leadership, teamwork, knowledge of foreign language as well as the ability to do research. Furthermore, student-centered training methodology is needed to promote course selection possibilities, problem solving systems, unity and participation of society which will in turn create a concrete evaluation system of students and graduations as well as providing lifelong skills.

Конфликт интересов. *Авторы заявляют об отсутствии конфликта интересов.*

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ИННОВАЦИИ В МЕДИЦИНСКОМ ОБРАЗОВАНИИ МОНГОЛИИ

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Резюме.

Цель работы: изучение изменений в медицинском образовании Монголии.

Материалы и методы. Аналитический обзор литературы по медицинскому образованию в Европе и Тихоокеанском регионе, сравнение традиционных и современных методов разработки учебных программ. Описание хронологии внедрения современных учебных программ в Монголии.

Результаты. Демократические изменения 1990 года коснулись всех секторов страны, и Монгольский национальный университет медицинских наук также претерпел серьезные изменения в переходный период. Факультеты и специалисты университета сосредоточены на разработке программ с международной квалификацией и региональных потребностей, отвечающих требованиям в этой области. В течение последнего десятилетия наш университет сосредоточился на разработке учебных программ, охватывающих анализ содержания и соответствия зачетных единиц, согласование учебных программ, изменение порядка курсов на полноту и продвижение индивидуального обучения, чтобы соответствовать мировым стандартам и быть признанным западно-тихоокеанскими учреждениями. Мы инициировали реформу медицинской учебной программы по сравнению с европейским медицинским образованием и тесно сотрудничали с Гронингенским университетом в Нидерландах и университетом Лидса в Великобритании с 1996 года. Новая интегрированная учебная программа была внедрена в период с 2000 по 2019 год.

Заключение. Медицинское образование в Монголии претерпело серьёзные реформы, завершившиеся созданием новой интегрированной учебной программы.

Ключевые слова: медицинское образование; инновации; разработка учебных программ.

INNOVATION OF MEDICAL EDUCATION IN MONGOLIA

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Summary.

***Aim*:** to study changes in medical education in Mongolia.

***Methods*.** An analytical review of the literature on medical education in Europe and the Pacific, comparing traditional and modern methods of curriculum development. Description of the chronology of the introduction of modern educational programs in Mongolia.

***Result*.** The democratic changes of 1990 had affected all sectors of the country and Mongolian National University of Medical Sciences also went through massive changes during the transition period. Faculties and professionals of the university focused on producing internationally qualified and regional needs met programs in the field. Within last decade our university focused on curriculum development covering content and credit match analysis, alignment of curriculums, reordering courses to comprehensiveness, and promoting individual learning in order to meet the global standards and to be recognized by the western pacific institutions. We have initiated medical curriculum reformation comparatively with

European medical education and closely collaborated with Groningen University in Netherlands and Leeds University in United Kingdom from 1996. The new integrated curriculum has been implemented between 2000 to 2019.

Conclusion. Medical education in Mongolia has undergone major reforms, culminating in the creation of a new integrated curriculum.

Key words: Medical Education; Innovation; curriculum development.

The history of medical education in Mongolia had experienced various stages of development including the Huns to 16th century "treat-cure, cognitive revolution, and education", Asian medicine thriving centuries until 19th century, Religious teaching and mentorship training until 1921, first modern medicine training for hygienists, nurses and physician assistants based on traditional medicine between 1921 to 1942, and followed by National University for higher education in medicine, domestically trained medical doctors and professionals with Soviet style. Currently the medical education is focusing on modernization and globalization of medical education in Mongolia form 1990.

The history of medicine in Mongolia is rich and ancient. Ancestors of Mongolians were nomadic people and discoveries found stone medical equipment from 209 BC. In 1681 the first Buddhist schools for traditional medicine were established and had significant role in medical teaching in Mongolia. However, in 1921 social reforms dismantled the system and future of medical training had no vision. The newly established government started introducing modern medicine and teachings from European science, practitioners of traditional medicine and Soviet professionals began working together, and some traditional medications were banned.

The Soviet experts had played enormous role in development of modern medical practice and establishing educational system for locally trained medical professionals in Mongolia, more than 150 professionals were invited between 1942 and 1990. The government of Mongolia has expanded medical institute to university status by the 154th act published on November 11, 1990 in order to promote medical education system in the country.

Curriculum development

The democratic changes of 1990 had affected all sectors of the country and Mongolian National University of Medical Sciences also went through massive changes during the transition period. Faculties and professionals of the university focused on producing internationally qualified and regional needs met programs in the field. Undergraduate medical education was completely reformed into core curriculum concept towards modern approach to globalization since 1996. Curriculum development had played strong role in advancing quality of medical education and thus had been evaluated by numerous domestic accreditations. Quality assurance in medical education is a globally accepted policy to improve medical practice and healthcare services and World Health Organization recognized the importance in medical education.

World Health Organization is prioritizing quality of medical education, curriculum standards of medical schools all over the world, and accreditation of the programs. In 1972, WHO jointly formed World Medical Education Committee along with other international organizations and the committee has been closely working to define the competencies of the physicians in the world.

World Medical Education Committee published the curriculum standards of medical training which is internationally recognized criteria for education in medicine. These standards were aimed to promote quality of the medical education all over the world. It covers 3 principles (2015) of key components as followed by.

1. Undergraduate medical education
2. Postgraduate training

Continuous medical education

Within last decade our university focused on curriculum development covering content and credit match analysis, alignment of curriculums, reordering courses to comprehensiveness, and promoting individual learning in order to meet the global standards and to be recognized by the western pacific institutions. We have initiated medical curriculum reformation comparatively with European medical education and closely collaborated with Groningen University in Netherlands and Leeds University in United Kingdom from 1996. The new integrated curriculum has been implemented between 2000 to 2019.

Medical curriculum had been strongly influenced by Eastern European and Soviet teachings and had several characteristics of training. These include strong disciplining, identical curriculums, high cost treatment focused, concerned to treat diseases with medical approach not to prevent from diseases, linear flow of contents, teacher centered, traditional atmosphere of teaching and learning, content overflow to

Таблица 1

Различие концепций традиционных и интегрированных учебных программ /
Table 1. Concept difference of traditional and integrated curriculums

№	Items	Traditional curriculum	Integrated curriculum
1	Concept	The medical approach to cure illnesses	Preventive and public health oriented
2	Disease	Acute and infectious diseases oriented	Minimizing risk factors of chronic illnesses
3	Diagnosis	Pathologic diagnosis based	Syndrome based and individually oriented
4	Treatment	To cure the disease	To treat the people at the same time
5	Prophylaxis	Strong chemical compounds e.g antibiotics, vaccination	Healthy lifestyle and rehabilitation integrated
6	Expert	Specialists	General practitioners

Таблица 2

Сравнение содержания стилей учебных программ /
Table 2. Contents comparison of the curriculum styles

№	Curriculums	Subjects	Content update
1.	Traditional style core curriculum (1998)	Social sciences History Russian language Neurosurgery	Social sciences, Russian and specialist medical courses were common
2.	Updated core curriculum (2008)	Research methodology, Information technology Communication skills	Problem solving concepts and contents that are practically important and subjects

students, discouraging creativity of students, and grading evaluations were not blinded nor objectively measured.

As a member of the Western Pacific medical education committee, Mongolian National University of Medical Sciences is closely collaborating with regional higher education institutions to maintain international standards quality education. Not only promoting the content and standard improvements to regionally acceptable level, we were qualified by the external curriculum evaluation by the committee. It is worth mentioning accomplishment of the quality assurance in educational service.

Western Pacific Medical Education Committee experts visited MNUMS between October 2nd to 7th, 2011 and evaluated the integrated undergraduate medical education at the School of Medicine. The committee consisted of 8 members from 6 countries namely, Australia, Japan, South Korea, the Philippines, Taiwan, and United States of America. During this time our faculties and staff prepared in advance the evaluation neatly.

We signed a memorandum of understanding prior to the external evaluation by the Western Pacific Medical Education Committee (WPMEC) and a formal support from the Ministry of Education, Culture, Sciences of Mongolia. Following to memorandum of understanding signing ceremony, we delivered self-evaluation to the committee. The accreditation consists of self-evaluation report on curriculum and selected team had presented on behalf of the university to experts' committee. The committee then visited to medical school, clinical setting, teaching hospitals, and interviewed faculties and doctors as well as students over the implementation status of integrated curriculum.

Groningen team – June 15-17, 2015

Recommendations	Interpretation
• To consider outcome based learning • To maintain the integrity of the block contents and to increase evaluation standards • To introduce problem based learning contents in blocks • To support clinicians in career development in clinical teaching • To reduce in person classes and promote individual learning • Reconsider order of the block contents • Faculty payment should not be measured by in person teaching hours • To enhance teaching resources	• Efforts from the faculties and students are well, very enthusiastic • The university is ready for curriculum reformation • Canmed's roles are delivered well • Block contents are getting reorganized • In person hours are reducing • Faculty development is continuously maintained

Groningen team – October 11-14, 2017

Recommendations	Interpretation
• The activities in the field of Faculty Development are impressive • The number of blocks is reduced substantially and an integrated block exam is introduced • The number of contact hours is reduced • The use of e-learning has increased	• Impressive implementation of Faculty Development • Substantial progress in updating the programme • Evaluate practical skills/clinical rotations in relation labour market • Reconsider the extracurricular position of professional development related topics • Gradual implementation of Canmeds/competencies is advised

It was an historic moment in Mongolian higher education system, that medical school's integrated curriculum was accredited by international committee for the very first time in Mongolia.

External evaluation did allow us to understand integrated curriculum and shift towards modernization change was important, curriculum renovation was enormous work of out university. The reformation of medical education began in 1990 and clearly defines how we stand in the globalized world for medical education. Reorganizing the subjects and contents also gave us important take away, how important is having academic freedom.

Conclusion:

We restructured our mission and vision with the lessons learned from the evaluation process itself and gained great experiences. Maintaining quality assurance over the medical education became an integral part of our organizational goals. We also realized importance of creativity and innovation approach was essential for the evaluation and renovation.

In this regards, curriculum development is a continuous process of medical education research and scientific problem.

***Конфликт интересов**. Авторы заявляют об отсутствии конфликта интересов.*

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РУКАВИШНИКОВ ВИКТОР СТЕПАНОВИЧ (К 70-ЛЕТИЮ СО ДНЯ РОЖДЕНИЯ)

RUKAVISHNIKOV VICTOR STEPANOVICH (ON THE 70TH BIRTHDAY)

6 августа 2019 года исполняется 70 лет со дня рождения выдающегося ученого-гигиениста, члена-корреспондента РАН, доктора медицинских наук, профессора, почетного профессора «НИИ медицины труда им. академика Н.Ф. Измерова» и Всероссийского НИИ железнодорожной гигиены Роспотребнадзора Виктора Степановича Рукавишникова.

В.С. Рукавишников родился в селе Хомутово Иркутской области. В 1973 г. после окончания Иркутского государственного медицинского института Виктор Степанович был распределен в Ангарский НИИ гигиены труда и профзаболеваний МЗ РСФСР, прошел все ступени карьерного роста и в 1992 году возглавил Институт, который в последующем вошел в состав Восточно-Сибирского научного центра СО РАМН, заместителем директора которого стал Виктор Степанович. В 2012 г. Рукавишников В.С. назначен директором ФГБНУ «Восточно-Сибирский институт медико-экологических исследований». С 2017 г. и по настоящее время В.С. Рукавишников является научным руководителем ФГБНУ «Восточно-Сибирский институт медико-экологических исследований».

На протяжении многих лет научная деятельность Виктора Степановича была посвящена изучению проблем медицины труда в горнорудной промышленности. В 1985 г. им защищена кандидатская диссертация «Гигиеническая оценка условий труда при ионообменной технологии извлечения золота», а в 1999 г. – докторская диссертация «Медицина труда на золотоизвлекательных фабриках». В 2003 г. В.С. Рукавишников получил звание профессора, в 2004 г. был избран членом-корреспондентом РАМН, с 2014 г. – членом-корреспондентом РАН.

В настоящее время Виктор Степанович Рукавишников – ведущий специалист в области медицины труда и экологии человека в Сибирском регионе и в России.

В условиях системной перестройки науки В.С. Рукавишникову удалось не только сохранить, но и организовать активно работающий коллектив Института и сформировать сибирскую школу медицины труда.

В результате фундаментальных исследований, проведенных под руководством В.С. Рукавишникова, были выявлены основные закономерности формирования условий труда и профессиональной заболеваемости на предприятиях по добыче и извлечению драгоценных металлов, разработана патогенетическая схема нарушений функции щитовидной железы при хронической интоксикации цианистыми соединениями. Все это позволило впервые обосновать 2 новые формы профессиональных заболеваний: гипотиреоз и кожные заболевания (дерматиты) у работающих на золотоизвлекательных фабриках.

Исследования В.С. Рукавишникова по изучению влияния физических факторов на организм работающих, позволили сформировать концепцию «сенсорного конфликта» и «гироскопического эффекта» как основ-