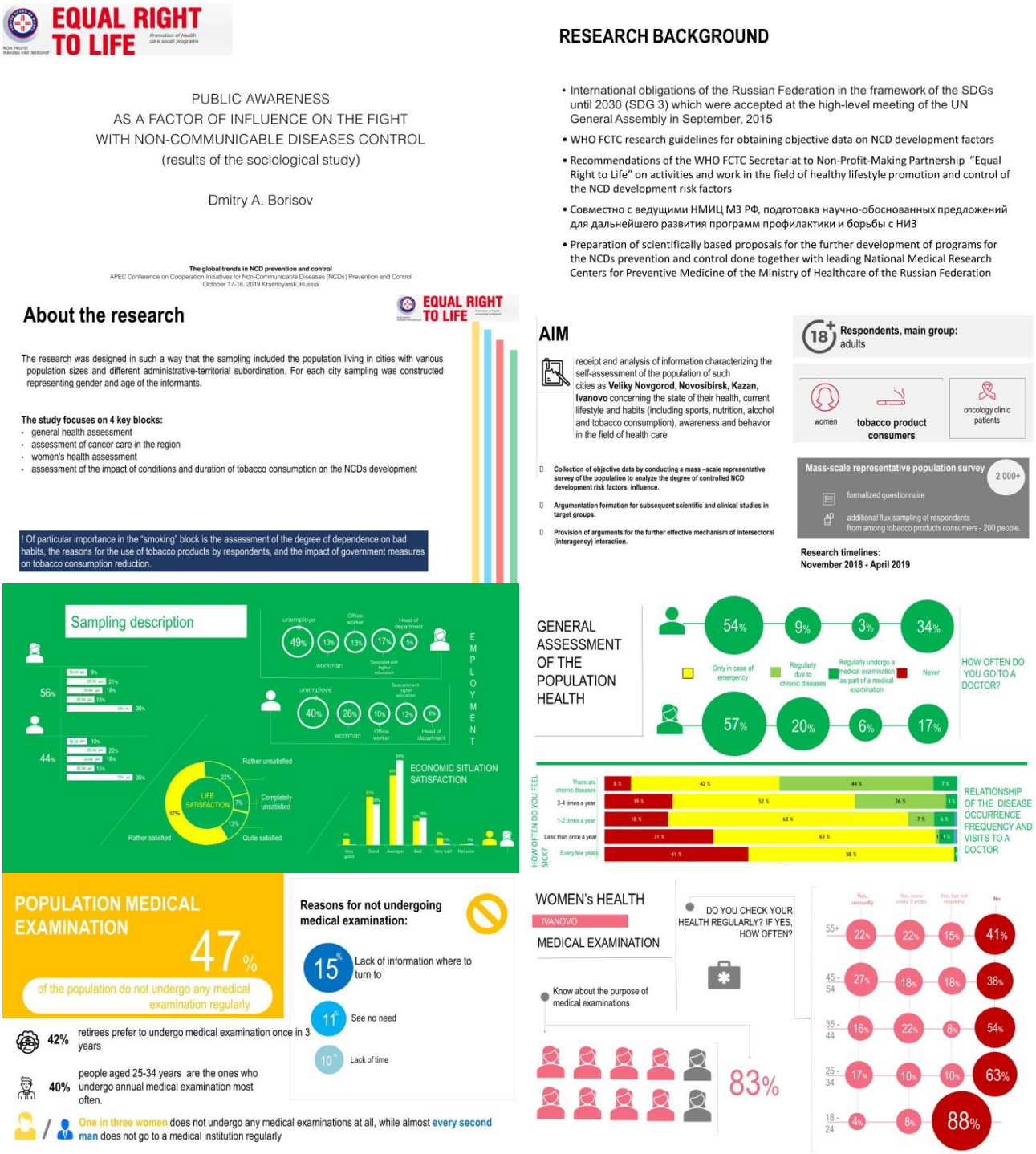
Training for medical personnel in modern methods of diagnosis and treatment in the field of nuclear medicine, as well as training the heads of clinical centers of nuclear medicine, taking into account the specifics of their functioning

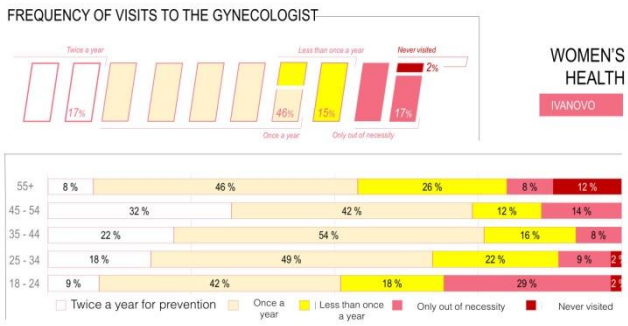
Krasnoyarsk, October 18, 2019

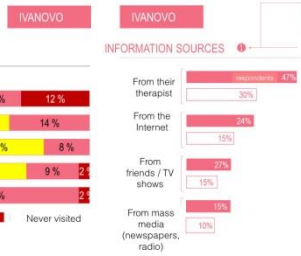


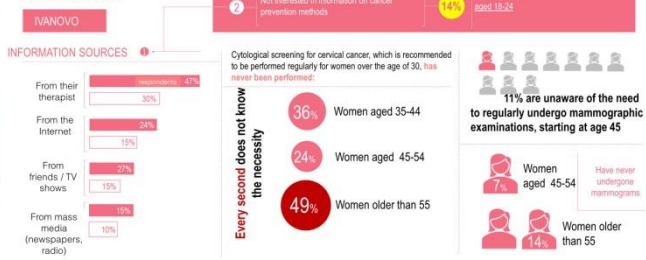
Thanks for your attention!

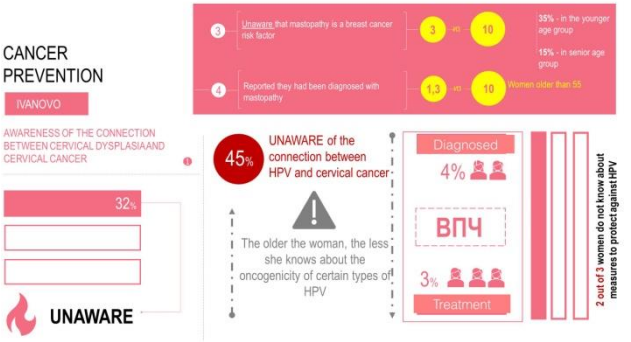
Speaker 4
Dmitry Borisov
Executive Director, Non-commercial Partnership "Equal Right for Life"
Public awareness as a factor of influence on the fight with non-communicable diseases control (results of the sociological study)

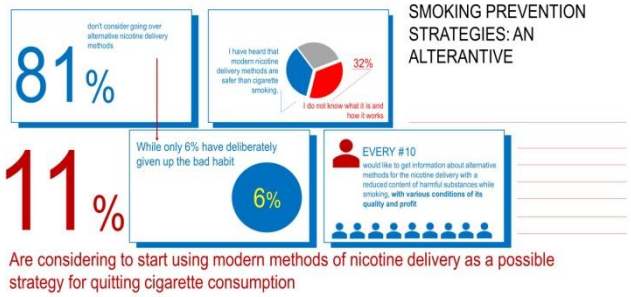


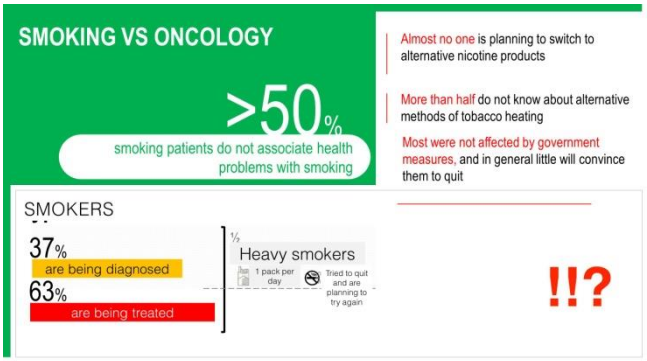

FREQUENCY OF VISITS TO THE GYNECOLOGIST
Twice a year
Less than once a year
Never visited
17%
46%
15%
2%
17%
Once a year
Only out of necessity
55+ 8 % 46 % 26 % 8 % 12 %
45 - 54 32 % 42 % 12 % 14 %
35 - 44 22 % 54 % 16 % 8 %
25 - 34 18 % 49 % 22 % 9 %
18 - 24 9 % 42 % 18 % 29 %
Twice a year for prevention
Once a year
Less than once a year
Only out of necessity
Never visited


WOMEN'S HEALTH
IVANOVO

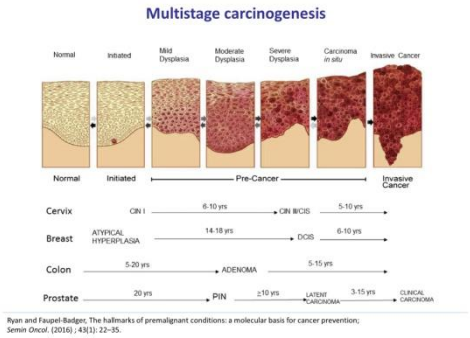

CANCER PREVENTION
IVANOVO
INFORMATION SOURCES
From their therapist
From the Internet
From friends / TV shows
From mass media (newspapers, radio)
Breast examination during the last visit to the gynecologist
8 vs 10
One out of three has visited the gynacologistin the last six months
Not interested in information on cancer prevention methods
14%
Typically, women aged 18-24
Cytological screening for cervical cancer, which is recommended to be performed regularly for women over the age of 30, has never been performed:
Every second does not know the necessity
36% Women aged 35-44
24% Women aged 45-54
49% Women older than 55
11% are unaware of the need to regularly undergo mammographic examinations, starting at age 45
7% Women aged 45-54
Have never undergone mammograms
14% Women older than 55

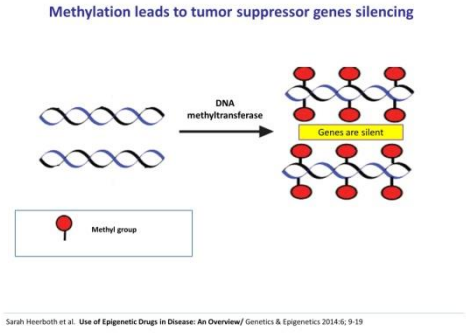

CANCER PREVENTION
IVANOVO
AWARENESS OF THE CONNECTION BETWEEN CERVICAL DYSPLASIAAND CERVICAL CANCER
32%
UNAWARE
Unaware that mastopathy is a breast cancer risk factor
3 vs 10
35% - in the younger age group
15% - in senior age group
Reported they had been diagnosed with mastopathy
1,3 vs 10
Women older than 55
45% UNAWARE of the connection between HPV and cervical cancer
The older the woman, the less she knows about the oncogenicity of certain types of HPV
Diagnosed
4%
ВПЧ
3%
Treatment
2 out of 3 women do not know about measures to protect against HPV

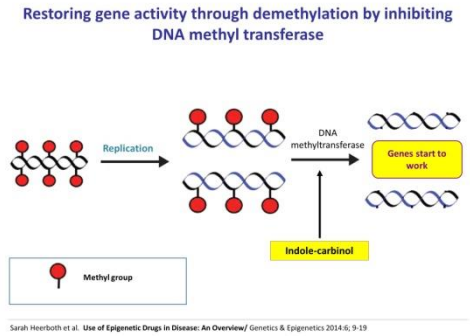

SMOKING PREVENTION STRATEGIES: AN ALTERANTIVE
81%
don't consider going over alternative nicotine delivery methods
I have heard that modern nicotine delivery methods are safer than cigarette smoking
32%
I do not know what it is and how it works
11%
While only 6% have deliberately given up the bad habit
6%
EVERY #10
would like to get information about alternative methods for the nicotine delivery with a reduced content of harmful substances while smoking, with various conditions of its quality and profit
Are considering to start using modern methods of nicotine delivery as a possible strategy for quitting cigarette consumption

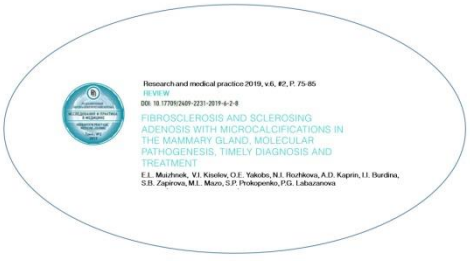

SMOKING VS ONCOLOGY
>50%
smoking patients do not associate health problems with smoking
Almost no one is planning to switch to alternative nicotine products
More than half do not know about alternative methods of tobacco heating
Most were not affected by government measures, and in general little will convince them to quit
SMOKERS
37%
are being diagnosed
63%
are being treated
½
Heavy smokers
1 pack per day
Tried to quit and are planning to try again
!!?


Cancer Prevention Innovations

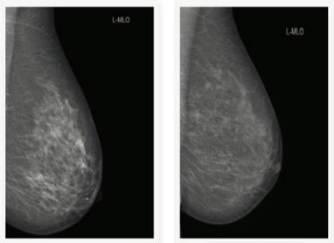

Multistage carcinogenesis
Normal
Initiated
Mild Dysplasia
Moderate Dysplasia
Severe Dysplasia
Carcinoma in situ
Invasive Cancer
Normal
Initiated
Pre-Cancer
Invasive Cancer
Cervix
CIN I
6-10 yrs
CIN II/CIS
5-10 yrs
Breast
ATYPICAL HYPERPLASIA
14-18 yrs
DCIS
6-10 yrs
Colon
5-20 yrs
ADENOMA
5-15 yrs
Prostate
20 yrs
PIN
≥10 yrs
LATENT CARCINOMA
3-15 yrs
CLINICAL CARCINOMA
Ryan and Faupel-Badger, The hallmarks of premalignant conditions: a molecular basis for cancer prevention; Semin Oncol. (2016) ; 43(1): 22–35.


Methylation leads to tumor suppressor genes silencing
DNA methyltransferase
Genes are silent
Methyl group
Sarah Heerboth et al. Use of Epigenetic Drugs in Disease: An Overview/ Genetics & Epigenetics 2014:6; 9-19


Restoring gene activity through demethylation by inhibiting DNA methyl transferase
Replication
DNA methyltransferase
Genes start to work
Indole-carbinol
Methyl group
Sarah Heerboth et al. Use of Epigenetic Drugs in Disease: An Overview/ Genetics & Epigenetics 2014:6; 9-19


Research and medical practice 2019, v.6, #2, P. 75-85
DOI: 10.17709/2409-2231-2019-6-2-8
FIBROSCLEROSIS AND SCLEROSING ADENOSIS WITH MICROCALCIFICATIONS IN THE MAMMARY GLAND, MOLECULAR PATHOGENESIS, TIMELY DIAGNOSIS AND TREATMENT
E.L. Mazhnek, V.I. Kiselev, O.E. Yakobs, N.I. Rozhkova, A.D. Kaprin, I.I. Burdina, S.B. Zapirova, M.I. Mazo, S.P. Prokopenko, P.G. Labazanova

Indole-3-carbinol in the prophylactic therapy of mastopathy (increased mammographic density)



Before treatment

After 4 months of treatment

FURTHER ACTION PLAN

- Further study in the regions of the Russian Federation, the beginning of international cooperation with the purpose to study the factors of raising public awareness for a more effective NCDs control
- Discussion of the results with WHO experts and international core groups
- Development of proposals for further program development for NCDs prevention and control as well as for monitoring NCDs development risk factors done in alliance with the expert community
- Preparation of proposals for international cooperation on the development of programs for the prevention and control of NCDs

CONCLUSION

- Population awareness of the scientifically substantiated facts with a high evidence base allows to increase the mindfulness in decision-making aimed at reducing the impact of facts of NCDs development risks
- Creation of legal regulation of NCDs development risk factors should consider the willingness and awareness of the population on the importance of legislative initiatives (motivation to participate in medical examinations, healthy lifestyle, smoking cessation, etc.)
- International and intersectoral programs assigned to build evidence and innovative approaches to the prevention and control of NCD development risk factors will contribute to the effective achievement of the SDGs

Speaker 5
Ms. Chun-Fu Lee
MOHW, Chinese Taipei
NHI MediCloud System for NCD Management

NHI MediCloud System for NCD Management

Chun-Fu Lee
Director
Medical Affairs Division
National Health Insurance Administration,
Ministry of Health and Welfare
Chinese Taipei

Outline

- Introduction of NHI
- NHI Medicloud System
- My Health Bank

2

Introduction of NHI

3

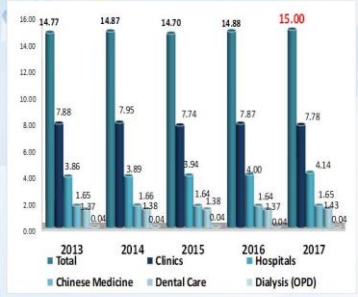
NHI Characteristics

Coverage	Compulsory enrollment for all citizens and legal residents
Administration	Single-payer system run by the government
Financing	Premiums
Benefits	Uniform package, copayment required
Providers	Contract-based About 93% of healthcare providers contracted with NHI
Payment	Plural payment programs under the global budget payment systems
Privileges	Premium subsidies and copayment waivers for the disadvantaged

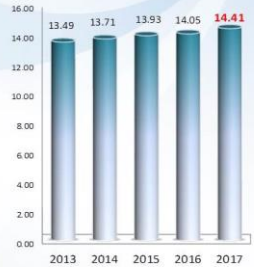
4

NHI Medical Utilization

Outpatient visits per person from 2013 to 2017



No. of hospital admissions per 100 persons



5

NHI Payment Systems

1995 Fee for services

1998 Global budgets

- 1998 Dental Care
- 2000 Chinese Medicine
- 2001 Clinics
- 2002 Hospitals
- 2003 OPD Dialysis

Efficient use for resources

- 2001 Pay for Performance
- 2004 RBRVs
- 2010 Tw-DRGs (Inpatient)

6

Pay for Performance

Focus on disease which are high expenditure, large population and care models have room for improvement

2001
- DM (2012 entry fee schedule), breast cancer, asthma, tuberculosis(2008 entry fee schedule)

2006
- Hypertension (ended in 2013), Pre-end stage renal disease (Pre-ESRD)

2010
- Schizophrenia, Hepatitis B and C carriers

2011-2012
- Chronic Kidney Disease (CKD),emergency care(2012)

2015 till now
- Full-course maternity care(2015), Early treatment for development retardation(2015), COPD(2016)

7

Quality Dimensions

Structure | Process | Outcome

- Breast Cancer
- Asthma
- Diabetes
- Schizophrenia
- Hepatitis B and C Carriers
- CKD
- Emergency care
- Full-course maternity care
- COPD
- Early treatment for development retardation

Keep modifying pilot model to outcome dimension

8

Incentives System Design

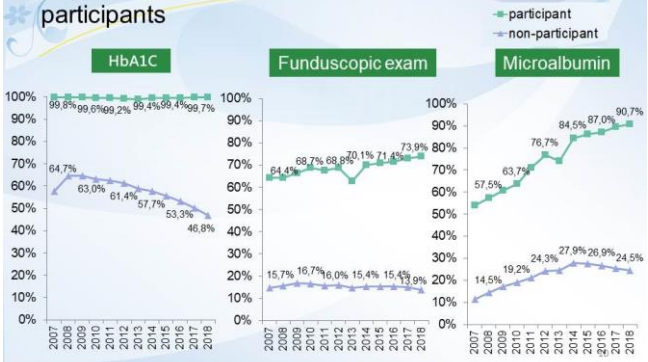
- Incentives = FFS + extra bonus

Disease	Extra Bonus
Diabetes	➢First visit: 650 points; Subsequent visit: 200 points; Annual evaluation: 800 points; extra bonus by quality indicator evaluation
Asthma	➢First visit: 400 points; Subsequent visit: 200 points; Annual evaluation: 800 points ; extra bonus
Breast Cancer	➢Depend on the combination of treatment (diagnosis, treatment, follow up): ➢More rewards depends on disease-free survival rate of stage 0-3 or overall survival rate of stage 4.
Schizophrenia	➢Case Management Fee: 1000 points (general patient); 1500 points (high risk patient); basic care fee 40%, quality reward 60%
Hepatitis B & C Carriers	➢First visit: 100 points; Subsequent visit: 100 points; Quality reward: 100 points ; extra bonus
CKD	➢First visit: 200 points; Subsequent visit: 200 points; Quality reward: 200 points; extra bonus
Full-course maternity care	➢Case Management Fee: 900~1200 points ; extra bonus
COPD	➢First visit: 400 points; Subsequent visit: 200 points; Annual evaluation: 800 points ; extra bonus
Early treatment for development retardation	➢Case Management Fee: 1000 points ; extra bonus

9

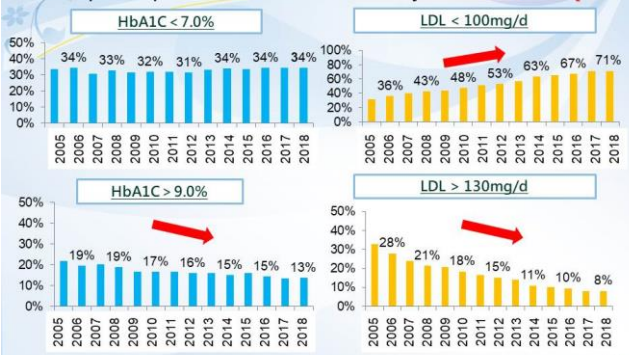
P4P outcome – diabetes

- Participants' examination rate are higher then non-participants



P4P outcome – diabetes

- New participants in 2005, after 13 years follow up



11

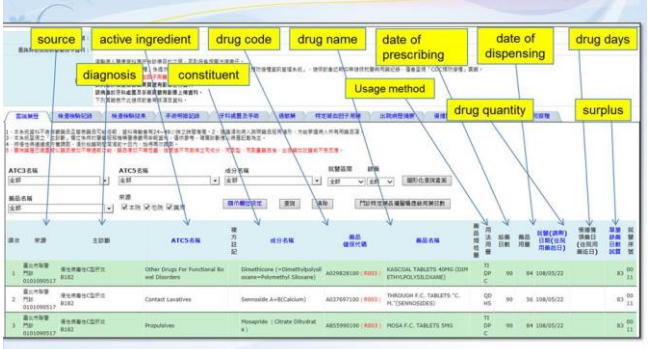
NHI Medicloud System

12

NHI MediCloud System

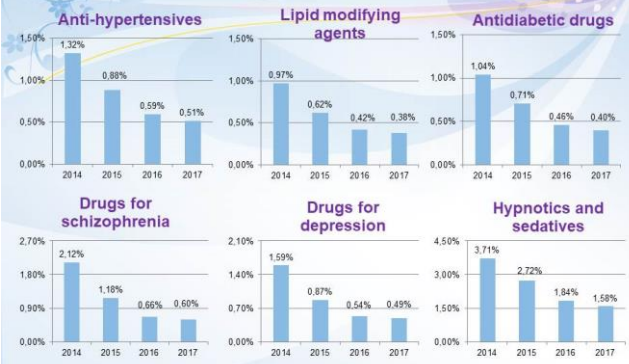
13

Medication Record Query



14

Reduction in Duplicate Prescriptions



15

Medical Images

CT Scans
MRIs

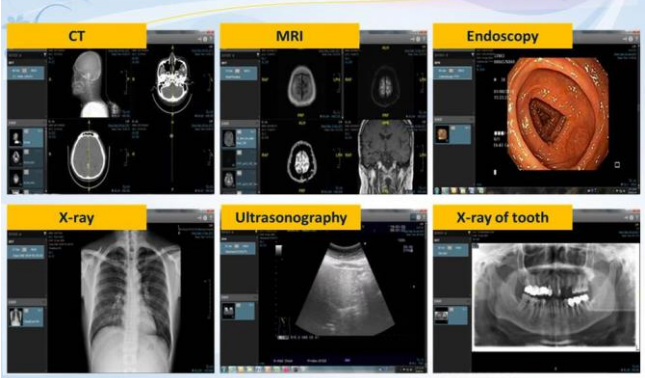
Ultrasound images
(echocardiography, obstetric ultrasound, bladder ultrasound, & etc.)

X-rays
(chest, kidney, ureter, & etc.)

Endoscopy images
(colonoscopy and gastroscopy)

16

Screenshots of Sharing Medical Images



Top 3 Paid Examinations

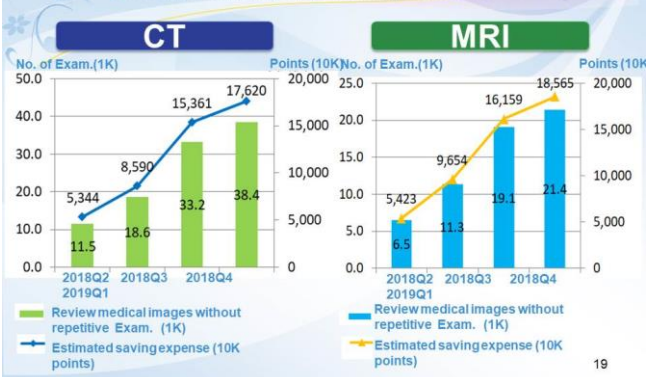
◎Rate of re-examinations in 30 days

ITEM	Jul-Dec/2016		Jul-Dec/2017		Variation	
	No. of re-exams in 30 days	% of re-exams in 30 days	No. of re-exams in 30 days	% of re-exams in 30 days	No. of re-exams in 30 days	% of re-exams in 30 days
CT	85,722	9.32%	83,771	8.94%	-1,951	-0.38%
MRI	9,519	2.79%	8,858	2.64%	-661	-0.15%
Abdominal ultrasonography	48,371	3.76%	39,225	3.24%	-9,146	-0.52%

18

Performance of Medicloud System

◎Keep reducing expense by seasons



19

My Health Bank

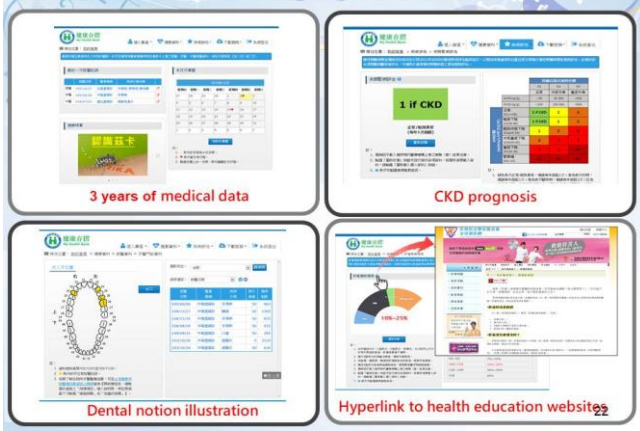
20

My Health Bank

- Heightening the awareness of self-care
- Reaching self-data anytime anywhere

21

A Tool for Managing Personal Health



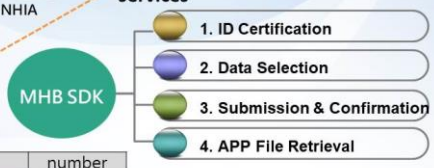
22

The number of Download - MHB

25

Cooperate with Healthcare Industries

- MHB software development kit (SDK) for users to authorize their own health data to trusted third-party apps for further value-added services



Industry	number
IT company	29
Insurance company	5
Hospital	20
Government	2
School	5
Total	61

24

Thank you
for your kind attention!

Speaker 6
Andrey Shuvaev
Lecturer in common physics in the Siberian Federal University, Russia
The Nuclear Medicine Master Program of SibFU and FSRCC

The Nuclear Medicine Master Program of SFU and FSRCC

Existing Experience and Future Perspectives

Andrey SHUVAEV
Siberian Federal University

APEC Conference on Cooperation Initiatives for Non-Communicable Deseases Prevention and Control

Krasnoyarsk, October 17-18, 2019

The Outline

Existing Experience

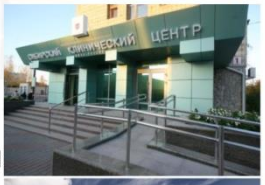
- The Master Program in Nuclear Medicine
- Master Program graduation Results

Existing Experience

- Internalization of the Master Program
- Exchange programs
- Collaboration with leading Nuclear Medicine Centers

Existing experience
Demand driven education

- 2014 The NucMed Center was created
- 2015 The pilot project of education was launched as the complimentary training program
- 2016 The Russian-language Master program was started



The Master program structure

The program is designed to educate the technicians (physicists and chemists) to obtain and use the radioactive materials for medical procedures. It is the full-time 2-year program.

- Medical tracer kinetics
- Medical data analysis
- The positron-emitting isotopes generation
- The synthesis of the Radiopharmaceuticals (with 18F and 15O mainly)
- Radiopharmaceuticals quality control
- Dose managing
- The area of irradiation modeling

The main master theses topics

- Mathematical methods of the determination of edges on medical images
- The quantum-chemical model of L-18-isoleucine as the PET radiopharmaceutical for multiple myeloma diagnostics
- Molecular modeling of the lysyl oxidase based radiopharmaceutical for the bones metastatic lesions diagnostics
- The application of the neural networks for the somnipathy analysis
- The analysis of the EEG-symptoms of the brain activities disorders with the Random Forest algorithm

The Outline

Existing Experience

- The Master Program in Nuclear Medicine
- Master Program graduation Results

Existing Experience

- Internalization of the Master Program
- Exchange programs
- Collaboration with leading Nuclear Medicine Centers

Ways of development

Education

- Bologna process
- Sufficiently equipped practical module ⇒
  - Student exchange programs
  - Visiting professors
  - Proprietary NucMed equipment

Employment

- Barren choice of employers ⇒
  - International vacancies bank
  - Company oriented students
  - Adjacent specialties vacancies
  - Employed based practice

THANK YOU FOR ATTENTION!

СИБИРСКИЙ ФЕДЕРАЛЬНЫЙ УНИВЕРСИТЕТ
SIBERIAN FEDERAL UNIVERSITY

SFU-FSRCC directions of cooperation

- English-language Master program in NucMed
- Trilateral agreement SFU - FRSCC - Dept. Of Science and Technology & Dept. of Health
- The extensive exchange programs
- Visits to Nasarbaev Univ & Semey NucMed Center