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Научно-практический журнал «Вопросы реабилитологии» призван способствовать развитию реабилитационной службы и повышению ее эффективности. Журнал позволит обмениваться новыми знаниями, идеями и опытом специалистам, занятым реабилитацией больных и инвалидов, объединит усилия медицинских, социальных и педагогических служб в борьбе за здоровый образ жизни.

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Сфера интересов журнала: реабилитация и восстановление здоровья больных и социализация инвалидов, укрепление здоровья и профилактика заболеваний, пропаганда здорового образа жизни, социально-педагогическое сопровождение детей с ограниченными возможностями.

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12. Паллиативная медицина
13. Дайджест новостей из мира реабилитологии
14. Памятные даты

Передовая статья

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О возрастающей роли информационных систем ЕНСЗ в Национальном центре детской реабилитации

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Резюме

Сегодня медицинские организации вовлечены в процесс цифровизации здравоохранения, что позволило отказаться от устаревших технологий, сделать пересмотр целей и приоритетов. Национальный центр детской реабилитации одним из приоритетным направлений обозначил внедрение и распространение современных технологий, в том числе информационных систем Министерства здравоохранения и переход на «безбумажную» больницу.

Ключевые слова: информационные системы, современные технологии, сбор и анализ данных, госпитализация.

Балаларды оңалтудың ұлттық орталығында БҰДЖ ақпараттық жүйесінің өспелі рөлі

Бөлекбаева Ш.А. [1], Сағындыкова А.Ж. [2], Түймебаева Н.Н. [3], Саркенова С.С. [3]

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Түйіндеме

Бүгінгі таңда медициналық мекемелер денсаулық сақтауды цифрландыру үрдісіне қатысып жатыр, ал бұл ескірген технологиялардан бас тартуға, бастапқылық пен мақсатты қайта қарауға мүмкіндік берді. Балаларды оңалтудың ұлттық орталығы бірден бір басымды бағыт ретінде заманауи технологияларды ендіру және тарату, соның ішінде денсаулық сақтау Министрлігінің ақпараттық жүйелері және «қағазсыз» ауруханаға өтуді белгіледі.

Кілт сөздер: ақпараттық жүйе, заманауи технологиялар, деректерді жинау және талдау, ауруханаға жатқызу.

The increasing role of the UNHS information systems at the National Center for Children's Rehabilitation

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Abstract

Today, medical organizations are involved in the process of digitalization of healthcare, which made it possible to abandon outdated technology, revise goals and priorities. The National Center for Children's Rehabilitation has identified the introduction and distribution of modern technologies, including the information systems of the Ministry of Health and the transition to a "paperless" hospital, as a priority.

Keywords: information systems, modern technologies, data collection and analysis, hospitalization.

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Введение

В Послании Президента Республики Казахстан Н. Назарбаева народу Казахстана 10 января 2018 г. «Новые возможности развития в условиях четвертой промышленной революции» указано о необходимости повысить доступность и эффективность медицинской помощи через интеграцию информационных систем, использование мобильных цифровых приложений, внедрение электронных паспортов здоровья, переход на «безбумажные» больницы [1].

История информационной системы здравоохранения Республики Казахстан берет начало с 2005 года, где в рамках Государственной программы реформирования и развития здравоохранения Республики Казахстан на 2005-2010 годы (далее – Программа) были определены основные задачи по созданию новой модели управления здравоохранением и единой информационной системы отрасли [2].

В рамках реализации данной Программы создана единая информационная система здравоохранения (далее - ЕИСЗ), основными направлениями которой были разработка единой методики сбора, обработки и хранения информации о состоянии здоровья граждан, получении медицинской и лекарственной помощи, анализ, обобщение и предоставление информации, создание информационно-справочной системы, центрального банка данных, создание электронного паспорта здоровья граждан, электронной истории болезни, применение единого идентификационного кода физического лица для персонифицированного учета больных.

В целях развития информационного обеспечения здравоохранения разработана методология сбора и обработки данных на каждом этапе внедрения информационных систем в здравоохранении и на всех уровнях, начиная с органов управления и заканчивая медицинским персоналом, непосредственно занимающимся оказанием медицинской помощи населению. Система учета и отчетности приведена в соответствие с клиническими и медико-экономическими аспектами деятельности организаций здравоохранения.

В 2013 году принята Государственная программа «Информационный Казахстан - 2020», в которой введен термин «электронное здравоохранение» (е-здравоохранение) и определены пути для дальнейшего развития информатизации здравоохранения [3].

В настоящее время функционируют 22 информационные системы (ИС) Министерства здравоохранения Республики Казахстан (далее – МЗ РК) и 3 программных комплекса «Мединформ»: АИС «Гепатит», АИС «Млад» и «Медстат», в функции которых входит: анализ работы деятельности медицинской организаций, как стационара, так и поликлиники, формирование статистических отчетных данных, ведение документации по утвержденным формам Министерства здравоохранения Республики Казахстан, внесение информации о лечении/направлениях пациентов по острым и хроническим заболеваниям. В целом все ИС предназначены для сбора статистической информации, а также обеспечения финансирования здравоохранения [4].

Одним из первых информационных систем Министерства является портал «Бюро госпитализации» (БГ), которая была создана в соответствии с приказами Министра здравоохранения Республики Казахстан от 25 декабря 2009 года № 869 «О создании Республиканского и регионального бюро госпитализации» и от 13 мая 2010 года № 336 «О внедрении портала Бюро госпитализации». В соответствии со статьями 88 (Права граждан) и 91 (Права пациентов) Кодекса Республики Казахстан от 18 сентября 2009 года «О здоровье народа и системе здравоохранения» внедрение новой системы позволило реализацию прав пациентов на свободный выбор медицинской организации, т.е. каждому гражданину самостоятельно выбрать врача и поликлинику на территории города и области, а при необходимости стационарного лечения, любую профильную больницу на территории страны [5]. Кроме того, портал «Бюро госпитализации» в

рамках единой национальной системы здравоохранения (ЕНСЗ) дает возможность узнать о наличие свободных коек, о пациентах, состоящих в листе ожидания на плановую госпитализацию, о пациентах, госпитализированных в стационары, позволяет осуществить организацию плановой и экстренной госпитализаций больных в стационар, провести мониторинг и обеспечение прозрачности процесса госпитализации во все стационары республики.

С момента внедрения ЕНСЗ межрегиональная госпитализация выросла, треть пациентов из регионов выбирают стационары Астаны, где сконцентрированы республиканские клиники, одним из которых является Национальный центр детской реабилитации Корпоративного Фонда «University Medical Center» (НЦДР). Ежегодно в НЦДР проходят лечение до 4200 детей и подростков с различными неврологическими расстройствами. За 11 лет деятельности НЦДР пролечено более 40 тысяч детей и подростков со всего региона Казахстана, а также стран ближнего и дальнего зарубежья.

Одним из приоритетных направлений НЦДР является внедрение и распространение современных технологий, в том числе информационных систем Министерства здравоохранения. Так, в рамках реализации принципов ЕНСЗ госпитализация пациентов осуществляется через информационную систему портал «Бюро госпитализации».

С учетом специфики и курсового лечения госпитализация пациентов осуществляется по заездной системе. При поступлении пациента заполняется форму 066/у, утвержденная приказом Министерства здравоохранения Республики Казахстан от 23 ноября 2010 года № 907 «Об утверждении форм первичной медицинской документации организаций здравоохранения» (статистическая карта выбывшего из стационара) (форма 066/у). Специалист сектора медицинской статистики присваивает порядковый номер и регистрирует в информационную систему портала «Бюро госпитализации». Процесс госпитализации по одномоментной заездной системе имеет некоторые особенности. Первичный осмотр пациентов, заполнение форм 066/у осуществляется сразу несколькими специалистами отделов, а ввод и ведения данных в портал «Бюро госпитализации» одним специалистом, который и является ответственным за корректный ввод данных. В этой связи, в целях упорядочения потока пациентов поступивших в один день одномоментно, а также во избежание нежелательных ситуации, в дни заезда в процесс госпитализации вовлечены весь медицинский и педагогический персонал НЦДР.

Одним из значимых информационных систем МЗ РК является электронный регистр стационарных больных (ЭРСБ), который также внедрен в НЦДР. ЭРСБ, кроме информации о пролеченных пациентов в стационаре, позволяет делать выборку случаев, подлежащих экспертизе и контролю качества и объема, формирование счета-реестра для оплаты.

Специалистами сектора медицинской статистики ведется мониторинг и ежедневный учет и контроль по своевременному, полному и корректному вводу данных в ЭРСБ, перенос и ввод данных с вкладки «Журнал учета приема больных» в «Персонифицированный реестр». Форма 066/у заполняется в бумажном виде в начале поступления и в конце выписки, вносится в ЭРСБ.

Ввод в информационные системы осуществляется в соответствии с требованиями к электронной медицинской записи, утвержденные приказом Министерства здравоохранения Республики Казахстан от 10 февраля 2014 года №75 «Об утверждении технической документации по вопросам электронного здравоохранения».

Выводы

Таким образом, медицинская информационная система помогает повысить оперативность и точность при формировании отчетности, сократить время работы с

документацией, повысить качество оказания медицинской помощи, и как следствие, сократить число врачебных ошибок.

Внедрение портала бюро госпитализации позволило осуществлять организацию потоков пациентов и качественный подход к управлению структурой госпитализации и зарекомендовал себя, как один из инновационных прорывов в сфере информатизации здравоохранения Республики Казахстан.

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Review article

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Introduction to neurocognitive rehabilitation according to Carlo Perfetti

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Abstract

Authors introduces new rehabilitation and its evolution proposed by Carlo Perfetti. It is a rehabilitation therapy that believes that the quality of recovery is determined by the activated cognitive processes and by the mode of their activation. This theory strictly and continuously connected with the most recent studies coming from neuroscience, from pedagogy and philosophy, it believes that mind and body constitute a single entire unit and that the rehabilitation process must intervene in the construction or reconstruction of this unity in both the adult and the subject in developmental age. To achieve this goal, Perfetti et al. propose that the movement or rather every action is the means by which man knows and interacts with the world to make sense of it. To achieve this, it must learn to integrate all the senses, cognitive and emotional processes: all are integral part of every action. This theory considers the body as a receptor surface able, through its fragmentation, to send to the brain continuous spatial (position of the limbs in space) and contact information (tactile, weight, friction pressures). Other principle is that rehabilitation is a learning process in pathological conditions: the brain does not contain mechanisms for recovery but, in the case of injury, it uses the same mechanisms that are activated during the processing of learning in situation of normal. It is precisely learning or the organization through cognitive processes that determines the generation of plastic phenomena, such as the resolution of the diaschisis, the production of new synaptic connections, the activation of biological phenomena of neurogenesis, the creation of new nerve cells responsible for recovery. Neurocognitive rehabilitation has obtained clear results in the improvement of recovery on numerous pathologies whereas other rehabilitative interventions have been unsatisfactory, such as cerebral palsy, hemiplegia in stroke outcomes, tumors, cerebral or medullary trauma, in degenerative diseases such as multiple sclerosis, Parkinson's disease, in the pathologies of neuropathic pain as the complex regional pain syndrome (CRPS) and from phantom limb.

Keywords: neurocognitive rehabilitation, cognitive processes, recovery, plasticity.

Карло Перфеттидің нейрокогнитивтік оңалтуына кіріспе

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Халықаралық директор, нейрокогнитивтік оңалту саласында мұғалімдер мен реабилитологтарды оқытуға жауапшы, «La Sapienza» университетінің оқу орталығы, Рим, Италия

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Түйіндеме

Автор Карл Перфеттидің оңалтуға және оның эволюциясына жаңа көзқарас ұсынады. Ол қалпына келтірудің сапасы белсенді когнитивтік үдерістер мен оларды белсендіру жолымен анықталады деп санайды. Бұл теория неврология, педагогика және философиядағы соңғы зерттеулермен тығыз байланысты. Автор сана мен денені бірге қарастырады және оңалту процесі ересектер мен даму үдерісіндегі емделушілердің осы бірлікті жобалауға немесе қалпына келтіруге араласуы тиіс деп есептейді. К. Перфетти және басқа авторлардың айтуынша әрбір адамның іс-әрекеті әлеммен танысып, оны түсіну үшін өзара әрекеттесетін құрал болып табылады. Бұл мақсатқа қол жеткізу үшін ол барлық сезімдерді, сондай-ақ танымдық және эмоциялық процесстерді біріктіруді үйренуі керек: олар әр іс-әрекеттің ажырамас бөлігі болып табылады. Бұл теория денені фрагментациялау арқылы үздіксіз кеңістіктің (кеңістіктегі қол-аяқ позициясы) және байланыс ақпаратын (сезімталдық, салмақ, үйкеліс қысымы) миға жіберуге қабілетті рецепторлы бет ретінде қарастырады. Тағы бір принцип - оңалту - бұл патологиялық жағдайларда оқу процессі, яғни мидың сауығу механизмдері жоқ. Бірақ жарақат алу жағдайында қалыпты жағдайдағы жаттығуды қайта өңдеу кезінде белсендірілетін механизмдерді қолданады. Бұл диашиздің шешілуі, жаңа синапс қосылыстардың қалыптасуы, неврогенездің биологиялық құбылыстарын белсендіру, қалпына келтіруге жауап беретін жаңа жүйке жасушаларын құру сияқты пластикалық құбылыстардың пайда болуын анықтайтын когнитивті процестер арқылы оқыту немесе ұйымдастыру. Нейрокогнитивтік оңалту бас-ми сал ауруы, инсульт, ісік, ми жарақаттары, дегенеративті аурулар (шашыраңқы склероз, Паркинсон ауруы), нейропатиялық ауырсыну сияқты күрделі аймақтық ауырсыну синдромы(CRPS) және фантомды ауырсыну жағдайларды жақсартып айқын нәтиже берді. Ал басқа оңарту жолдары қанағаттанарлықсыз болды.

Кілт сөздер: нейрокогнитивтік оңалту, когнитивті процестер, қалпына келтіру, икемділік.

Введение в нейрокогнитивную реабилитацию по Карло Перфетти

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Резюме

Автор представляет новый взгляд на реабилитацию и ее эволюцию, предложенную Карлом Перфетти. Он рассматривает, что качество выздоровления определяется активированными когнитивными процессами и способом их активации. Эта теория строго и непрерывно связана с самыми последними исследованиями в нейробиологии, педагогике и философии. Она считает, что разум и тело составляют единое целое, и что процесс реабилитации должен вмешиваться в конструирование или реконструкцию этого единства как у взрослых, так и у пациентов в процессе развития. Чтобы достичь этой цели, К.Перфетти и соавт. предположили, что движение или, вернее, каждое действие - это средство, с помощью которого человек узнает и взаимодействует с миром, чтобы понять его. Чтобы достичь этого, он должен научиться интегрировать все чувства, а также когнитивные и эмоциональные процессы: все они являются неотъемлемой частью каждого действия. Эта теория рассматривает тело как поверхность рецептора, способную посредством своей фрагментации посылать в мозг непрерывную пространственную (положение конечностей в пространстве) и контактную информацию (тактильное, весовое, фрикционное давление). Другой принцип состоит в том, что реабилитация - это процесс обучения при патологических состояниях: мозг не содержит механизмов для восстановления, но в случае травмы он использует те же механизмы, которые активируются при обработке обучения в нормальной ситуации. Именно обучение или организация через когнитивные процессы определяют генерацию пластических явлений, таких как разрешение диашиза, образование новых синаптических связей, активация биологических явлений нейрогенеза, создание новых нервных клеток, ответственных за восстановление. Нейрокогнитивная реабилитация дала четкие результаты в улучшении выздоровления при многочисленных патологиях, в частности таких, как детский церебральный паралич, гемиплегия в результате инсульта, опухоли, церебральная или мозговая травма, при дегенеративных заболеваниях (рассеянный склероз, болезнь Паркинсона), при невропатической боли как комплексного регионарного болевого синдрома (КРБС) и от фантомной конечности, в то время как другие реабилитационные вмешательства были неудовлетворительными.

Ключевые слова: нейрокогнитивная реабилитация, когнитивные процессы, восстановление, пластичность.

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How is the neurocognitive rehabilitation of Carlo Perfetti born? What new ideas does it propose and what are its principles? From which studies were these ideas born?

Neurocognitive Perfetti Rehabilitation (NPR) was born around the 70s. These were years of revolutions: social, cultural, and scientific. The beginnings of neurocognitive rehabilitation were based on three different strands of study and research:

A. In the field of neurophysiology: the paradigm shift was the beginning of experiments with superior primates like monkey, similar to humans, awaken, and in different condition. Before seventies, the physiologist worked only on small animals such as mousses, rats and cats, on vivisections of sleeping animals, who could not express their will in their actions. For example, Mountcastle V.B. (1975) [1] realized that in order to activate certain cells of posterior parietal lobe, it was necessary for the monkey to pay attention to the required task. Therefore, not only the presence of a stimulus, but also the active attention of the animal was necessary to stimulate this cortical area. This means that the brain does not necessarily respond to stimuli, but the answer requires the conscious presence of the subject. It is important in rehabilitation to consider this both in the adult and in children of any age. These and other neurophysiological studies demonstrated the importance of the role of cognitive processes in the organization of actions (Rosenzweig and Bennet 1972 [2], Merzenich and Kaas 1980 [3], Recanzone 2000) [4]. Until the 70s rehabilitation was dominated by neuromotor vision that acts on reflexes, but the person did not play an active role. After the latest neurophysiological studies, it was necessary to change the point of view and study a new way of rehabilitation.

B. Cognitive revolution

Behavioral psychology considered scientific only the study of afferents (input) and outputs, but not what happens between the stimulus and the behavioral response of the subject, because the instruments of investigation did not allow to study the brain. Cognitive psychology supports the opposite: to understand human behavior, one must study what happens in the brain. The cognitive Psychologists begun to give importance to attention, to the ability to solve problems, to the memory, to the construction of information. This step was important, because until then, the subjects to be rehabilitated were considered as a reflex machine influenced by the outside.

C. The clinical interest in superior cortical functions (neuropsychology)

In 1967 Lurija's theory «The superior cortical functions» was published [5]. In Italy until then there was no concern for memory, attention, perception, reasoning and other superior cortical functions. The publication made it obligatory to consider these aspects also in rehabilitation. In addition to Lurija, other important researchers emphasized the importance of higher cognitive functions [6-8].

All these different studies were very important for a change of point of view about the reference theory for a different interpretation of human behavior and of course of rehabilitative intervention.

The purpose of Rehabilitation is to obtain changes in patient's pathological behavior. It is fundamental how these changes take place. These studies induced to speculate that the modifications of the system must take place within the central nervous system of the patient, therefore at the level of his cognitive processes. The aim is to create or recreate an interaction between mind /body /world.

From these different points of view to of the researches (NPR) elaborated its theory. NPR believes that the quality of recovery (both spontaneous and guided by rehabilitative intervention) is determined by the activation of cognitive processes and by the modality of

their involvement. This theory allows identifying different interpretation of pathologies and proposes different rehabilitative intervention instruments and exercises. The instruments of NPR are the cognitive processes: perception, attention, memory, vision, representation, language, reasoning, comparison, problem solving and intention. The interpretation of different pathologies is based on the hypothesis that the motor behavior, altered by a lesion, is determined by the deficit of the organization of specific cognitive processes that underlie the execution of actions (and outlines the profile Perfetti C., Rizzello C., Pante F., 1997 [9]). Therefore, the target of the intervention is not directed to the muscle, but to the recovery of the correct motor activity through the activation and reorganization of the cognitive processes.

For a commitment to a new rehabilitation, on 1979 was published the first Perfetti C., monograph about NPR theory: «The motor rehabilitation of the hemiplegic» [10]. What are the scientific researches that supported the NPR point of view?

1. Science has shown that there is neither motor «homunculus» nor a sensory one [11, 12]. There is no small, single area, where all human movements are represented in an ordered somatotopic representation. The homunculus paradigm has fallen. The idea that, at the cortical level, the dimension of the representation of different parts of body was directly proportional to the refinement of the movements was also abandoned: into the homunculus the hand was represented very extensively, the trunk very small, as well as shoulder, foot and ankle. This vision meant that two types of movements were distinguished in man: the most important voluntary movement (typical of the hand) and the postural one (typical of the trunk) with less value. Neurosciences rejected this homuncular vision. Strick and Preston 1982 [13] observed that in monkeys the areas involved in movement of hand's fingers are represented twice. Two regions that, if stimulated, lead to the same movement of the hands. One of the areas was under the control of skin, tactile information when the movement of the fingers was used to recognize the material of an object. The other one was under kinesthetic control; it was involved if the aim of movement was to recognize the dimensions of the object through proprioceptive information. The homunculus theory was further criticized. Gould and et al. 1986 [14] demonstrated that the primary motor area represents a kind of mosaic of different parts of the body: the shoulder and the trunk, for example, are represented several times and in an extended way. Scientists hypothesized that the involvement of representations occurs with different combinations depending on the movement performed and on different relation with the environment. Therefore, there is no anatomical representation, but a functional representation, in relationship with the aims of actions. Schieber M. (2001) [15] represents the primary motor area (M1) as a huge piano keyboard consisting of 12 different scales. Actually, it is known that the representations of different parts of the body are multiple. It is important to consider the results of these studies from a rehabilitation point of view. Recovery does not depend on muscle contractions, but on the intentions for which contractions are carried out, in relationship with different interactions with the world, in different contexts. That must be considered in the theory, in the evaluation/observation and in the organization of the exercises.

2. Similar results were demonstrated for the sensitive homunculus by Merzenich and Kaas in 1980 [3]. They showed that there is not a single representation of the human receptor surface (homunculus) of the body, but there are many. There are at least 12 representations of the hand in the cortex in relationship with the function performed by the hand: in some areas it is represented the whole palm, in others only three fingers, in others only the fingertips, and so on. The significance for rehabilitation is clear. It can be hypothesized that this may be the cause of certain rehabilitative failures. The exercises activate the representation of the hand involved in certain functions, but not in others. Therefore, the patient fails to activate the hand when it is involved in functions that he has not learned.

From the 70's the way to see the study of the human brain has substantially changed. Before, motor and sensitive areas were described as separate functions. The brain was seen as a machine able to produce certain movements, but not as sensitive and a cognitive

operator. In the last 80 years a trend reversal has been observed. New neuroscientific studies have shown that all areas of the brain are interconnected and able to produce cognitive processes that represent the foundation for motor behavior. One example is in the 80's Georgopulos' studies [16] and next in 2000 [17] showed that in the M1 area are codified muscular contractions in relation with the directions of gesture in space (these are cognitive operations). Rizzolatti et al. [18] demonstrated the functional properties of neurons located in the rostral part of inferior area 6 studied in awake, partially restrained macaque monkeys. The most interesting property of these neurons was that their firing correlated with specific goal-related motor acts rather than with single movements made by the animal. Later, Buccino et al. (2001) [19] demonstrated that during the observation of actions made by another individual. Object- and non-object-related actions made with different effectors (mouth, hand and foot) determined a somatotopically organized activation of premotor cortex. During the observation of object-related actions, activation was additionally found in the posterior parietal lobe, as if the subjects were indeed using those objects. Thus, when individuals observe an action, an internal replica of that action is automatically generated in their premotor cortex. Recent studies in monkeys and humans have shed light on what the parieto-frontal cortical circuit encodes and its possible functional relevance for cognition Rizzolatti G., Sinigaglia C. (2010) [20].There are several mechanisms through which one can understand the behaviour of other individuals, the parieto-frontal mechanism allows an individual to understand the action of others «from the inside» and gives the observer a first-person grasp of the motor goals and intentions of other individuals, imitation during learning processes and the interpretation of other intentions that are the base of social interaction, but also important for learning and recovery in the case of pathology.

3. Regarding the cerebellum, this paradigm shift was particularly clear. The relationship between the cerebellum and muscle contraction was historically interpreted as a contribution to the realization of fluid, precise, coordinated movements and the organization of body's equilibrium. In 1990 Decety J. [21] shown that the cerebellum was very active even when the patient, standing still, imagines performing a given action. He suggested volunteers to accurately throw a tennis ball, but without really doing it, they just had to imagine doing it. In the lateral lobes of the cerebellum, under these conditions, a great activity was observed, therefore also without movement by the volunteers. Other studies demonstrated that cerebellum is active much more during the learning process, but very small activation was shown when the performance is learned. The learned movement produces a greater activation of parietal areas, but not of cerebellum lobes. Gao J.H., Parson L. and Bower J.M. [22] in their experiments used some objects analogous to the tools that are used in neurocognitive rehabilitation (blind recognition of different shapes). They pointed out that to activate the cerebellum it is not important the muscular tension, but the patient's attention to solve the assigned task or to learn something new. Several authors published an important number of papers on the cognitive role of the cerebellum. The role of the cerebellum in learning influenced the way of working in NPR and these studies confirmed the validity of neurocognitive rehabilitative intervention as a learning process for the recovery of actions. The results of the rehabilitation treatments had significantly improved, even in degenerative diseases.

4. Neurophysiological studies of «Plasticity of the central nervous system» contributed in a fundamental way to the construction of the neurocognitive theory. Plasticity is the ability of the central nervous system to modify itself according to the experience. Current studies on neurogenesis are very important for rehabilitation. Over the years it was not known that the brain could produce new neurons; only nerve regeneration was admitted through the process of sprouting. Now it is known that the brain has the possibility to generate new cells. In 1999, Gould E. [23] demonstrated that in the mammalian brain around the fourth ventricle, there are staminal cells (undifferentiated cells) that can migrate to the cortex where

they are needed. These new neurons initially lack ramifications. What do the migrated cells need to really fit into the structure and become efficient? According to Gould, once in the destination cortex, they are transformed in cerebral cells only if they are used in a learning process (neurogenesis) that is the experience made by the subject must be a specific experience of learning that involves the areas in which the cells have migrated. In fact, they are task-dependent. They are mainly placed in brain association areas, around the lesion areas, and hippocampus that's important for memory. These are the most important areas for learning and for recovery. These studies are very important for rehabilitation work because demonstrated that brain plasticity needs to be driven through specific experiences of learning using cognitive processes [24]. So, the rehabilitation must take this into account.

5. The concept of Diaschisi that is related to plasticity. It is a phenomenon of neural inhibition that involves some brain structures «at a distance» from the lesion, but functionally connected to it, which although not been damaged. A local brain lesion remotely causes an ipsilateral thalamus and contralateral cerebellum neural deactivation. The diaschisis is one of the bases of neurocognitive recovery theory. The concept of diaschisi («to separate at distance») was studied first by Costantin Von Monakov (1913-14) [25], and it is also based on Asratian's works [26]. Baron J.C., (1986) [27], Gold L., and Lauritzen M. (2002) [28] through neuroimaging methods, showed that the diaschisis is a real phenomenon. It has been hypothesized that the brain in the phase of the diaschisis should put the injured areas to rest. Resting at rest they send less information to the injured cortex, to protect it in the post-constitutional phase. Task of the rehabilitator is to attempt to disinhibit these areas, with appropriate cognitive exercises, otherwise the phenomenon, might remain unresolved for life, compromising quality and quantity of recovery. Rehabilitation intervention must take into account in which functions the inhibited area (thalamus and cerebellum) are involved with the lesioned area and to guide the patient to the recovery it.

6. The importance of conscious experience. The brain works differently if the experiment involves the awake subject compared to the involvement of an unconscious subject. That was widely shown with MRI method, which allow to observe the involvement of the brain areas during the action (or thought) of the subject, like the study of motor image.

All these neuroscience contributions supported NPR way of thinking and acting on the patient.

From the Neurocognitive Rehabilitative interpretation of the these and other study coming from different scientific disciplines emerged three fundamental principles:

1. Recovery as a learning process.

The patient's recovery is a learning process. What does it mean? It is known that the brain is plastic, and it changes its biological connections and areas, when, in a normal situation, we learn something. Currently the brain has many thousand synaptic connections. For example, if a subject is learning to play tennis, his cognitive processes are activated in a very important way, because he has to pay attention on where the ball is, where to strike it, with which part of the arm is most important in order to do it. During this learning process his own brain changes creating new synaptic connections, the production of new neural cells (neurogenesis), and the activation of new areas. The same plastic process also occurs in the patient, but only if he is put in a condition in which he activates his cognitive processes to learn somethings. The therapist induces the patient to solve a cognitive problem using movement, perception, cognition and emotion. For example, the therapist asks to the patient to recognize, with closed eyes, different textures or different shapes and guide him to organize the correct movement to do it. That is a learning situation, which stimulates the activation of plastic repair processes that are the basis of recovery [4, 22, 29-34].

2. Body as a somesthetic receptorial surface

What does it mean? It means that the body is composed by many structures (sight, hearing, smell, somestesic), that receive information from the outside world and from the inside world. It's a surface that acquires information to interact with the world to know it and adapt to it in different situations and contexts. For example, if one person closes his eyes, and he moves his right foot, he knows where his foot is, he perceives it. Or if he touches something (the key in his pocket), he can say what it is even though he doesn't see it. It's the set of all this information that the body takes in, from the outside and the inside that allows him to act well and to give a sense to the world. A characteristic of the somesthetic receptorial surface is that it is fragmentable, it means that in order to take information it can move the different parts of the body in different ways and directions and it always can have different relationship between his anatomical structures (variability and adaptability).

3. Action as knowledge

What does it mean? We know that, in a situation of normalcy, whenever we know something, our brain changes. Experience changes our brain. Maybe the pianist's brain is different from the brain of a lawyer since he would probably have the areas of fingers, wrist, palm, shoulders and the connections between those much more «developed» than a normal person. There are many studies in which mices kept in a cage, have a very small brain connections compared to mices left free to do so many experiences in a place full of attractions [35]. Therefore, in order to recover those cognitive processes, the Rehabilitator must guide the patient to experience and to know again through his «altered» part of the body. Knowledge is a biological process that allows little by little developing areas and connections in the brain.

The NPR theory follows three main lines of study and research [36]:

I - Knowing how the brain changes when it is engaged in the act of knowing or the study of how cognitive exercise affects plasticity;

II - Knowing what the brain makes in order to know (aspects of the patient's profile like the reasoning, the re-cognition, the representation);

III - Knowing what the patient feels when he knows. «Feel» has three different meanings:

a) feel «sensorially» (for example «I feel that my finger is moving»);

b) «Feel cognitive» that is what the patient feel in order to recognize and to solve the task;

c) «Feel emotionally» (what the patient feels his body when he is doing an action). The three meanings thus correspond to the sensory experience, to the cognitive processes involved and to the phenomenological aspect.

The portrait up to here outlined shows how the two main strands have been articulated in parallel: the neurocognitive rehabilitative work and the research of neurosciences, to develop NPR theory.

Neurocognitive rehabilitation has reinterpreted various pathologies such as spasticity in hemiplegic patient [10], with right and left hemisphere lesions, the apraxis [37-39] and emineglet patients, the patient with cerebellar [40-41] and medullary lesions, with the basal ganglia's lesion (Parkinsonian) [42] with multiple sclerosis [43], with chronic neuropathic pain (CRPS) and phantom limb [44], the aphasia [45], [46], the child with childhood cerebropathy palsy with early intervention from the first months of life [48], the patient with degenerative and orthopedic traumatism [49].

What actually is the NPR studies?

In 2001 two research projects were proposed: «Living the knowledge» and «Talking With the Patient» [50] aimed to investigate the point of view of the «subject who knows» to understand which processes and modifications are involved in knowing and to penetrate on what the subject thinks and feels while he/she is knowing. The projects investigate the patient's conscious experience, underlines the importance of the «first person descriptions», in all phases of the rehabilitative intervention. The comprehension of the language of the patient about what and how he feels his body, together with the therapist's third person observation become crucial to formulate new hypotheses about a more complex interpretation of pathology (motor, sensitive, cognitive and emotional aspects). In order to verify/falsify such hypotheses the rehabilitator invented new exercises. These projects led to significant possibility to interpret the pathology of the patient in a more complex way, to organize different exercises that improved the results in recovery of patients' skills. In 2009 another problem was addressed: the organizational autonomy of the patient who was, in some cases, excessively dependent on the rehabilitation set. A critical rereading of the instruments was carried out: the therapist's verbal instructions (used by the therapist and the patient as a substitution of his own mental operations), and the role of «motor image», introduced in neurocognitive rehabilitation since 1996 (Pante' F. 1997 [51], 2001 [52], Perfetti C. 2000 [53]). The motor image turned out to be too specific and partial, too far for the patient from the real every day action [54]. The patient cannot make an aware «immediate comparison» [55] between the representation of the exercise experience (a «map») and its meaning within the real action.

The contributions of philosophical theories on «Intermediate Worlds» [56], of cognitive psychology theories about the «Comparison» [57] and the theory about the «Difference» [58] were fundamental to formulate new hypothesis to solve the autonomy problem. Therefore, a new paradigm of NPR theory was born: the «Comparison Between Actions (CBA)» with new two proposals [59-65]:

1. All stages of the rehabilitation process must constantly refer to reality at all significant levels and the patient must be aware of it.

2. Wander what experiences the therapeutic exercise has in common with a significant representation of a real historical and concrete pre-lesioned action (when this exist), or a normal action. Furthermore, inquire what relationships exist between the exercise and real action: what similarity or differences they are and guide the patient to search for them through a «comparison process».

The results of Neurocognitive rehabilitation in some cases are satisfactory in many pathologies but it requires further study in order to improve the quality of recovery approaching increasingly the restoration of a normal action.

In conclusion, at each progress of the basic sciences, an evolution and a change in neurocognitive rehabilitative theory took place at the same time. At each change there has been a gradual improvement in the quality of recovery of skills in patients in various diseases. However, some unresolved or partially resolved issues remain, for which further study and continuation of commitment and research are needed.

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Оригинальная статья

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Опыт внедрения Проекта «Безопасное использование медикаментов» в Национальном центре детской реабилитации

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Резюме

Цель исследования: Создание научно-обоснованной системы обеспечения безопасности использования медикаментов, основанной на лучших международных стандартах и адаптированной к потребностям центра детской реабилитации.

Методы: Данная работа выполнения в Национальном центре детской реабилитации Корпоративного фонда «University Medical Center». В данной работе использованы: стандарты Аккредитации Долгосрочной медицинской помощи Объединенной Международной Комиссии (JCI), стандарты национальной Аккредитации медицинских организаций, оказывающих стационарную помощь и нормативно-правовые акты Республики Казахстан.

Результаты: Для достижения цели был разработан и внедрен Проект «Безопасное использование медикаментов». В рамках реализации данного проекта была создана команда специалистов, состоящая из фармацевтов, клинического фармаколога, врачей, экспертов отдела менеджмента качества и безопасности пациентов, медицинских сестер. Для обеспечения медикаментозной безопасности пациентов в Центре проводятся постоянные мероприятия по повышению ответственности всех медицинских работников в отношении использования лекарственных средств.

Выводы: Безопасность использования медикаментов на уровне медицинской организации обеспечивается проведением комплексных организационных, управленческих, методологических и обучающих мероприятий. Разработка и

внедрение Проекта «Безопасное использование медикаментов» позволило повысить компетентность медицинского персонала в вопросах обращения с медикаментами высокого риска, выявлению медикаментозных ошибок и способствовало улучшению практики применения лекарственных средств.

Ключевые слова: безопасность, медикаменты, медикаментозные ошибки.

Балаларды оңалтудың ұлттық орталығында «Дәрі-дәрмектерді қауіпсіз пайдалану» жобасын іске асыру тәжірибесі

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Түйіндеме

Мақсаты: Балалардың оңалтудың ұлттық орталығына дәрі-дәрмектерді қолданудың қауіпсіздігін қамтамасыз ететін, осы орталықтың жұмысына бейімделіп қарастырылған, үздік халықаралық тәжірибеге және ғылымға негізделген жүйе құру.

Әдістері: Жұмыс «University Medical Center» корпоративті қорының Балаларды оңалтудың ұлттық орталығында жүргізілді. Жұмыс Біріктірілген халықаралық комиссияның (JCI) медициналық қызметті ұзақ уақытқа аккредитациялау стандарттарына, стационарлық көмек көрсететін медициналық ұйымдарды ұлттық аккредитациялау стандарттарына және т.б. нормативті-құқықтық актілеріне сүйене отырып жасалды.

Нәтижесі: Жұмыстың мақсатына жету үшін «Дәрі-дәрмектерді қауіпсіз пайдалану» жобасы әзірленіп, тәжірибеге енгізілді. Аталмыш жобаны жүзеге асыру үшін құрамында фармацевт, клиникалық фармаколог, дәрігерлер, сапа менеджменті мен науқастардың қауіпсіздігі бөлімінің сарапшылары, мейіргерлер бар мамандар топ құрылды. Орталықта науқастардың дәрі-дәрмектерді қауіпсіз қабылдауын қамтамасыз ету үшін барлық медициналық қызметкерлердің дәрі-дәрмектермен жұмыс жасауға қатысты жауапкершілігін арттыруға бағытталған іс-шаралар тұрғылықты түрде өткізіліп тұрады.

Қорытынды: Медициналық ұйым деңгейінде дәрілік заттарды қолданудың қауіпсіздігі кешенді ұйымдастырушылық, басқарушылық, әдістемелік және білім беру іс-шараларын жүргізу арқылы қамтамасыз етіледі. «Дәрі-дәрмектерді қауіпсіз пайдалану» жобасын әзірлеу және енгізу жоғары қаупі бар дәрі-дәрмектерді қолдану, дәрілік қателіктерді анықтау мәселелерінде медицина қызметкерлерінің құзыретін арттыруға және емдік дәрі-дәрмектерді қолдану тәжірибесін жақсартуға мүмкіндік береді.

Кілт сөздер: қауіпсіздік, дәрі-дәрмектер, дәрілік қателіктер.

Experience of implementing the project «Safe use of medicines» at the National Center of children's rehabilitation

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Abstract

The aim: to create a scientifically based system for ensuring the safety of the use of medicines, based on the best international standards and adapted to the needs of the children's rehabilitation center.

Methods: This work is done at the National Center for Pediatric Rehabilitation of the Corporate Fund «University Medical Center». In this work, we used the following standards: Accreditation of Long-Term Medical Care of the Joint International Commission (JCI), standards of national Accreditation of medical organizations providing inpatient care, and regulatory and legal acts of the Republic of Kazakhstan.

Results: To achieve the goal, the project «Safe use of medicines» was developed and implemented. As part of this project, a team of specialists was created, consisting of pharmacists, clinical pharmacologists, doctors, experts from the department of quality and patient safety management, nurses. In order to ensure the medical safety of patients, the Center conducts ongoing activities to increase the responsibility of all medical professionals regarding the use of medicines.

Conclusions: The safety of the use of medicines at the level of the medical organization is ensured by carrying out comprehensive organizational, managerial, methodological and

educational activities. The development and implementation of the “Safe Use of Drugs” Project allowed the medical staff to be more competent in handling high-risk drugs, identifying medical errors and helped to improve the practice of using drugs.Key words: safety, drugs, medical errors.

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Введение

В настоящее время фармацевтический рынок предлагает врачам и пациентам огромное количество медикаментов для лечения различных расстройств здоровья. В связи с чем, создаются предпосылки для небезопасного и неправильного применения медикаментов. Всемирной организацией здравоохранения (далее – ВОЗ) в 2017 году была выдвинута 3-я глобальная инициатива по безопасности медикаментов – «Medication Without Harm» Global Patient Safety Challenge on Medication Safety. Начиная с 2004 года ВОЗ работает в партнерстве с Всемирным альянсом за безопасность пациентов и были инициированы две предыдущие глобальные проблемы безопасности пациентов: «Чистое лечение – безопасное лечение», а несколько лет спустя «Безопасная хирургия спасает жизни». Они были нацелены на то, чтобы завоевать всемирную приверженность и явиться пусковым механизмом, направленным на сокращение инфицирования и риска, связанного с хирургическим вмешательством.

Ввиду высокой эффективности и приверженности международного сообщества ВОЗ начинает третью глобальную инициативу безопасности пациентов с темой безопасности лекарств. Она определяется философией безопасности пациентов, ранее разработанной ВОЗ, а именно, что ошибки неизбежны и в значительной степени вызваны слабыми системами здравоохранения, и поэтому задача состоит в том, чтобы уменьшить их частоту и воздействие. В результате внедрения данной инициативы ВОЗ предполагает снизить уровень тяжелого, предотвратимого вреда, связанного с медикаментами на 50% в течение 5 лет в глобальном масштабе. Задача направлена на улучшение на каждом этапе лечебного процесса, включая назначение, выдачу, введение, мониторинг и использование. [1].

Вопросам безопасного использования медикаментов уделяется важное значение в международных стандартах аккредитации медицинских организаций JCI [2] и стандартах национальной аккредитации медицинских организаций Казахстана [3,4].

Цель исследования: Создание научно-обоснованной системы обеспечения безопасности использования медикаментов, основанной на лучших международных стандартах и адаптированной к потребностям центра детской реабилитации.

Материалы и методы:

Данная работа выполнения в Национальном центре детской реабилитации Корпоративного фонда «University Medical Center». В данной работе использованы:

- Стандарты Аккредитации Долгосрочной медицинской помощи Объединенной Международной Комиссии (JCI) http://www.jointcommissioninternational.org.

- Стандарты национальной Аккредитации медицинских организаций, оказывающих стационарную помощь и нормативно-правовые акты Республики Казахстан.

Результаты и обсуждение

Обеспечение безопасности использования медикаментов в медицинской организации является многоуровневой и комплексной задачей с вовлечением всех подразделений и всех сотрудников, связанных с использованием лекарственных средств (далее – ЛС). В связи с чем, в Национальном центре детской реабилитации Корпоративного фонда «University medical center» (далее – Центр) был разработан и внедрен Проект «Безопасное использование медикаментов» (далее – Проект). Была создана команда специалистов, состоящая из фармацевтов, клинического фармаколога, врачей, экспертов отдела менеджмента качества и безопасности пациентов, медицинских сестер. В таблице 1 представлены этапы разработки и внедрения Проекта.

Таблица 1 - Этапы реализации Проекта «Безопасное использование медикаментов»

Период	Название этапа	Методы	Полученные результаты
2013 год	Понимание проблем и процессов, связанных с безопасностью использования медикаментов	Обсуждение с сотрудниками	Определение проблем и возможностей для улучшения
2013 год	Разработка Проекта	«Мозговой штурм» Консультации экспертов Методология FOCUS PDCA Литературный поиск	Проект по методологии FOCUS PDCA Создана рабочая группа Заседания рабочей группы
2013 год	Разработка подходов и инструментов для повышения безопасности использования медикаментов	Оценка текущей ситуации Изучение стандартов и рекомендаций по повышению безопасности использования медикаментов	Политика управления использования лекарственных средств, Перечень медикаментов высокого риска.
2013 год	Обсуждение с персоналом	Заседания рабочей группы Конференции Заседания Формулярной комиссии	Политика утверждена Приказом Директора Центра
2013 год	Обучение персонала	Конференции Работа в группах	Оценка знаний персоналом
2015 год 2017 год	Пересмотр Политики	Заседания рабочей группы Конференции Заседания Формулярной комиссии	Политика утверждена Приказом Директора Центра
2013-2018	Обучение персонала	Конференции Работа в группах	Оценка знаний персонала
2013-2018	Мониторинг соблюдения безопасности использования ЛС	Клинико-фармакологическая экспертиза медикаментозных назначений Трейсеры по знаниям и хранению медикаментов высокого риска Инциденты, связанные с использованием ЛС	Медикаментозные ошибки Оценка знаний персонала и хранению медикаментов высокого риска

В связи с тем, что безопасное использование медикаментов является важной частью обеспечения безопасности пациентов в Центре, данный Проект постоянно совершенствуется и включает организационные, управленческие, методологические и обучающие мероприятия. Ключевым моментом успешной реализации Проекта явилось разработка и внедрение «Политики управления использования медикаментов» (далее – Политика), которая состоит из 8 основных глав:

- Глава 1. Отбор лекарственных средств;
- Глава 2. Планирование закупа лекарственных средств;
- Глава 3. Приобретение лекарственных средств;
- Глава 4. Хранение и учет ЛС и ИМН;
- Глава 5. Назначение и выписывание ЛС;
- Глава 6. Процедура раскладки ЛС и ИМН фармацевтом для пациентов;
- Глава 7. Выполнение назначения средним медицинским работником;
- Глава 8. Мониторинг и анализ эффективности и безопасности использования ЛС.

При разработке Политики были использованы и адаптированы к потребностям Центра стандарты Аккредитации JCI, национальной Аккредитации и нормативно-правовые акты Республики Казахстан, проведены заседания рабочей группы и обсуждение с медицинским персоналом Центра. При выявлении основных проблем в вопросах обеспечения безопасности применения медикаментов было обнаружено, что не все сотрудники Центра, участвующие в процессах использования медикаментов обучены «Политике управления и использования ЛС в Центре»; не все сотрудники используют достоверные источники информации по рациональному использованию медикаментов; не все сотрудники вовлечены в процесс выявления побочных действий ЛС; не всеми сотрудниками оцениваются риски медикаментозных ошибок; не все сотрудники обучены принципам безопасного хранения и использования медикаментов высокого риска.

В связи с чем, основными направлениями работы по Проекту явились:

•Обучение сотрудников безопасному использованию медикаментов;

•Выявление медикаментозных ошибок;

•Выявление побочных действий медикаментов;

•Соблюдение правил хранения и знаний по медикаментам высокого риска.

Для создания целостного видения мероприятий по повышению безопасности использования медикаментов Проект был разработан в формате FOCUS PDCA (рисунок 1).

В результате понимания важности и необходимости безопасного использования медикаментов в Центре была принята стратегия на «демедикализацию» и назначение пациентам ЛС с высокой доказательной базой и только в случаях оправданной необходимости. Так, количество ЛС в Лекарственном формуляре Центра снизилось в 2,1 раза в 2018 году в сравнении с 2012 годом, которое связано с исключением из Лекарственного формуляра ЛС с низкой доказательной базой, дублирующих и неважных ЛС. Кроме того, принятое направление Центра на реабилитацию детей с нервно-мышечными расстройствами и исключение эндокринологического профиля также снизило количество ЛС в Лекарственном формуляре.

F	Повышение компетентности в вопросах безопасности использования и хранения медикаментов следующих специалистов: - врачи; - эксперты отдела менеджмента качества и безопасности пациентов; - фармацевты; - медицинские сестры.	P	Составления плана обучающих мероприятий по безопасному использованию медикаментов; Совершенствование системы выявления медикаментозных ошибок Совершенствование системы выявления побочных действий медикаментов Проведение обучения и трейсеров по соблюдению правил МВР
O	Собрана команда по мониторингу правил хранения и обучению безопасному использованию медикаментов: Клинический фармаколог; Ведущий специалист отдела менеджменты качества и безопасности пациентов; Руководитель ОЛО; Провизор; Фармацевты (6 сотрудников).	D	Проведено 15 обучающих мероприятий по безопасному использованию медикаментов среди: -врачей - экспертов отдела менеджмента качества и безопасности пациентов; - медицинских сестер - фармацевтов. Проведено тестирование
C	Определить % надлежащего хранения МВР Определить % уровня знаний сотрудников по вопросам безопасности использования медикаментов	C	Проведение обучающих мероприятий для сотрудников Обучение в отделениях в текущем порядке. Трейсеры по хранению и выявлению знаний по МВР всех сотрудников, связанных с использованием медикаментов Мониторинг медикаментозных ошибок и побочных действий
U	Провести анализ полученных результатов по хранению МВР и обучению безопасному использованию медикаментов: - не доступна информация по безопасному использованию медикаментов; - не все сотрудники обучены принципам безопасному использованию медикаментов	A	Обучение необходимо проводить каждые 6 месяцев среди сотрудников: -врачей - медицинских сестер - фармацевтов Мониторинг медикаментозных ошибок и побочных действий проводить 1 раз в месяц
S	Провести обучение для сотрудников по безопасному использованию медикаментов.		

Рисунок 1 - Проект «Безопасность использования лекарственных средств в Национальном центре детской реабилитации» за 2015-2017 гг.

В настоящее время с целью повышения безопасности использования медикаментов в Центре разработаны и внедрены в рутинную практику:

- Политика управления использованием ЛС с отдельной главой «Мониторинг эффективности и безопасности использования лекарственных средств»;
- Выписывание назначений ЛС в информационной системе;
- Централизованная раскладка и выдача медикаментов персонально для каждого пациента;
- Перечень медикаментов высокого риска, основанный на Листе медикаментов высокого риска, рекомендованный ISMP (Институт безопасного использования медикаментов) [5], с включением ЛС, влияющих на ЦНС;
- Перечень медикаментов со схожими названиями и внешним видом упаковок;
- Перечень медикаментов с возрастными ограничениями, разработанный с использованием инструкций к применению ЛС, зарегистрированных в Казахстане [6];
- Перечень аналоговой замены ЛС;
- Обучение сотрудников безопасному использованию медикаментов;
- В рутинной практике используются материалы по рациональному использованию ЛС: клинические протоколы лечения РК [7], рекомендации по мониторингу побочных действий противоэпилептических препаратов, утвержденных в Центре и другие;
- Информация размещена в свободном доступе для медицинского персонала

(сетевая папка) и пациентов (стенды, памятки);

- Обеспечен доступ медицинского персонала к источникам достоверной информации о ЛС;
- Мониторинг медикаментозных ошибок (в том числе с анкетированием пациентов), побочных действий медикаментов и обоснованности назначений
- Соблюдение правил хранения и знаний по медикаментам высокого риска (трейсеры).

Для повышения понимания медицинским персоналом риска несоблюдения правил безопасного использования медикаментов был разработан семинар «Безопасное использование медикаментов», во время которого проходил просмотр и обсуждение фильма, рекомендованного ВОЗ «Один обычный день…» [8], интерактивное обучение основным вопросам обеспечения безопасности применения медикаментов. Обучение на данном семинаре проходило в формате мультидисциплинарной команды с целью более полного понимания роли каждого медицинского работника: врача, медицинской сестры, фармацевта, менеджера. А также отдельно обсуждается роль пациента в безопасности применения медикаментов.

В связи с тем, что ключевым индикатором результата безопасного использования медикаментов является снижение медикаментозных ошибок, в Центре внедрен 4-х уровневый мониторинг назначений ЛС:

- 1 уровень. Самооценка назначений врачами (соблюдение протоколов лечения);

- 2 уровень. Каждое новое назначение заверяется руководителем отделения;

- 3 уровень. Фармацевты проверяют правильность дозирования ЛС;

- 4 уровень. Клинико-фармакологическая экспертиза назначений, выборочно проводимая клиническим фармакологом.

Также проводится мониторинг правильности раскладки и введения медикаментов пациентам. Кроме того, в Центре создана не карательная, конструктивная система выявления медикаментозных ошибок/почти-ошибок и разработки корректирующих мероприятий для улучшения практики использования медикаментов.

В начале реализации Проекта количество медикаментозных ошибок было значительным. С целью определения текущей ситуации, тестирования шкалы и выявления системных ошибок был проанализирован 291 лист назначений. В результате анализа было выявлено: не указаны формы выпуска ЛС в 39,86% листов назначений, не указана разовая доза - 4,12%, неправильная дозировка - 1,03%, не указан лекарственный анамнез - 52,23%, неразборчивый почерк/исправления 0,02%, неправильные назначения - 0,02%. Значительный процент листов назначений в которых не был указан лекарственный анамнез связан с тем, что это явилось новым требованием и врачи не видели необходимости заполнения данного раздела. После проведения методологических и обучающих мероприятий было отмечено снижение медикаментозных ошибок в 6 раз [9,10].

С введением информационной системы по выписыванию медикаментов, медикаментозные ошибки, связанные с неправильной прописью лекарств, неразборчивым почерком и т.п. отсутствуют.

На рисунке 2 представлена динамика выявления медикаментозных ошибок / почти ошибок за 2017 год. Расчет процентного отношения медикаментозных ошибок рассчитывался по соотношению медикаментозных ошибок к общему числу назначений ЛС. Среднее число медикаментозных ошибок составило 5,4% к общему числу назначений, что является допустимо низким показателем. Полученные результаты по выявлению медикаментозных ошибок обсуждаются с персоналом и проводятся обучающие и корректирующие мероприятия соответственно выявленным проблемам.

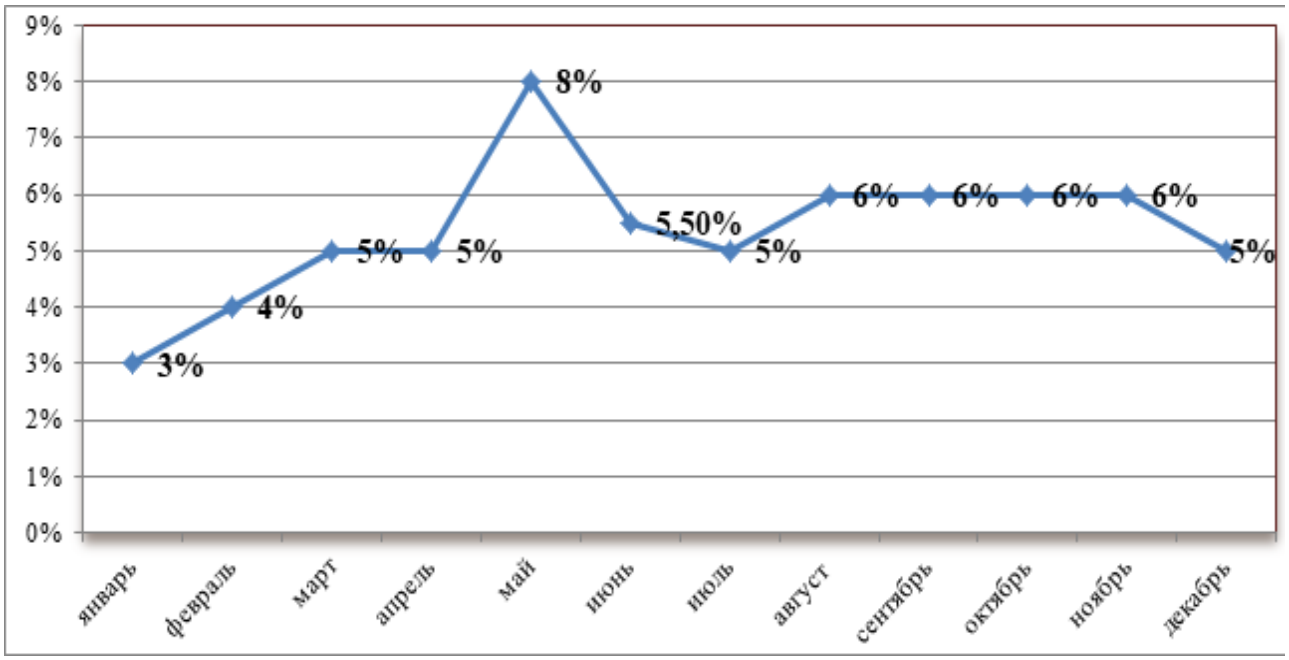

Рисунок 2 - Динамика выявления медикаментозных ошибок / почти ошибок за 2017 год

Таким образом, для обеспечения медикаментозной безопасности пациентов в Центре проводятся постоянные мероприятия по повышению ответственности всех медицинских работников в отношении использования лекарственных средств.

Выводы

Для обеспечения безопасного использования медикаментов в медицинской организации необходим комплексный подход с вовлечением всех участников использования лекарственных средств.

Внедрение проектного менеджмента позволяет создать структурированную, научно-обоснованную систему обеспечения безопасного использования медикаментов в медицинской организации.

Повышение мотивации и знаний медицинского персонала политики и правил безопасного использования лекарственных средств является важным фактором повышения качества медицинской помощи в медицинской организации.

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Original article

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Neuronal Plasticity in Neuropsychic Development Ontogenesis of Premature Infants

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Abstract

The aim. To assess premature infant outcome and determine significant predictors of favorable neurological development.

Methods. We collected data at the National Center of Maternal and Child Health in Astana, where all women from Kazakhstan with high-risk pregnancies are hospitalized, and premature infants make up more than 60% of all newborns. Data were retrieved from the records of 670 children born at our center between 2008 and 2011. The inclusion criterion was gestational age <36 weeks.

Results. The following were favorable predictive criteria: gestational age at birth, 31.82 ± 0.122 weeks; number of days in the NICU, 6.608±0.31; absence of seizures on the 5th day; gentamycin use; pH at birth, 7.27±0,025; urea on the 1st day, 4.62±0.16; urea on the 3rd day, 6.32±0.427. Gestational age at birth 28.96±0.444 weeks; number of days in the NICU 12.410±1.323; diagnoses of «asphyxia» «congenital malformation», «ischemia», «bronchopulmonary dysplasia», and «sepsis» at birth; use of ampicillin, cefazolin, dehydration and sedative therapy; pH at birth 7.15±0.03;, urea on the 1st day 5.76 ± 0.466; and urea on 3rd day 8.83±1.193 may be considered as unfavorable predictive criteria for premature neonate outcome. Sex, intrauterine growth restriction, hemolytic disease, pneumonia, hypoglycemia, urea levels on days 2-7, and creatinine levels on days 1-7 had no significant effect on prematurity outcome. Days at AVL, FiO2 ≥40%, blood pH, and urea on the 1st day can be used as predictors.

Conclusions. Thus, the main difficulty in the early neonatal period is overcoming lung tissue immaturity. However, after this problem is addressed both parents and doctors begin to be concerned about neurological outcomes, which will define the infant's quality of life.

Keywords: neonatology, premature infants, ontogenesis, treatment outcome.

Шала туылған нәрестелердің жүйке-психикалық дамуындағы нейрональды икемділік

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[2] Ана мен бала ұлттық ғылыми орталығының балалар анестезиологиясы және реанимациясы бойынша ага ординатор, медицина ғылымдарының кандидаты, «University medical center» корпоративтік қоры, Астана, Қазақстан

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Түйіндеме

Мақсаты: Шала туылған нәрестелердің қолайлы неврологиялық дамуының маңызды предикторларын бағалау және сәйкестендіру.

Әдістері: Біз Астанадағы Ана мен бала ұлттық ғылыми орталығына Қазақстанның түрлі аймақтарынан келген, жүктілік ағымы бойынша жоғары қауіп-қатер тобына жатқызылған әйелдер туралы деректерді сараладық. Бұл орталықта шала туылған сәбилердің саны жалпы жаңа туылған нәрестелердің 60% -дан астамын құрайды. Бұл деректер 2008-2011 жылдар аралығында біздің орталығымызда туылған 670 баланың жазбаларынан алынған. Іріктеу критерийі 36 аптадағы жүктілік кезеңі болды.

Нәтижелері: Қолайлы болжамның критерийлері мынадай болды: туу кезінде жүктілік мерзімі 31,82±0,122 апта; реанимация бөлімшесінде өткізген күндердің саны: 6608±0,31; 5-ші күнде ұстаманың болмауы; гентамицинді қолдану; туылған кезде pH 7,27±0,025; 1-ші күні несепнәр - 4.62±0,16; 3-ші күні несепнәр - 6,32±0,427. Туылған кездегі жүктілік мерзімі 28,96±0,444 апта; реанимациялық бөлімшеде болған күндердің саны: 12 410±1,332; туылған кезде «асфиксия», «туа біткен кемістіктер», «ишемиялар», «бронхопульмональды дисплазия» және «сепсис» диагноздары; ампициллинді, цефазолинді, дегидратацияны және седативті терапияны қолдану; туылған кезде pH 7,15± 0,03; 1-ші күні несепнәр 5,76±0,466 және 3-ші күні несепнәр - 8,83 ±1,193. Гендерлік айырмашылықтар, ингаляциялық өсу шектеуі, гемолитикалық ауру, пневмония, гипогликемия, несепнәр деңгейлері алғашқы 2-7 күні, креатинин деңгейі 1-7 күнге дейін шала туылған нәрестелергге қатысты нәтижеге айтарлықтай әсер етпеді. Босанғаннан кейінгі 1-ші күні AVL, FiO2 ≥40%, қан және несепнәр pH көрсеткіші алдын-ала белгілер ретінде пайдаланылуы мүмкін.

Қорытынды. Осылайша, ерте неонатальдық кезеңдегі негізгі қиындық өкпе тінінің жеткіліксіздігін жеңу болып табылады. Алайда, аталмыш мәселені шешкеннен кейін де, ата-аналар мен дәрігерлер баланың өмір сапасын айқындайтын неврологиялық зардаптар туралы ойлана бастайды.

Кілт сөздер: неонатология, шала туылған нәрестелер, онтогенез, емдеу нәтижелері.

Нейрональная пластичность в нейропсихическом развитии недоношенных детей

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Резюме

Цель исследования. Оценка и определение значимых предикторов благоприятного неврологического развития недоношенных детей.

Методы. Мы собрали данные в Национальном центре охраны здоровья матери и ребенка в Астане, где все женщины из Казахстана с беременностями высокого риска госпитализированы, а недоношенные дети составляют более 60% всех новорожденных. Данные были получены из записей 670 детей, родившихся в нашем центре в период с 2008 по 2011 год. Критерием включения был гестационный возраст <36 недель.

Результаты. Были следующие благоприятные прогностические критерии: гестационный возраст при рождении 31,82±0,122 недели; количество дней в отделении интенсивной терапии 6,608±0,31; отсутствие судорог на 5 день; использование гентамицина; pH при рождении 7,27±0,025; мочевина в 1-й день - 4,62±0,16; мочевина на 3 сутки 6,32±0,427. Гестационный возраст при рождении 28,96±0,444 недели; количество дней в отделении интенсивной терапии 12,410±1,332; диагнозы «асфиксия», «врожденный порок развития», «ишемия», «бронхолегочная дисплазия» и «сепсис» при рождении; применение ампициллина, цефазолина, дегидратационная и седативная терапия; pH при рождении 7,15±0,03; мочевина в 1-й день 5,76±0,466; и мочевина на 3-й день 8,83±1,193 может рассматриваться как неблагоприятный прогностический критерий преждевременных исходов у новорожденных. Пол, внутриутробное ограничение роста, гемолитическая болезнь, пневмония, гипогликемия, уровни мочевины на 2-7 дни и уровни креатинина на 1-7 дни не оказали существенного влияния на исход недоношенных. Дни в AVL, FiO2 ≥40%, pH крови и мочевины в 1-й день могут использоваться в качестве предикторов.

Выводы. Таким образом, основной трудностью в раннем неонатальном периоде является преодоление незрелости легочной ткани. Однако после решения этой проблемы родители и врачи начинают беспокоиться о неврологических последствиях, которые будут определять качество жизни ребенка.

Ключевые слова: неонатология, недоношенные дети, онтогенез, результаты лечения.

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Introduction

In children with extremely low and very low body weights, survival in the neonatal period is dependent largely on the adaptive ability of the nervous system. Neurological disability is the leading source of disability in children in Kazakhstan. Primary nervous system disorders are the most common causes of neurologic disability, accounting for 38.4% of all neurologic disability in children, including intracranial pressure (ICP, ~59%), sensorineural hearing loss (~10%) premature retinopathy (~60%), and the development of these conditions is dependent on the nervous system maturity degree at the time of birth [1]. This problem is especially relevant after the Republic of Kazakhstan's 2008 transition to international live birth criteria.

Purpose. To assess premature infant outcome and determine significant predictors of favorable neurological development.

Materials and methods

Data were retrieved from the records of 670 children born at our center between 2008 and 2011. The inclusion criterion was gestational age <36 weeks. The outcomes of 64 of these infants were unknown at the time of statistical data processing.

Infant neuropsychological development is of considerable social importance for doctors and teachers. How to best treat these problems has become more and more important as more infants are born in the 28th week of gestation and earlier and survive because of better perinatal intensive care.

In this study, we identified possible risk factors for negative treatment outcomes and chose «explanatory» variables to generate a mathematical equation to estimate the possibility of achieving good outcomes.

We used the number of neonates who survived as the dependent variable. We defined the null hypothesis value as 1, when the patient survives and 0 when the patient died [1]. The Kolmogorov-Smirnov criterion was applied because the sample size (more than 50) indicates that its use was appropriate [2].

The risk factor «weight» was significantly associated with survival, indicating that infants who survived typically had higher birth weights.

In terms of additional risk factors, Mann–Whitney U-tests identified «head circumference», «breast circumference», and «growth» as higher in surviving infants. Surviving neonates had higher Apgar scores, suggesting that this variable had an influence on outcome ($p<0.001$).

Further actions suggested calculations to determine the influence of «gestation term». The average values for neonates that died was 28.96 ± 0.444, and 31.82 ± 0.122 for surviving neonates. Mann–Whitney U-tests revealed that this difference was highly significant (U, 13,387, 5; $p<0.0001$). Thus, the surviving group was characterized by longer gestation.

We also considered several clinical indices that could influence outcome, including «Diagnosis at birth – asphyxia», «Diagnosis at birth – congenital malformation», «Final diagnosis – cerebral ischemia», «Final diagnosis – bronchopulmonary dysplasia», «Final diagnosis – sepsis». Statistical analyses demonstrated that infants born with these diagnoses were less likely to survive.

According to researchers, one significant prognostic indicator is «days in the clinic». The mean value for neonates who died was 16.151±1.712 versus 17.97±0.791 for surviving neonates. A Mann–Whitney U-test demonstrated that this difference was significant ($U = 10.939$, $p<0.0001$), suggesting that a longer hospital stay was associated with a worse outcome.

The mean «Bed days in the NICU (neonatal intensive care unit)» for infants who did

not survive was 12.410±1.323 compared to 6.608±0.315 for neonates who survived. A Mann–Whitney U-test sowed that this difference was significant (U=14,395.5; p<0.0001). Designated «days at AVL» was also significantly different between groups (U = 4,958, p < 0.0001).

The following variables were also taken into consideration over the course of the study: «seizures on the 5th day» (x^2 = 5.920, df = 1, p = 0.015; odds ratio [OR] = 5.882 (confidence interval [CI] = 1.171-29.412). Thus, infants who experience seizures on the 5th day are at higher risk of dying. Also, «seizures more than 5 days» (x^2 = 5.521, df = 1), p = 0.019; OR = 2.95 (CI = 1.51-7.576) was associated with negative outcome risk.

We obtained interesting data on antibiotic prophylaxis. Analysis of the «antibiotic therapy with ampicillin» variable yielded the following results x^2 = 8.373, df = 1, p = 0.04; OR = 3.135 (CI = 1.395-7.042), and the findings for «antibiotic therapy with cefazolin» were x^2 = 7.917, df = 1, p = 0.005; OR = 1.988 (CI = 1.225-3.226). Thus, infants who have been prescribed ampicillin or cefazolin have an increased risk of mortality. The analysis for the «antibiotic therapy with gentamycin» variable yielded the following results: x^2 = 4.899, df = 1, p = 0.027; OR = 0.358 (CI = 0.139-0.922). These data indicate that infants who have been prescribed gentamycin have a lower risk of death.

Data analysis of the «dehydration therapy» variable (x^2 = 12.946, df = 1, p<0.0001; OR=3.333 (CI=1.675-6.667) suggested that infants prescribed dehydration therapy are more likely to have a poor outcome. The «sedative therapy» variable (x^2 = 14.953, df = 1, p < 0.0001; OR = 2.967 (CI = 1.675-5.263) was associated with a high risk of negative outcome.

The following variables values are also worth discussing: «pH of blood at birth». The mean value at birth among infants who died was 7.15± 0.031 compared to 7.27±0.025 in infants who survived. A Mann–Whitney U-test demonstrated that this difference was significant (U=3,631, fican.000). Thus, the group of infants who survived was characterized by higher blood pH at birth.

With regard to the variable of «Blood urea on the 1st day», the mean value of blood urea on the 1st day among infants who died was 5.76±0.466 compared to 4.62±0.168 in infants who survived. A Mann–Whitney U-test confirmed that this difference was significant (U = 2,552, p52, 005).

The mean value of blood urea on the 3rd day among infants who died was 8.83 ± 1.193 compared to 6.32 ± 0.427. A Mann–Whitney U-test showed that this difference was significant (U = 341.5, p = 0,041). Thus, the group of infants who survived was characterized by a lower blood urea value on the 3rd day.

The analysis revealed that a number of variables did not have a significant influence, including «Sex», «Diagnosis at birth – respiratory distress syndrome», «Diagnosis at birth – intrauterine growth restriction», «Diagnosis at birth – hemolytic disease of newborn», «Diagnosis at birth – pneumonia», «Hypoglycemia», «Blood urea on days 2,4,5,6,7», and «Creatinine rates on days 1-7».

A binary logistic regression method was used to create a mathematical model of good treatment outcome. This method was selected because the resultant variable had two values (an «unknown» treatment outcome value was considered as «passed», i.e., it was not considered in the statistical analysis).

Our analysis revealed 33 possible predictor candidates; however, the records only included 606 events with known treatment outcomes. Therefore, it was necessary to select possible candidates from all identified risk factors proceeding from the following: 1) literature review, 2) temporary exposure (i.e., predictor initially appears, and the result subsequently occurs), and 3) data sufficiency in terms of this predictor. As a result the following variables were identified as possible predictors: growth, days at AVL, FiO2 ≥40percentage, seizures on the 5th day, antibiotic treatment (cefazolin, second-line antibiotic treatment), and blood urea on the 1st day. For events for which probability is estimated by binary logistic regression, the

good treatment outcome event was considered.

Results

Because of applying the above-described method, we obtained the following results:

The inclusion of possible predictors significantly improved the regression model - (x^2=59.057, df=4, p<0.0001, suggesting that these predictors are valid.

The following risk factors proved significant from the standpoint of predictors' inclusion: days at AVL, FiO2 ≥ 40%, blood pH, and blood urea on the 1st day.

Then, insignificant risk factors were excluded from the initial regression model to determine the final mathematical model to assess treatment outcome possibility:

1) Possible predictors were included in a significantly improved regression model (x^2=56.259, df=4, p<0.0001) suggesting that predictors were identified.

2) R^2 Nagelkerke = 0.758. Therefore, we found that this variable predicted 75.8% of all outcomes. In 85.7% and 90% of cases, the outcomes «died» and «survived» were predicted correctly, respectively. The percent of correctly predicted treatment outcomes was 88.2%.

3) The coefficients in the binary logistic regression equation are as follows: in «Days at AVL» variable b_1=-0,295 (p=0,028); in «FiO2 ≥40%» variable b_2=-4.868 (p=0.001); in «pH blood risk» variable b_3=12.814(p=0.022); in «blood urea on the 1st day» variable b_4=-0.561(p=0.04).

Thus, the equation to estimate positive treatment outcome was as follows:

$$p(A)=1/(1+e^{-z})$$

where A was positive treatment outcome, p (A) was event A possibility, e was an exponent equal to 2.71, and z was defined from equation (3).

$$z=-85.358-0.295x_1-4.868x_2+12.814x_3-0.561x_4 \quad (3),$$

where x_1=1 if an infant had «days at AVL», 0 otherwise; x_2=1, if an infant had «FiO2 ≥40%», 0 otherwise; x_3=1 if an infant had «pH blood risk», 0 otherwise; x_4=1 if an infant had «blood urea on the 1st day», 0 otherwise.

We collected data at the National Center of Maternal and Child Health in Astana, where all women from Kazakhstan with high-risk pregnancies are hospitalized, and premature infants make up more than 60% of all newborns. Based on our findings, we came to the following conclusions:

- the following were favorable predictive criteria: gestational age at birth, 31.82 ± 0.122 weeks; number of days in the NICU, 6.608 ± 0.31; absence of seizures on the 5th day; gentamycin use; pH at birth, 7.27 ± 0,025; urea on the 1st day, 4.62 ±0.16; urea on the 3rd day, 6.32 ± 0.427.

- gestational age at birth 28.96 ± 0.444 weeks; number of days in the NICU 12.410 ± 1.323; diagnoses of «Asphyxia», «Congenital malformation», «Ischemia», «Bronchopulmonary dysplasia», and «Sepsis» at birth; use of ampicillin, cefazolin, dehydration and sedative therapy; pH at birth 7.15±0.03;, urea on the 1st day 5.76±0.466; and urea on 3rd day 8.83±1.193 may be considered as unfavorable predictive criteria for premature neonate outcome.

- sex, intrauterine growth restriction, hemolytic disease, pneumonia, hypoglycemia, urea levels on days 2-7, and creatinine levels on days 1-7 had no significant effect on prematurity outcome.

- days at AVL, FiO2 ≥40%, blood pH, and urea on the 1st day can be used as predictors.

Conclusion

Thus, the main difficulty in the early neonatal period is overcoming lung tissue immaturity. However, after this problem is addressed both parents and doctors begin to be concerned

about neurological outcomes, which will define the infant's quality of life.

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Клинический случай

УДК: 61:575; 616-036.82/.85

Реабилитация пациента с нейросенсорной тугоухостью, обусловленной наследственной патологией - синдрома Ваарденбурга (клинический случай)

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Резюме

В данной статье описан клинический случай пациента с подозрением на наследственный синдром Ваарденбурга. Приведены эпидемиология, клинические проявления данного заболевания по последним литературным данным. Необходимо акцентировать внимание врачей на выявление синдрома Ваарденбурга, учитывая стигмы дизэмбриогенеза (телекант, тугоухость, депигментированные пятна) и медико-генетическое консультирования родителей для планирования семьи.

Ключевые слова: нейросенсорная тугоухость, синдром Ваарденбурга, реабилитация

Нейросенсорлы кереңдікпен сипатталатын тұқымқуалайтын ваарденбург синдромы бар науқас оңалтуы (клиникалық жағдай)

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Түйіндеме

Мақалада тұқымқуалайтын Ваарденбург синдромы диагнозы болжанған науқастың клиникалық жағдайы баяндалады. Соңғы мәліметтерге сүйене отырып осы аурудың эпидемиологиясы, клиникалық көрінісі келтірілген. Мақала арқылы дизэмбриогенез стигмалары (телекант, кереңдік, депигменттелген дақтар) бар науқастарда Ваарденбург синдромы болуы мүмкіндігіне дәрігерлердің көңілін аударуға және жанұяны жоспарлау кезінде ата-аналарға медико-генетикалық кеңес алудың маңыздылығына ескеруге шақырғымыз келді.

Кілт сөздер: нейросенсорлы кереңдік, Ваарденбург синдромы, оңалту.

Rehabilitation of a patient with neurosensory deafness, due to the hereditary pathology - Waardenboug syndrome (clinical case)

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Abstract

In this article, a clinical case with suspected hereditary syndrome of Waardenburg is described. The etymology, clinical manifestations of the disease are given according to the latest literary data. It is necessary to focus doctors attention on the detection of the syndrome of Waardenburg, tacing into account the stigmas of dysembryogenesis (televoting, deafness, depigmented spots) and medical genetic counseling for parents for family planning.

Key words: neurosensory deafness, waardenburg syndrome, rehabilitation.

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Введение

Национальный центр детской реабилитации занимается реабилитацией детей с нейросенсорной тугоухостью [1]. Следует отметить, что это заболевание иногда может быть симптомокомплексом различных наследственных болезней [2].

Синдром Ваарденбурга – генетически гетерогенное наследственное заболевание, характеризующееся комплексом аномалий и пороков развития, обусловленных нарушением формирования структур нервного гребня в эмбриональном периоде. Симптомами этого состояния являются смещение латерального угла обоих глаз, широкая переносица («греческий профиль»), пигментные аномалии кожи, волос и радужной оболочки, тугоухость [6].

Впервые симптомокомплекс, характерный для данного заболевания, был описан голландским офтальмологом П. Ваарденбургом в 1951 году. Механизм наследования этого заболевания различный по причине генетической гетерогенности – чаще всего имеет место аутосомно-доминантный тип с неполной пенетрантностью, однако описаны и аутосомно-рецессивные разновидности. Частота данного синдрома составляет от 1:42 000 до 1:50 000 в популяции [3]. Согласно данным медицинской статистики, этим заболеванием обусловлено от 2 до 5% всех случаев наследственной тугоухости и глухоты [5]. Половое распределение синдрома Ваарденбурга не имеет особенностей, мальчики и девочки поражаются с одинаковой частотой.

В настоящий момент выделено 4 клинических типа синдрома Ваарденбурга, некоторые из них делятся на подклассы в зависимости от гена, мутации которого привели к развитию заболевания. Общей причиной всех форм патологии является нарушение формирования структур нервного гребня в эмбриональном периоде – это приводит к порокам развития лица, пигментным аномалиям, расстройствам слуха и иногда зрения. Дизэмбриогенез при синдроме Ваарденбурга обусловлен дефектами генов, в большинстве случаев кодирующих белки-факторы транскрипции, то есть, отвечающих за экспрессию других генов.

У больных редко можно выявить весь набор типичных признаков. Каждый симптом имеет свою степень экспрессивности. Наиболее часто встречающимися признаками синдрома Ваарденбурга являются: телекант (99%), частичный альбинизм (45%), нейросенсорная тугоухость (20%). При данном синдроме также наблюдаются: широкая выступающая переносица (75%), сросшиеся брови (50%), гетерохромия радужных оболочек (45%), белая прядь волос надо лбом (45%). В некоторых случаях отмечаются птоз, выступающая нижняя челюсть, расщелина или высокое небо, небольшие скелетные деформации и пороки сердца. Кроме указанных признаков, у больных иногда бывают участки гипер- и депигментации на коже, пигментные изменения глазного дна. Седая прядь может быть уже у новорожденного, но затем эти депигментированные волоски исчезают. Нос может иметь не только приподнятую спинку, но и гипоплазию крыльев. Патология конечностей включает такие аномалии, как гипоплазия кистей, мышц, ограничение подвижности локтевых, лучезапястных и межфаланговых суставов, слияние отдельных костей запястья и плюсны. Снижение слуха при этом заболевании врожденное [3].

Определение синдрома Ваарденбурга производится на основании данных осмотра больного, изучения его наследственного анамнеза, офтальмологических и аудиометрических исследований. Окончательное подтверждение диагноза дает молекулярно-генетический анализ. При осмотре больного синдромом Ваарденбурга, как правило, выявляется характерный внешний вид лица (смещение латеральных уголков глаз, широкая переносица), лейкодермия различной выраженности, очень часто виден белый пучок волос надо лбом. Радужные оболочки глаз могут иметь

разный цвет (гетерохромия) или вставки другого оттенка в форме сектора.

Аудиометрические исследования при синдроме Ваарденбурга зачастую обнаруживают снижение слуха вплоть до полной глухоты. Обычно тугоухость при этом заболевании не имеет тенденции к прогрессированию. Врачом-генетиком может быть выполнена молекулярно-генетическая диагностика практически любой формы этого заболевания методом секвенирования ассоциированных с ним генов. Также может производиться определение носительства дефектной формы гена в случае отягощенного наследственного анамнеза и пренатальная диагностика синдрома Ваарденбурга.

Специфической терапии этого заболевания на сегодняшний день не существует, применяется только симптоматическое лечение, а также мероприятия, направленные на улучшение качества жизни больного. Тугоухость и глухоту при синдроме Ваарденбурга можно компенсировать имплантацией кохлеарного аппарата, причем это необходимо делать как можно раньше для нормального развития речи у ребенка. В случае развития тех или иных офтальмологических нарушений может потребоваться коррекция в виде ношения очков или контактных линз. Гипоплазия мышц, характерная для синдрома Ваарденбурга 3-го типа, может уменьшаться при регулярных занятиях лечебной гимнастикой и использовании физиотерапевтических процедур. Поражение желудочно-кишечного тракта при WS4 устраняется хирургическим путем – посредством удаления патологически измененных участков кишечника.

Клинический случай пациента с подозрением на синдром Ваарденбурга

Ребенок А. 3 года, поступил с жалобами на нарушения слуха на оба уха, нарушения речи, сухость кожных покровов, депигментированные пятна

Из анамнеза заболевания: Со слов мамы стала замечать, что ребенок не слышит к 1,5 годам. Обращались к сурдологу. Провели обследование, после чего был выставлен диагноз двухсторонняя сенсоневральная тугоухость 4 степени. Состоит на «Д» учете: двухсторонняя нейросенсорная тугоухость 4 степени. Операция по кохлеарному импланту проведена в июне 2016 г.

Из анамнеза жизни: Ребенок от 1 беременности, от 1 родов. Течение беременности на фоне анемии, обострение хронического пиелонефрита, ОРВИ, с приемом антибиотиков. Роды в сроке 38-39 недель, самостоятельные. Вес при рождении 3480 г, закричал не сразу. К груди приложен сразу. Выписан из роддома на 6 сутки.

Наследственность не отягощена. Маме 23 года, папе 27 лет, не родственный брак.

Перенесенные заболевания: ОРЗ, кишечная инфекция, ветряная оспа в 2016 г.

Операции: 2016 г июне, кохлеарная имплантация справа.

Данные объективного статуса: Общее состояние средней степени тяжести за счет неврологической симптоматики. Окружность головы 51 см, форма головы округлая. Сознание ясное. Растет и развивается с задержкой психо-речевого развития. Умственное развитие не соответствует возрасту. Речь нарушена. Зрительных нарушений нет. Слух снижен. Моторное развитие соответствует возрасту. Тонус и сила мышц не изменен. Координаторные пробы не выполняет по возрасту.

Стигмы дизэмбриогенеза: телекант, седая прядь надо лбом, дипигментированные участки кожи на лбу, на ноге. (Рисунок 1).

В ходе лечения обследована следующими специалистами:

Сурдологом: Нейросенсорная 2 х сторонняя тугоухость 4 степени. Кохлеарный имплант справа.

Эндокринологом: На момент осмотра данных за эндокринную патологию нет.

Окулистом: На момент осмотра патологии не выявлено.

За время нахождения в центре проведены реабилитационные мероприятия-занятия ЛФК, гидрокинезотерапия, коррекционные занятия с логопедом, дефектологом, психологом, игротерапевтом, музыкатерапевтом, трудотерапевтом. В ходе коррекционной работы был определен уровень остаточного слуха, для улучшения слухового восприятия было наблюдение за условно-двигательными реакциями. В результате проведенных реабилитационных мероприятий в динамике: Повысилась двигательная активность. Улучшилось понимание и выполнение команд. Выполнял различные комплексы упражнений для развития и закрепления физических навыков и умений. Улучшилось звукоподражание домашних животных. Улучшилось слуховое восприятие и повторение гласных звуков. Научился работать в группе со сверстниками, появился интерес к выполнению заданий. Пополнился словарный запас по лексическим темам, изучил машинки. У ребенка улучшилось концентрация внимания на занятиях, стал более усидчивым.

У мамы ребенка взято информированное согласие на публикацию персональных данных в научном журнале.

Рисунок 1 - Ребенок с синдромом Ваарденбурга

Обсуждение

В большинстве случаев прогноз синдрома Ваарденбурга благоприятный, так как пороки развития при этом заболевании зачастую не угрожают жизни больного и не имеют тенденции к прогрессированию. Однако, несмотря на это должна быть диагностическая настороженность среди врачей, учитывая редкую встречаемость данного наследственного заболевания в популяции. При ранней диагностике данного заболевания для развития психо-речевого развития рекомендовано коррекция слуха посредством кохлеарной имплантации. Из-за нарушения пигментации кожи, у лиц с этой патологией возникают солнечные ожоги, повышенная чувствительность к свету, что устраняется ношением солнцезащитных очков и использованием специальных кремов. Профилактика синдрома Ваарденбурга возможна только в рамках медико-генетического консультирования родителей перед зачатием ребенка и пренатальной диагностики.

Выводы

Синдром Ваарденбурга у ребенка имеет благоприятное течение и реабилитационное лечение показало положительную динамику. Даны рекомендации о продолжении педагогической коррекции по месту жительству.

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Nongovernmental Organization
In official Relations with World Health Organization (WHO)
Founded in 1937

ABSTRACTS

of the 71° GENERAL ASSEMBLY
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THE CONCEPT OF THE LEAN SYSTEM IN THE MEDICAL AND PHARMACEUTICAL ORGANIZATIONS OF THE CAUCASIAN MINERAL WATERS

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More than 215 years Caucasian Mineral Waters take patients from Russia and the world to rest and treatment. Today, about 300 resort organizations serve over 1,000,000 people each year. Such a huge potential and the presence of a medical-pharmaceutical institute in the region make it possible to introduce new methods and improve the quality of medical services and services in general. Competition in the medical tourism market stimulates the entire industry to use modern approaches to process management with an emphasis on customer focus. One such path may be the concept of lean manufacturing.

The aim of this study was to check the possibility of applying lean production methods in various medical and pharmaceutical organizations in the region in order to integrate into a single lean system.

Currently, the national project “Creating a new model of a medical organization providing primary health care” is being implemented in the Russian Federation. This state program of changes in the work of a clinic, pharmacy or sanatorium that is familiar to the patient sets the main purpose - increasing customer and employee satisfaction. To this end, the leadership of the Russian healthcare system studied the materials and international experience of the founders of the philosophy of lean manufacturing, the Toyota production system, and developed recommendations adapted for the country.

For several months, the institute staff conducted practical experiments on the introduction of lean production methods in the processes of several organizations: an institute, a pharmacy, two hospitals and two sanatoriums. The methods of value stream mapping, questionnaires, open surveys using sheets of problems and suggestions, visualization, timekeeping, etc. were applied.

When analyzing the results of the experiment, losses that did not create value for the consumer were identified, requests for information about some processes from customers and employees of organizations, ways to solve certain problems, and also showed increasing interest of customers and employees in improving the conditions of service and labor.

The findings lead to the conclusion about the possibility and necessity of introducing the principles of lean production into the medicine and balneology sphere, as well as the relevance of creating a single lean system at all stages of training (for staff), treatment and rehabilitation (for patients), especially in Caucasian Mineral Waters.

MODERN STATE OF THE SANATORIUM-RESORT SERVICES (ON THE EXAMPLE OF CAUCASIAN MINERAL WATERS)

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Spa treatment and rehabilitation in the Russian Federation are traditionally aimed at: the restoration and compensation of body functions after injuries, operations and chronic diseases, as well as the General improvement of the nation, to improve the quality of life of the population and the extension of its active longevity. Sanatorium-resort rehabilitation and treatment of patients is carried out using traditional environmental factors, mineral waters, mud and other resort procedures. The complex impact of these factors ensures the effectiveness of treatment and rest of patients in the resort areas. The potential of the resort resources of the region Caucasian mineral waters are huge and unique. In fact, these resorts have no analogues and competitors. In recent years, there has been a trend of growth of tourist flow to the region, which is 6-7% per year. Every year Caucasian mineral waters (according to Rosstat) is visited by more than 1 million tourists from different regions of Russia and foreign countries. It formed up to 17% of the market of health services in Russia.

The region is included in the cluster» ECO-resort Caucasian mineral waters», which was included in the Federal program for the development of domestic and inbound tourism until 2018 with funding from the Federal budget. First of all, financing will be directed to the development of infrastructure and transport logistics, repair, expansion and reconstruction of sanatoriums and other health resorts. A number of measures are planned to increase the investment attractiveness of sanatorium complexes.

The analysis of the features of personnel and material support of the health resort service showed that in this territorial integrity there are 451 units of the health system, including the «Pyatigorsk research Institute of balneology» and 156 sanatoriums of various Ministries and departments, which employ more than 14,800 employees. In addition, there are more than 200 hotels in Caucasian mineral waters. According to the expert organization RAEX, the total capacity of accommodation facilities in the region is more than 43 thousand places, including 34.8 thousand people in health resorts. The average load of health resorts is 69%, the average cost of one guest per day is 2826 rubles ($43).) and includes the cost of accommodation, meals and medical services.

Sanatorium-resort complex Caucasian mineral waters can be viewed in two planes. First, it should be noted that about 40% of all health resorts belong to the state, and their main mission is to perform social functions for the improvement of the population and prevention of diseases. Sanatoria of the state form of ownership belong to various departments and are assigned to the Federal center.

Other organizations have the form of trade Union-19,20%. private -4.30%, mixed Russian-30.20%, foreign – 3.70%, mixed with foreign ownership – 2.20%. These sanatoria are a market component in the health resort sector of the economy, removing the limitations inherent in state health organizations.

This turns them into full-fledged participants of the tourism market, whose activities primarily triggered the concept of effective development of recreation and treatment, based on the formation and development of highly efficient economic entities with a predominance of the economic component of the social. At the moment, these sanatoriums lack the

infrastructure of sports and health-improving orientation, which is being re-equipped at a slow pace. Only 40% of health resorts have indoor or outdoor pools.

Analyzing the emerging trends in the sanatorium industry in Russia, we believe that the development of resort organizations should go to the Caucasian mineral waters in several directions.

First of all, it is necessary to allocate the objects specializing in medical tourism, equipped with high-tech diagnostic and physiotherapy equipment, having a staff of highly professional medical staff, conducting research work on the influence of resort factors and other means on the course of the disease. Such organizations today there are about 30 units or 22% of the total number of sanatorium organizations Caucasian mineral waters. These organizations should become the basis for the development of medical tourism in the region in the future. The main contingent of these resorts are as in the old days, citizens suffering from various diseases and the elderly.

The second type of health resorts owned by trade unions and individuals is more like a holiday home. The contingent of vacationers of these sanatoriums are mostly citizens at an active age, in need of General improvement. In such sanatoria, the staff of doctors is limited to therapists and physiotherapists, conducting mainly General supervision of vacationers. There are about 30% of such sanatoriums.

A fundamentally new model of Spa organizations appeared in the last 10 years. These are modern hotels with a well-developed infrastructure of accommodation and food, modern medical facilities, and the presence in the complex of services provided SPA and other health programs: relax, detox, diet. This mixed model provides the opportunity to take on treatment and rehabilitation of all categories of tourists, including healthy young people and it just has all the advantages to a greater spread in the region of Caucasian mineral waters. With the strengthening of this position in the future, Russian health resort organizations will cease to be a place of treatment and rest only for patients and elderly people and will become multifunctional health centers designed for a wide range of consumers.

Thus, the health resort organizations of Caucasian mineral waters are very diverse and are aimed at serving different segments of consumers. The use of different types of physical recreation in addition to Spa treatments allows them to have an obvious competitive advantage in a market economy and to be the best multifactorial resort base for the prevention and treatment of a number of diseases.

WELLNESS TOURISM: CHALLENGE FOR UKRAINIAN HEALTH-RESORTS

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The priority of the development of tourism and resorts for the Ukraine is due to the economic importance of this area, the need to form a positive international image of Ukraine,

a powerful function of wellness tourism in promotion of healthy lifestyle, an objective need for the rational use of natural recreational and healing resources. In the structure of inbound medical tourism in Ukraine by the number of clients spa and wellness tourism is 25 %.

According to data of Global Wellness Institute (2017) wellness tourism earns 563 billion US dollars, among them termail/mineral springs – 51 billion and spa industry – 99 billion. The Global Wellness Institute experts identify five best ways for promotion of wellness tourism, among which the fundamental for Ukrainian health-resorts are to focus on a unique offering (the unique for our resorts are various healing mineral resources) and don't forget the domestic wellness tourist.

The resort complex of Ukraine is a large industry of health and recreation with unique climatic, balneological, mud resorts. According to the Law of Ukraine «On Resorts» (2000) healing mineral resources are mineral waters, peloids (medical mud), climate, rump of estuaries and lakes, seawater, ozocerite, bischofite. The mineral waters for intertnal and external usage and peloids (medical muds) of almost all types are found in Ukraine: mineral waters with specific organic substances («Naftusya», Truskavets resort, Lviv region), organic substances and metasilic acid (Berezovsky mineral waters, Kharkiv region); carbonic, ferrous, arsenic, sulphide, radon (Khmelnik, Vinnytsia region), thermal (Zakarpattia, Kherson, Odessa regions) waters, etc.; Sulphide, peat, sapropel, soponic peloids (Odessa, Kherson, Nikolaev, Donetsk, Ivano-Frankovsk regions), bischofite (Poltava region) and ozocerite (Lviv region). There are unique therapeutic climatic conditions of recreation complexes of the north-western Black Sea and Azov region and Solotvin salt caves (Transcarpathian region), big forest and mountain regions etc.

Tourism and health-resort sector are the city-forming for many resort areas of Ukraine, a key to sustainable development of these areas. The transformation of the resort complex of Ukraine into a highly profitable, competitive, attractive investment sector will enable our state to take its place among the leading tourist countries in Europe.

RESULTS OF THE RESEARCH OF HYDROMINERAL RESOURCES OF ADJARA REGION AND PROSPECTS OF THEIR USE IN BALNEOLOGICAL PRACTICE

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There are over 2000 healing waters discovered on the territory of Georgia, that have been used by the local population for curing reasons for centuries. The healing mineral waters effectively cure various diseases, and the efficiency of mineral waters are rising for several times in case they are accompanied by mountain air, sun rays and vitalizing greenery of the forest.

Adjara is one of the regions of Georgia, rich in fresh and mineral water resources, which can be found on the seacoasts, as well as in the mountains. These resources have been known to the local population since the ancient times and have been widely used for the treatment of various diseases.

In the available literature there is found scarce information on the use of hydromineral resources of Adjara region in balneological practice.

The chemical compositions (micro- and macroelements) of 38 mineral waters located

in Adjara region have been studied by using the chemical and modern instrumental methods of analysis.

In almost all studied objects have been stated the contents of the following balneological components: iron, calcium, silicon and gases, hydrogen sulfide in some of them (Keda, Namonastrevi, Ghoma waters, Makhinjauri, Khulo, Khidistavi, Beshumi etc.).

Based on the pharmacological studies have been established, that the mineral water "Shubani" of Shuakhevi municipality significantly stimulates the acid and enzyme producing function of stomach, while not affecting the peripheral blood composition; it stimulates the synthesis and release of bile acids, secretion of bilirubin. By loading of the body weight by 2% (single time) the mineral water mildly reduces the secretion of bile and bilirubin.

The further development and practical realization of the results of conducted studies will promote the development of medical, particularly healthful tourism and arrangement of balneological resorts in Adjara region.

AVANT-GARDE TECHNOLOGIES IN BALNEOLOGY, THALASSOTHERAPY AND CLIMATOLOGY – REVIEW OF INNOVATIONS AND ADVANCED SOLUTIONS IN HEALTH RESORT MEDICINE IN XXI CENTURY

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The report is devoted to the analysis of the development of new, innovative solutions and technologies that marked the end of the 20th and the beginning of the 21st century. The evolvement of new materials and systems in balneology has led to the production of new forms of bathtubs, showers and other hydrotherapeutic installations. Medical acryl, Corian, stainless steel have allowed to create other ergonomic forms of baths. Innovative technologies of water and air pumps have laid the foundation for automatic hydromassage. In 1978, the first baths with automated air, water and mixed massage were set up. Further, the development of automated massage in water went onward and upward, and the creation of electronic systems and automated regulation at the turn of the 21st century made it possible to almost completely automate the processes in balneology today. To date, modern hydrotherapeutic installations have been created (TRAUTWEIN, Germany) that provide ECG monitoring directly in the bath, exposing to micro-currents in water, and a number of additional effects on the principle of "multi-factorial exposure" in one procedure. Currently, the "multifactorial impact" is realized through formation of new therapeutic shower assemblies with electronic automated control (DORNBRACHT, Germany) that facilitate the work of the personnel and increase the efficiency of balneological therapeutic procedures. The progress of aqua-therapy and methods of physiotherapy exercise in water significantly expands the possibilities of rehabilitation and recovery in patients with musculoskeletal system disorders. Advances in biochemistry and biology in the analysis and evaluation of algae and seawater have developed and made popular and scientifically based the direction of thalassotherapy

as a modern seaside resort.

The elaboration of plastic materials, new electronic control systems has brought the organization of the processes of crenotherapy and inhalation therapy in the resort sphere to a new level. Nowadays, these processes are almost completely automated and make it possible to increasingly use these methods not only in resorts. New solutions in climatic treatment have allowed us to reapply at a new level to such effective procedures as solar and air baths, sleeping on climatic terraces, as well as to artificially recreate natural climatic zones such as salt caves, zones with controlled aero-therapy and a number of others. The advance in these technologies, along with other factors, is one of the reasons for the renewed interest of mankind in the capabilities of the resort, as a place where the natural resources of health can be restored and the pharmacological dependence can be reduced.

THERMALISM IN ALGERIA AND PERSPECTIVE

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The communication is about the thermalism in Algeria, it is presented the thermal potentialities in Algeria, as defined during the last thermal assessment carried out in 2015.

It also presents the establishments in operation throughout the national territory, the projects in progress as well as the operations related to the upgrading of the personnel working in these establishments.

Finally, a brief overview of the 2030 sector›s development plan is presented in terms of issues, strategic orientations and the action plan to be implemented.

THERMAE 4.0 – IMPACT OF THE EMERGING DIGITAL TECHNOLOGIES IN BALNEOLOGY

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Recent developments in Information Technology are having a major impact in all sectors, changing people lifestyle, professional activities and business strategies.

It is therefore important to analyze this scenario, identifying potential developments, emerging opportunities and possible risks. Hence the objective of this study: to provide the balneology operators useful information to define short and medium-term strategies.

Analyzing the information available on the Web, very few advanced IT applications appear in the Balneology sector. But if we consider separately its three components, Tourism, Wellness and Health, we can see that many of the most advanced technologies are present in applications already in operation or under development.

Virtual reality and robotics are at the base of innovative rehabilitation systems. The IoT (Internet of Things) is present in a wide range of wearables, under-skins and internal devices, to monitor the vital parameters and detect risk situations (infections, tumors, ...).

But the most revolutionary applications are those based on AI + BigData and AI + NPL, which generally reduce costs and improve the quality of services. AI + NPL systems allow to realize highly effective Customer Care applications, giving information and indications both for the organizational and for the medical aspects. AI + BigData systems allow to improve the Tourism marketing strategies, while their Medical applications give exceptional results in image analysis (identification of pathologies or body anomalies) and statistical data processing (effects of environmental factors, evaluation of therapies, …).

In conclusion the Balneology sector should adopt as soon as possible IT based applications to reduce the costs, improve the services and to expand its offers with new added value proposals.

THEORETICAL-PRACTICAL BASIS OF A NEW RE-EDUCATIONAL ACTIVITY FOR PARKINSON'S AND ALZHEIMER'S PATIENTS

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This article explains the theoretical-pratical basis of a new re-educational activity for Parkinson's and Alzheimer's patients.

Expressive Therapies (Art- Music- and Dance Therapy) can effectively perform in Alzheimer's e Parkinson's Diseases, maintaining the highest level of Life Quality (LQ), despite the gradual progress of disease, because are preferred access route to limbic brain.

In particular, music offers rhythmic stimuli and mnestic-imaginative cues that can help reducing Parkinson's motor deficiencies, both regarding imagery and real movement. Music further represents an interpretative framework against anxiety and it promotes positive feelings, strengthening focus capabilities and motivation in Alzheimer's patients.

Another our re-educational activity for Parkinson's and Alzheimer's patients, employs special trained dog handler teams, selected for their attitude and ability , as a characteristic element of re-educational session.

The method includes cycles of osteopathic manual treatments for the rigidity of Parkinson's patient and the related pain. At rigidity and global body flexion are related muscular-skeletal pain due to the spinal roots compression.

HUMAN RESOURCE MANAGEMENT IN REHABILITATION

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Human resource management — the field of knowledge and practical activities aimed at providing of the organization with the qualitative staff capable to execute the labor functions laid to it and its optimum use. Human resource management is an integral part of qualitative management systems of the organization

Rehabilitation of children with limited opportunities is a long and complex process in which the multidisciplinary team have the different level of preparation and different education from nurses to doctors and tutors, speech pathologists, orthosists, psychologists and else take part in it. Complex rehabilitation is made by three aspects: medical, psychological-pedagogical and social. Only in that case it is possible to expect the positive dynamics in a state of children.

Aim: study and improve human recourses management process when rendering rehabilitation

Tasks:

- To research features and needs of staff and to increase motivation of the center employees
- To prepare measures to increase efficiency of patients motivation

Risks for staff:

- Syndrome of Chronic Fatigue
- Syndrome of «psycho-emotional» burning-off

Risks for patients:

- Lowering motivation of child
- Syndrome of Chronic Fatigue

Features of patients:

- 100% of children have psycho-motor and speech disturbances
- Children from 1 year to 7 years are 62%
- 67% of children have disabilities, 52 per cent of them are children with cerebral palsy
- 70% need leaving and are hospitalized with mothers

Base of integrative rehabilitation is a multidisciplinary team.

Conception of multidisciplinary team – specialist, who takes part in the process of multidisciplinary team, cannot be limited only with his field of knowledge – he is a member of rehabilitation team.

Our specialists work not only with the patients but also with their parents. In Center we have mother’s school where our specialists teach mothers how to take care after their children.

Some elements of the existing system of motivation:

Material and non-material incentive	***The atmosphere in collective: social need and feeling of accessory***
1. provision of apartments and rooms in the hoste	1. carrying out various corporate actions (Day of mothers, April Fools' Day, etc.)
2. provision of vouchers to sanatoriums by union line	2. patronage programs (for example, for veterans of the Second World War)
3. delivery of 5% of employees to work, granting a gym for trainings	3. image calendar with photos of employees of RCRC, the organization of circles for dances, singing
4. help in preparing children for school (purchase of portfolios, school supplies, sports forms)	4. organization of mentoring and competition between wards
5. payment for educational trainings	5. publication of media

The results of operations of HR department in Center:

- Increase of employees' satisfaction on 5,0%
- Reduction of employee turnover on 2,3%,
- Increase of categorization of doctors on 5,4%.

EXEMPTION OF UNNECESSARY IONS FROM MINERAL WATERS, USING THEM TO BE USED FOR STANDARDS AND USE FOR MEDICINAL PURPOSES

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An important amount of the world's underground mineral and sheer drinking waters contain excess amounts of various harmful minerals, such as of Barium and Fluorine, the concentrations of which reach - of Barium 5-10 mg/l and Fluorine 5-15 mg/l, which is why the World Health Organization and sanitary organizations of states and correspondingly the country standards sharply limit the existence of these elements in sheer and mineral waters. The same problems persist in the mineral and sheer drinking waters existing in Georgia. According to standards, the Maximum Acceptable Concentrations (MACs) are overlooked in drinking waters, both sheer and mineral; Ba (barium) - 0,7 mg/l, F (fluorine) - 2 mg/l, in healing drinking mineral waters Fluorine is allowed 3 mg/l.

Since the excess of amounts of Barium and Fluorine in sheer and mineral drinking waters does not allow their use and capitalization, the existing multiple drinking and mineral waters in Georgia arc either not used completely or if they are used, that is only with greater restrictions, or more importantly, with special, long-term conditions that not at all satisfy the

requirements of domestic and foreign markets. The example of this is provided by the shutting down of the factory of mineral water “Zanavi” because of excess amounts of Fluorine; the inability to master the mineral waters “Gvara” and “Qobuleti” because of the containment of harmful ions in excess amount; the containment of excess amounts of Barium and Fluorine ions in the mineral water “Borjomi” and “Likani” questions the future perspective of the use of this unique drinking mineral waters.

The purpose of the project is: through the modification of naturally formed sorbents, the creation and /research of selective sorbents which will have high selectiveness towards the ions of Barium and Fluorine. The treatment of sportive technological process of extraction of Barium and Fluorine ions from sheer and mineral drinking waters until the Maximum Acceptable Concentration. To derive an experimental amount of selective sorbents and to create the appropriate device. To develop technological regulations of the regeneration of sorbents.

CLIMATE AND HEALTH IN MOUNTAIN AREAS IN THE EXPERIENCE OF THERMALISM CENTERS

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Mountain nature and climate offers an ideal enviroment for classic musculo-skeletal and neurologic rehabilitation.

Research shows benefits for many different conditions as anemia, cardiovascular diseases, metabolic syndrome, obesity.

Moreover lately there is a development of mountain therapy, facing psychological and psycho-social disorders with a new approach.

Mountain thermal centers are an ideal pivot where to organize many activities responding to important health problems and to these new needs of our stressful society, putting together healthy enviroment, healing waters, medical competency, psychological and psychosocial support.

AGEING PROCESS AND SAPROPELIC MUD FROM TECHIRGHIOL LAKE

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Aging represents the expression of a progressive functional imbalance of the neuroendocrine system and antioxidant status.

The aim of this study was to investigate some determining factors: insulin 1 growth factor (IGF-1), serum cortisol, dehydroepiandrosterone-sulfate (DHEA-S), glutathione-

peroxydase (GPx), that seem to play a major role in the beginning and evolution of the biological ageing process and their behaviour under the effect of peloidotherapy.

Material and method: This research is a prospective clinical study, developed between July 2013-February 2016 and included a total number of 1377 patients but only 52 patients of this group met the inclusion and exclusion criteria. They were evaluated at admission, at the end of treatment, one and 4 months after the treatment. The batch was divided in two groups, the first one with 37 patients underwent mud bath at thermoneutral application and 15 patients underwent old mud ointment. All patients received 3 additional electric procedures, one regional massage and kinetotherapy session per day.

Results: For the group who received cold mud ointment, the results showed a statistically significant increase (p=0.044) of IGF-1, the variation of this hormone demonstrating the positive effect of the balnear treatment with contrasting factors in the biological ageing process. For the group who received mud bath, the results showed an increase of IGF-1 close to the statistical significance (p=0.067). Increasing tendency at the end of treatment, shows, as a whole, the general positive effect of the balnear treatment in the ageing process.

Conclusion: The IGF-1 low activity is associated with a significant morbidity in adults, with a high risk of cardiovascular diseases, diabetes, osteoporosis and neurodegenerative diseases, with certain implication in ageing modulation. There is one hypothesis that maximum human life expectancy depends on the strict regulation of the GH-IGF axis and on maintaining the optimal action of IGF-1[1]. The optimal activity of this hormonal axis is involved both in the extension of life expectancy and in the increased resistance to the oxidative stress[2].

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BODY PURIFICATION AND HEALTH IMPROVEMENT AT THE SANATORIUM-RESORT COMPLEX «DILUCH» LOCATED IN THE RESORT TOWN OF ANAPA: FROM THE BASIC ENDOECOLOGICAL REHABILITATION TO THE «DETOX-EFFECT» PROGRAM

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In the 50-ies of the XX century A.A. Bogomolets drew the attention on the importance of managing the state of the body's internal environment. The urgent need to develop a method for endoecological rehabilitation (ERL) arose after the Chernobyl disaster to eliminate its consequences. In 1999, the authors of the ERL method in spa, among others V.S. Sevryukova, were awarded a government prize for creating the basics and applying methods of general clinical and preventive lymphology. The ERL is an effective medical and health improving technology based on methods of stimulating fluid transport in organs and tissues of the body, purification of the cell space and lymphastimulation. Adverse

environmental factors, stress, metabolic disorders, hypodynamia, overeating, bad habits, age-related accumulation of slags in the body, sleep disorders, somatic diseases of the gastrointestinal tract or endocrine system contribute to the special importance of purifying the body for the moment. There is a large endoecological department in the medical and diagnostic center of the Sanatorium-resort complex «DiLUCH», where due to the current trends the ERL became the basis of the DETOX program. The DETOX program includes seven-day procedures, such as: hydro-massage and dry carbonic baths, a swimming pool, a gym, pneumocompression of the limbs, an intravenous laser irradiation of blood; and every second day: liver flush, hydrocolonotherapy. According to the indications a drug infusion therapy or plasmapheresis, a course of skin cleansing in a SPA-salon are prescribed. An evaluation of the effectiveness of treatment in 42 patients before and after the DETOX program was carried out. Improvement of overall health was noted in 100%, half of patients showed a decrease in body weight from 4 to 8% of the original. Stimulation of lymph drainage led to a decrease in the endotoxicosis manifestations, improvement of the excretory function of the kidneys and liver (triglycerides decreased from 2.5 ± 0.1 mmol / l to 1.7 ± 0.7 mmol / l, $p < 0.05$). DETOX activates biological resources, stimulates adaptation mechanisms, which leads to an increase in the rehabilitation capabilities of the patient. The effectiveness of the system of consecutive detoxification measures of sanatorium treatment used in DETOX, aimed at all levels of detoxification, is proved, providing an integrated approach to the treatment of humans as a single biological system.

MEDITERRANEAN DIET AND SPA TREATMENT: A HEALTHY ASSOCIATION?

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Background: In 2014, around 1.9 billion adults over the age of 18 were overweight. In the United States and Europe obesity has become a primary public health problem. Many people who go often to SPAs to perform mud therapy are overweight. The possibility of a dietetic evaluation to follow a dietetic program could be an occasion for both slimming and food education.

Objectives: We have look for a possible cooperation between Mediterranean diet and mudpack treatment in losing weight.

Methods.We enrolled 275 people in this study, from January 2014 to September 2016. 193 people of these were female (70%) and the other 82 was male (30%). Most diet-requiring patients were over 50 years of age.The 38% of the patients were from Russian countries (ex USSR), 29% were Italians, 19% were French and 14% from the rest of the world.

Spa therapy consisted in 1 or 2 week program performed at the Borile Group Thermal Spa in Abano (Italy). For 200 patients the program included 6, 10 or 14 daily mud-pack applications, thermal bath, and some massage; 75 patients didn't undergo mud-pack applications.

The mud-pack was applied on the whole body for 15 minutes at the initial temperature of 45°C. After this application there was a thermal bath in mineral water at the temperature of 36°C for 10 minutes with a light hydromassage.All the patients in the period of the study were on a 1000-1500 kcal diet, according to their basal metabolism. The main outcome measures are weight, BIA (Body Impedence Assessment), waist-hip ratio, abdominal circumference

RESULTS: Anthropometric measurements showed that the 42% of the patients was overweight and the 38% was obese with the presence of severe obese (BMI over 40).

If we consider the fat percentage measured with BIA together with the BMI and WHR, the 83% of our patients was obese.

We have considered whether mudpack could have some effect on weight loss, and / or on fat mass reduction. We have considered the two groups: 201 patients who underwent mudpack together with diet and 74 patients who underwent only diet. .

Overweight and obese subjects, if they have undergone diet and mudpack therapy, seem to have lost more weight and achieved a greater reduction in the fat mass than those who have done only diet.(tested, with a T-Student test).

Most overweight and obese patients have lost weight and fat, and this seems to be due not only to low caloric regimen, but also to the mudpack therapy itself. It will be very important to carry out studies with larger statistical relevance in the future.

PHARMACOTECHNICAL EVALUATION OF CLAYS SPREAD IN ADJARA REGION

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Georgia is reach of useful endemic resources, which are not untapped but is not studied also. Their reveal, study and develop using methods is one of the most important issues as in Modern Medicine also in Cosmetology. No one from the Earth's resources has such a broad, important and versatile use as clays. They are widely used in medicine and cosmetology – as a natural as well processed form, they are used: in Balneology and Resorts Therapy, for treatment of bone-joint and rheumatic disease, various types of skin diseases, besides it's very interesting to use them as an auxiliary means and a base in various soft and solid medicinal forms.

Adjara is one of the most interesting regions of the clay resources. Here, a local population and many tourists use clays arbitrarily, despite the fact that their chemical composition and medical properties have not been studied and it's only on the traditional medicine level. In the literature available to us, we have not found the data about the clays widespread in Adjara Region. That's why the most actual problem in medicine and pharmacy is to research the clays widespread in Adjara for further usage in medicine and cosmetology.

ON THE ISSUE OF ORGANIZING AND CREATING IN

GEORGIA AN INDUSTRY FOR SPILLING UNDERGROUND DRINKING WATER OF VARIOUS MINERAL COMPOSITION FOR USE IN BALNEOLOGICAL PURPOSES

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Georgia is one of the most richest countries in the world in respect to its constantly regenerative resources of vitally necessary water formed by rivers, glaciers, lakes, bogs and groundwater.

The total amount of rivers is 26060, their total length is 58957 km.

Resources of underground drinking water amount to 573 m3/min, operationally allowable level is 301 m3/min, which is equal to 26 billion liters per day. This amount far exceeds the daily vital need 7.4. billion people on Earth (biological norm -2 -2.5 liters per day).

The factors that determine competitiveness of resource potential of drinking water are: naturalness, abundance, stability, renewability, cheapness, non-seasonality, short period of recoupment of capital investment, constant growth of world population's needs for bottled (packaged) drinking water. These factors fully prove prospectivity and necessity of the stable development of drinking water industry.

Natural drinking water «Velis Tskaro» (mineralization, 2.0-3.0 g / dm3) was found in the eastern part of the outskirts of Tbilisi. Its medicinal properties have been established since 2001, it flows from the depths as a source without any drilling and belongs to the sulphate-sodium and magnesium-calcium mineral water group. The analogue of this water is located in the resort area of the Autonomous Republic of Adjara, in Gundauri of the Keda municipality and Racha-Lechkhum municipality.

Anions, mg/ dm^3	Anions, mg/ dm^3	Biol. active elements
Mz – 146	SO_4 – 1834	H_2SiO_3 – 31,20
NA + K – 201	HCO_3 – 244	Silicic acid
	CL	

The formula of mineral water:

M2,9 (SO_4 89)/(Ca52Mg28Na-20)

This medicinal drinking water has a number of healing properties:

Chronic gastritis (with normal, increased or decreased secretion function), chronic colitis and enterocolitis, chronic liver and biliary tract diseases, hepatitis, cholecystitis, angiocholitis, pancreatitis, diabetes, gastric and duodenal ulcers in remission and incomplete remission.

Based on the type of water (GOST 13273-88) and clinical and experimental studies conducted, mineral drinking water is useful for healthy people for prevention purposes.

Drinking water of this type strengthens people›s health, eliminates the processes associated with metabolic disorders, which causes many diseases in human organism.

In the form of baths: chronic diseases of the peripheral nervous system, gynecological, skin and other diseases.

BALNEOLOGICAL CLUSTERS OF UKRAINE: SCIENTIFIC SUBSTANTIATION, TREATMENT AND RESORT DEVELOPMENT STRATEGIES

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Sustainable development of the Ukrainian economy, which is now steadily moving through the implementation of reforms, is impossible without sustainable development of resorts.

The Strategy for the Development of Tourism and Resorts until 2026 was adopted in 2017. One of the priorities of the Strategy is complex modernization of the resort areas.

One of the resort-forming factors are natural therapeutic resources (NTR). According to the Law of Ukraine «On Resorts», NTR include mineral waters (MW), therapeutic mud (peloid), ozocerite, liman and lake brine, seawater, natural objects and complexes with favorable climatic conditions for treatment. The efficacy and safety of NTR, the ability to use them with sanatory(recreational) and therapeutic purposes to be based on the results of their biomedical quality and value estimation. Today, the state inventory of NTR contains data on 388 NTR.

At the legislative level, the status of six resorts of the nationwide scale and three resorts of local scale was established. A number of natural sites can also claim for the status of resorts.

Thus, balneological clusters (BCs) can be distinguished within Ukraine. Of course, they are limited to certain geographical areas. Somewhere in these natural sites there are NTR in a unique combination and developed spa resort complexes.

Powerful BCs are available on the territory of the southern region, in particular the seacoast zone, which uniquely combines sea and steppe climate, seawater, sandy beaches and numerical NTR, in particular medical mud, mineral waters, liman brine. This allows for development of balneotherapy and rehabilitation, in particular for patients with spinal and walking disfunctions, in the following sites: BCs of the Southern Odessa region, Kuyalnik, Zatoka, Sergievka, Carolino-Bugaz, Lebedivka and Arabat Arrow and Gengirka, the uniqueness of which is the presence of a thermal MF.

Central Ukraine is characterized by the presence of BCs with radon water and peat muds: Khmilnyk, Nemiriv (Avangard), where treatment is provided for diseases of the locomotorium as well as gynecological and skin diseases. Digestive organs treatment is provided in the BC of Mirgorod with its medical MW.

The western region is rich in variety of NTR, which led to the presence of a large number of BCs. Truskavets and Skhidnitsa are the unique BCs with curative MW with a high content of organic substances. BCs Polyana, Shayan, Morshyn, Soymi with curative MB offer treatment of digestive organs. BCs WBerehove, Solotvyno, Velyatino have well-known thermal MW. BC Kvasy has the unique arsenic MW.

"SELF-MONITORING" AS INSTRUMENT OF QUALITY FOR THE MANAGEMENT OF BALNEOTHERAPY CENTERS

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The demand of quality for balneology is growing. The innovation is a must.

The worldwide demand for "aquatics" is steadily growing, with relevant investment for the construction of aquatic centers and aquaparks leisure/recreational-oriented, where often the water element is completed by other secondary services (restaurants, accommodation, music entertainment, etc.). At the same time, the demand for health prevention - associated with the use of spa facilities and aquatic wellness centers – is growing. Today water physiotherapy is becoming more and more popular, as well as the growing demand for water gym; the healthy properties of water connected to the way of use it, always known and recognized at medical level, are more and more popular among customers and physicians that prescribe the use of water as therapeutic treatment.

While in the field of swimming pools the general discipline for their construction and management is subject to national and regional regulations and recommendations, in the field of thermalism there is a need to highlight the operating and management criteria regarding technology and hygiene & health prevention. The objective is trying to combine the qualitative aspects (offering a certain expected medical service) with the economic ones, following the policy of big investment (high technology) with reasonably short pay-back period (good management, energy saving, high-level maintenance).

For the moment the basic document remains the historic WHO Guidelines (2006), but some regional realities have already adopted regulations based on the rules applied to recreational swimming pools.

Unfortunately, however, the complex issue cannot be simplified because the fundamental conditions of the spa world (closely connected to the healthcare one) are different because the water used can be very mineralized, aggressive and at high temperature and the peculiar chemical-physical characteristics of the precious natural resource cannot be altered, in order not to affect its possible therapeutic applications, even for prevention ones. Furthermore it's necessary to pay attention to health & hygiene aspects – often ignored – inside facilities essentially dedicated to the healthcare and to the wellbeing of customer; it's not conceivable to get out of that facilities in a worse state of health than before.

Waiting for the evolution of scientific, industrial and - above all - political research to identify sustainable criteria in the application of thermalism, regardless of the allocation and the molecular complexity of available water, a basic preventive criterion can be adopted.

The criterion is based on some focal points that can be shared in every reality:

- specific knowledge of the water (chemical-physical parameters, available flow rate, temperature, etc.);

- knowledge of the facility where the water is used, especially for reliability of technology and professional expertise in management;

- knowledge of functions and intended use of water inside the facility, both for leisure and recreational uses and for medical/healthcare ones;

- capability of the industrial market to support the indispensable need to have high quality materials and maintenance products.

By adopting the principle that the spa is actually a healthcare facility and that the basic criterion must be to ensure the quality of hygiene & health prevention and the benefits of therapy - also from the psychophysical point of view - the ideal instrument to support the management of the facility is the “Self-monitoring Plan”.

Once all of the aforementioned knowledge are acquired, a “cautious principle” is adopted through the following points:

- Description of the facility from the architectural and functions point of view (layout, location, etc.)

- Description of the functioning of the various technological devices used (swimming pools, hot and chilled water distribution, electromechanical devices controls, electromedical devices, air conditioning and ventilation devices, lighting, shapes and materials for furniture and architecture, etc.)

- Analysis of risk of infections

- General maintenance plan

- Plan for cleaning, specific cleansing, disinfections and sanitization, for every environment, with related modalities of intervention

- List of materials, chemicals used and time schedule of intervention criteria

- Periodic verification of hygiene & health quality of environments and water

- Registration of non-compliance compared to available standards

- Definition of remedial actions to correct methods, materials and products in order to guarantee the compliance

- Professional roles of reference and their responsibilities

- Refresher courses plans

- Forms of communication and representation of the adopted quality system.

In this way the “Self-monitoring Plan” becomes not only the reference for the internal management of the facility, but also the reference for the controls, also providing the applicative instruments for ordinary management and for interventions in particular cases of emergency.

This means offering the customer - but also the staff - an additional form of quality to guarantee the prevention of health and goodness of the service.

The Self-monitoring Plan also represents the recorded history of the whole actions and interventions of maintenance (ordinary and extraordinary), providing a precious support for technical-economic analyses; with a good application this «register» becomes also the reference for management savings in economic and financial terms, with benefits for both Enterprise and Customers.

This method of work may seem useless and expensive. It is actually the most advanced «on-line» tool in the management of services related to Thermalism that allows management to constantly check both productivity and efficiency. It then determines an important economic advantage: in fact, it prevents management problems and especially maintenance issues. With proper application you can optimize and rationalize the interventions, planning the various activities and reducing the cost centers.

Finally, this tool allows you to constantly test the controls and verification of the Authorities concerned, which draw interest and value from this continuous traceability system. Its adoption can also be advertised as an irreplaceable quality factor. So at last it costs a little and it gives a lot! A success for Thermalism of innovation.

TREATMENT WITH RADON WATER AND MUD IN TSKHALTUBO RESORT

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In the report, it is briefly reviewed the origin and composition of the mineral waters of Tskhaltubo, the action of the water on the human body. In the report, attention is paid to the medical features of radon water and the diseases that are treated in Tskaltubo and on the treatment procedures which are used in the resort Tskaltubo.

SOCIAL THERMALISM IN BRAZILIAN PUBLIC HEALTH: PERCEPTION OF THE PUBLIC HEALTH SECRETARIES FROM MUNICIPALITIES WITH THERMAL WATER SOURCES

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Given the immense Brazilian potential, social thermalism are little explored practice as a factor for health promotion. In 2006, the National Policy on Integrative and Complementary Practices was created in Brazil, where the Social Thermalism was included as observatories in public health. However, there are still no results materialized in social thermalism in the country, which means that there is a need for more research, not only about the mineralogical characteristics of mineral-medicinal and thermal water sources, but also public management mechanisms for that thermalism is incorporated into the national health system as a structured practice and beneficial to the quality of community life. Within this scenario, the objective of this study was focused on identifying the perception of members of the Municipal Health Secretaries in ten municipalities, in Santa Catarina estate - south of Brazil, thermal source retainers. The present investigation was done in a qualitative and descriptive way by means of surveys recorded and later transcribed. This initiative was approved by the Ethics Committee of the State Secretariat of Health of Santa Catarina. In the ten cities, two managers in charge of primary health care and ten municipal health secretaries were interviewed about their level of knowledge about balneoterapy, the probability of developing the activity in their region and the possible challenges for implementing social thermalism as an local activity. The data obtained through the surveys were worked through the content analysis and the results were segregated into three categories: (1) General knowledge of managers and secretaries of health about social hydrotherapy; (2) potential for insertion / development of social thermalism in the local public health system; and (3) Difficulties in the implementation of social thermalism as a structured practice in the public health system.

With that, it was diagnosed that even if there is a lack of known about this practice, all the interviewees agree that the inclusion of thermalism in the structure of public health will be able to provide preventive and strengthening treatment to the quality of life of citizens.

However, the constant change of the Municipal Health Secretaries in the ten municipalities was identified as the main weakness for the continuous structuring and financial contribution of the state in the potential projects.

ABERRANT RESPONSES TO THERMAL STIMULUS OF FINGER VASCULATURE IN CONNECTIVE TISSUE DISEASE PATIENTS

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Background. In connective tissue diseases, peripheral blood flow disorder is frequent. It might develop both in limbs and in internal organs, sometimes resulting a severe outcome including pulmonary hypertension, pseudoileus and fingertip necrosis. When it develops in fingers, fingertip temperature is frequently dispersed aberrantly among fingers.

Objective. Response to cold thermal stimulus is evaluated by thermographic inspection.

Patients and Methods. The connective tissue disease patients with suspected peripheral perfusion disturbance underwent thermo-stimulus test. From before to 30 mins after hand Immersion in 10 °C water for 10 secs, nailfold temperature of each finger was sequentially measured by thermography. Temperature dispersion was evaluated by coefficient of variation (CV: standard deviation/average, right 5 fingers) . Sequential change of the temperature was classified into patterns, and in addition, numbers of patient with maximum temperature difference among fingers of over 2ºC were examined.

Results. Twenty-seven patients were included. CV was 0.030 at baseline, and increased to 0.057 5mins after finishing immersion. The sequential change of the temperature was roughly classified into 4 patterns: (1) near-normal, n=6, (2) delayed recovery, n=10, (3) persistently low, n=6, and (4) rebound, n=4. The numbers of patient with a 2ºC< temperature difference among fingers in each group were (1) 2, (33.3%), (2) 10 (90.9%), (3) 6 (100 %), and (4) 3 (75.0%).

Conclusion. In connective tissue diseases patients with a suspected peripheral perfusion disorder, temperature dispersion among fingers evaluated by CV were frequently observed. Sequential temperature change from before to after cold water hand immersion might be classified into 4 patterns. Temperature dispersion among fingers was frequent especially in association with aberrant temperature recovery.

Reference

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RESULTS OF THE RESEARCH OF "BAREZHIN" TYPE PELOIDS OF ADJARA REGION AND PROSPECTS OF THEIR USE IN BALNEOLOGICAL PRACTICE

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During studying the mineral waters widespread in Adjara region, it found out, that some mineral water is clean and transparent while running out on the surface, but it leaves lubricant mud at the place of coming out and when flowing into the pits. These types of peloids are successfully used in the balneological practice and are known in the literature by the names of the geographical locations, such as «Barezhin» – according to city of Barezhin in the Pyrenees mountains. In the available literature there is found no data on the research of «Barezhin» type peloids widespread in Adjara region with the purpose of their application in balneological practice.

The aim of our research was to study «Barezhin» type peloids of Adjara region with the purpose of their use in balneological practice.

The chemical compositions (micro- and macroelements) of 17 so called «Barezhin» type peloids located in Adjara region have been studied by using the modern instrumental methods of analysis.

It is noteworthy, that the studied peloids are saturated with micro- and macroelements. The results of X-Ray phase analysis have shown, that Kvirike and Chakhati peloids mainly represent rentgenoamorphous mass. The contents of the following minerals have been established in the objects: Ca-Na feldspar, K feldspar, Ca-montmorillonite, quartz (SiO2), hematite (Fe2O3), chlorite, magnetite, amphiboles, trace amounts of mica and chlorite.

The presence of bacteriophages have been stated in the water extracts of Chakhati and Kvirike peloids, which have the ability of the lyses of E. Coli and Staphylococcus strains.

Based on the pharmacological studies have been established, that the study objects (Chakhati and Kvirike peloids) are not characterized by general toxic, cumulative, local irritant, allergic, internal organs damaging and systemic actions during local administration.

At present, the instructions for use in the balneological practice have been processed on 2 kinds of «Barezhin» type peloids located in Adjara region.

THERMAE 4.0 AND REHABILITATION: A NEW BUSINESS OPORTUNITY FOR THERMAL COMPANIES

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In recent years we've seen everywhere, and especially in Italy, a crisis of the classical spa model. Especially in our country the thermal plants that have not been able to renew themselves have undergone a decline in the number of services provided and a lack of turnover for generations of visitors.

A possible strategy to solve this problem involves the reconversion of some departments in rehabilitation centers specialized in thermal water therapy.

This allows to combine the benefits of thermal water to the new protocols of medical gymnastics making the rehabilitation center unique.

Fisiokine proposes itself as a partner for the planning, realization and training for those entrepreneurs who want to undertake this path and will present a case report of the experience in progress at the Terme Stufe di Nerone in Naples.

APPLICATION OF APPLICATIONS OF MEDICAL MUD IN TAMBUKAN LAKE FOR RESTORATION OF ELITE SPORTASMENTS

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The aims of this work was to study the use of mud in the Tambukansky lake in the complex rehabilitation of elite athletes.

Materials and methods. The study involved 30 elite athletes (rugby, judo, boxing, athletics). For the rehabilitation of the musculoskeletal apparatus of the lower extremities of elite athletes during the intensive physical exertion, a mud applicator Tambukansky, was used. During the procedure, the athletes lay on the couch in a relaxed state for 15 minutes. At the course of the procedure, the procedures were performed daily, in total 7 procedures. To substantiate the effectiveness of mud application, methods were used: electroneuromyography (ENMG) and testing of the dynamometric characteristics of the musculoskeletal system in the robotic complex CON-TREX.

The results of the research show that after 1 session of Tambukan mud applications, elite athletes had a tendency to improve ENMG indices during stimulation at the «tarsus» point. There was a tendency to increase the amplitude of the M-response. The area of the M-response on the left leg increased significantly ($p<0.05$). With stimulation at the «caput fibulae» point, the motor speed on both legs significantly increased ($p<0.05$). With stimulation at the point "fossa popliteav", the amplitude and area of the M-response on the left leg and the speed of motor conduction on the right leg increased significantly ($p <0.05$).

The study of the effect of the application of the course of procedures showed significant improvements in the parameters of the M-response at all points of stimulation. At the point of stimulation "tarsus" the parameters of terminal and residual latency improved, the duration of the M-response. At the point of stimulation, the "caput fibulae" improved the indicator of terminal latency. At the point of stimulation, the popliteal fossa improved the parameters of terminal latency and duration.

Comparison of the performance of the muscles surrounding the right knee joint in highly qualified female athletes before and after applying the course of 7 sessions of Tambukan mud revealed a significant decrease in the fatigue factor of flexor and extensor muscles.

Conclusion. The use of mud in the Tambukanlake in the sport of higher achievements contributes to:

- enhancement of the functional capabilities of the neuromuscular and musculoskeletal system;
- urgent recovery of athletes (mud application immediately after an intense load on the neuromuscular apparatus);
- delayed recovery;
- prevention of fatigue injuries and injuries to athletes.

THERMAL MEDICINE IN GREECE

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The Hellenic Thermal Medicine Academy was founded in 2015 as a non-profit health organization dedicated to the development of thermal culture in Greece among professionals of medicine and consumers. The main purpose of the Academy includes representing and promoting world hydrotherapy, shared studies, research and experience in the sector, as well as new discoveries in Thermal Medicine and finally sponsoring high quality forums for education of medical professionals in the practice of thermal medicine. Thermal Medicine is a basic segment of Health Tourism and consists of a wide range of preventive, therapeutic and cosmetic applications using natural resources of seawater (thalassotherapy) for physical health, anti-aging and wellness for patients and non-patients in facilities called MediSpas (thermal centres under medical supervision). Academy's vision for MediSpas is to provide competence and experience for qualified treatment, prevention and rehabilitation in a clean and healthy environment.

Recently in Greece, the Complimentary Medicine was established by Hellenic Ministry of Health legislation and recognized as the main sector of health services since it combines medications with thermal springs compounds according to Hippocrates' spirit. We are working on the cross-border health procedures trying to be adopted to the European health network in order to have similar therapeutic certified protocols. We are also developing research programmes of the therapeutic elements efficacy in order to establish the Thermal Medicine as evidence-based medicine, aiming to work altogether in common programmes of preventive medicine and antiaging according to high level education and practice.

To sum up, Greece is a place devoted to enhancing overall well-being through a variety of professional services that encourages the renewal of mind, body and spirit, antiaging and prevention under medical supervision in the unique Hellenic climate.

THE REHABILITATION OF ACUTE LYMPHOBLASTIC LEUKEMIA PATIENTS WITH POST-TREATMENT NEUROPATHY IN A HEALTH RESORT

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Acute lymphoblastic leukemia (ALL) is the most common pediatric cancer worldwide. In modern treatment era it generally has relatively good prognosis with long-term survival about 90% in general patient cohort. The multicomponent intensive chemotherapy, which is a backbone of pediatric leukemia treatment, may lead to a whole spectrum of long-term adverse events. Vincri-stine polyneuropathy is associated with cumulative dose of the drug and usually develops after 2-3 injections. Therefore, after the standard treatment course is finished most patients have signs of neuropathy. As vincristine is able to cause axonopathy and gangliopathy mostly involving long axons innervating legs or, more rarely arms. Cranial nerves are the least likely to be involved. The clinical signs observed involve muscular weakness, lower tendon reflexes and peripheral palsy. More than one half of patients have gait impairment, in some cases leading to inability to walk unassisted. All these factors lead to significantly lower quality of life. As the pharmacotherapy of pediatric ALL treatment-associated polyneuropathy plays only a limited role, the main rehabilitation components are medical massage and hydrokinesitherapy. In some patients pain control measures must be used.

In 2017 a total of 38 ALL-type therapy pediatric recipients aged from 2 to 16 years were treated. All patients developed peripheral polyneuropathy, mostly moderate, during treatment. The rehabilitation in this patients' group included medical massage, hydrokinesi therapy and, if needed, analgesia. The medical massage of the limbs was conducted according to classical technique 3 times per week. The massage intensity was individual and depended on pain severity. The hydrokinesi therapy was conducted in 2 stages. The first one included exercise therapy in therapy tank. After 3 weeks of massage and hydrokinesi therapy the condition of most patients improved. After the pain resolved all further hydrokinesi therapy was performed in a swimming pool. When all the rehabilitation was complete, all 38 patients noted pain disappearance and gait improvement.

THERAPEUTIC BENEFITS OF THE MEDICAL HYDROLOGY IN THE DISEASE OF THE NERVOUS SYSTEM

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The XX century it filled from splendor to the medicine with the revitalización and the resurgence of the Centers Thermal calls also called spas and that significantly the systems of health have created the bases for the development of a highly beneficial medicine and of

very low cost, this way the Medical Hydrology with their waters mineromedicinales, the mire mineromedicinal, the climate, the seawater among other, acquires a considerable relevance again, everything added it to the importance that they are acquiring the preventive therapies and of promotion, with that which people don›t only go to the Thermal Centers to receive a very established rehabilitation program, and to recover of pathologies, but to prevent them and to be liberated of the physical and psychic load of with a lot of estrés, that generates the current life, being pointed out, therefore, as an important line in the public health of many countries in the current moments. Among their many very grateful results they are the affectations of the Nervous System so much Central as outlying as for example meningomielorradiculitis, epidemic poliomyelitis, meningoencefalitis, aracnoiditis, encephalitis, traumas of the spinal marrow and their membranes, radiculitis, polirradiculoneuritis, plexitis, neuritis, neuralgias and neurofibromiositis, parkinson in non-severe forms and anothers.

LIFESTYLE MEDICINE AND THERMAL MEDICINE

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In the 2013 the concept of Thermal Medicine was declared in the Congress of St Petersburg, introducing a new era that united the Balneotherapy and Education to improve the healthy life expectancy of the population.

Over the last decades society has increasingly become more aware of the impact of a healthy lifestyle in prevention. Individuals are starting to understand that a healthy lifestyle is not a selfish attitude but an altruistic one, as it reduces the future impact on your family and society.

The potential impact of Thermal Clinics in this field is huge. As Doctors, our mission is to inform and educate patients on how to design a healthy lifestyle. As Thermal Clinics, we have all the tools to create the biggest network of Health Schools, designing ongoing education programs with concentrated kick-off and follow up weeks.

Our goal should be to unite Balneotherapy with Lifestyle Medicine, a branch of evidence-based medicine in which integral lifestyle changes are used (including nutrition, physical activity, stress management, social support and environmental exposures) to prevent, treat and reverse the progression of chronic diseases by addressing their underlying causes. Lifestyle Medicine interventions include health risk assessments, advice on behavioral changes that affect health, and the clinical application of lifestyle modifications. Lifestyle medicine is an interdisciplinary field of internal medicine, psychosocial and neuroscience, public and environmental health, and biology.

The key principles of Lifestyle Medicine include prevention strategies that address lifestyle habits, underlying biological causes and the pathophysiologies common to Lifestyle Related Illnesses (eg, systemic inflammation, dysregulated stress disorder, metabolic dysfunction, etc.). As such, Lifestyle Medicine is an expanded form of treatment that helps unite the best aspects of public health and conventional clinical medicine.

We believe that Lifestyle Medicine is of great interest to Thermal Clinic patients and

therefore its educational programs should be introduced as part of the thermal.

This year the Spanish Society of Lifestyle Medicine was founded with the Spanish Society of Medical Hydrology as a founding member.

INNOVATIVE REHABILITATIVE CARE MODELS BASED ON A MULTIDISCIPLINARY APPROACH AND NEW TECHNOLOGY IN THERMAL SETTING

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The aim of this work is to measure the movement in water and to store the data for the patient follow-up. It is based on the added value generated by the association of biofeedback with water rehabilitation, thanks to the instrumental prototype known as Biofeedback Scuba Suit (BFSS) suitable for water motion analysis and proper data transmission to both the biofeedback system and the therapist. The BFSS prototype is a hybrid motion capture system, portable and waterproof, coupled with a software that can analyze and reproduce on a virtual platform the kinematic data of the anatomical segments of the subject that wears it, generating a visual biofeedback by capturing and transmitting the data from the patient in the water. The algorithm allows the measurement of relative and absolute angular positions as well as axial rotary movements of the different anatomic segments to which the sensors are applied. In this study, the prototype was tested and validated by analyzing and comparing the movements of the upper left arm of healthy volunteers; being a pilot study, it was considered sufficient to analyze the movement of a single limb to demonstrate its accuracy. The results of the validation tests described in the results section, first performed out-of-water and then in water, provided excellent results comparable with those obtained by the gold standard of kinematic measurement, represented by optokinetic systems. The potentials of BFSS for therapeutic purposes is vast: a) in aquatic rehabilitation; b) to improve the interaction with the patient and his motricity, as well as a basis for the continuous adaptation of the therapeutic program; c) allow to record, visualize and memorize the kinematic data during the aquatic rehabilitation.

RESULTS OF CHEMICAL AND PHARMACOLOGICAL RESEARCH OF SULPHIDE PELOIDS OF ADJARA REGION

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The use of natural healing factors for the treatment and prevention of various diseases represents the one of the actual tasks for modern medicine. The introduction of balneological methods of the treatment at the resorts as well as outside of them promotes the effective improvement of population's health.

In the world today, the demand for the preparations and cosmetics, made on peloids is increasing significantly, which is explained by the increased interest of the society to the ecologically clean raw materials of natural origin, they often replace expensive chemical preparations, which are frequently accompanied by some contraindications. The increased interest in peloids in the world put on the agenda the question of rational use of acting mud mines as well as the issue of cosmetic and medicinal preparations, developed on their basis. In the available literature there is found no data on the research of sulphide peloids of Adjara region with the purpose of their application in medical practice.

The aim of our research was to carry the chemical and pharmacological research of sulphide peloids of Adjara region with the purpose of their application in medical and pharmaceutical practices.

By using the physical-chemical and modern instrumental methods of analysis the chemical compositions of sulphide peloids have been studied, the contents of important balneological components have been stated in the study objects. The physical-chemical and technological characteristics of peloids have been determined. The content of bacteriophages in the study objectsd have been established by using the standard biological methods of analysis.

On the basis of the conducted studies the formula and technology of preparation of the hydrogel on Ardagani lake sulphide silt peloid have been developed, it`s anti-inflammatory activity has been established using formalin induced rat hind paw edema model.

The results of determination of the main good-quality characteristics of the given hydrogel provide the desired quality and efficiency of the product.

RESORTS - AS WELL AS RECREATIONAL AND HEALING TOURISM FACILITIES

MELKADZE E.

Manager of resort Tskaltubo JSC "Balneoservice" , Georgia

In the report, it is briefly rewieved the importance and role of health-care tourism in the process of improvement of people. It is also very briefly reviewed the origin of medicinal

and recreational resorts, and in particular their development in Europe. By bringing the appropriate numbers, it is briefly discussed the financial revenues from the healing and recreational tourism in EU28 budget. In short, modern trends of development of health-care resorts in Europe and former Soviet Union countries are discussed. The resort resources of Europe and other countries are also briefly described. Georgia›s resort potential and resort Tskhaltubo and its development perspectives are briefly discussed until 2030.

CREATION OF THE FIRST "HEALTH AND WELLNESS TOURISM CHAIR" IN LATIN AMERICA AND CARIBBEAN AND THE NEW INTERNATIONAL E-MAGAZINE "WELLNESS DESTINY"

MENÉNDEZ F.

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The FEMTEC further reinforces its important role of international professional training and updated information through its actions in Latin America and the Caribbean with the creation in Cuba of the first «Health and Wellness Tourism Chair» of the region and with the new Magazine International «Wellness Destiny" in collaboration with the company Solymed. Digital magazine edited by professional journalists, in English and Spanish, where the novel and updated disclosure has all the ingredients to mix action with pleasure and communicate spaces where beauty, health and quality of life are the hosts.

The Chair of Health and Wellness Tourism will be the only one of these characteristics existing in America and the Caribbean and is created with strong institutional and professional support with the aim of contributing to the study and development in these sectors with training and scientific programs and new methods of activities and new business innovation tools. Professionals with recognized international experience in Medical Hydrology, Health Tourism, Physical Medicine and Rehabilitation, Welfare, Economy, Organization and Management of services, Marketing and other related specialties will participate in the «Chair of Health and Wellness Tourism» fruit of an important scientific-technical collaboration between the Ministry of Public Health, the University of Medical Sciences of Havana, National Direction of Physical Medicine and Rehabilitation, the Cuban Society of Medical Hydrology and the FEMTEC. The scope of action of the Chair is international and includes teaching activities, research, occupational training, postgraduate studies, dissemination, business opportunities, business innovation, projection and promotion, international collaborations, new challenges and future perspectives related to these new segments of the generating market of various specialized alternatives, wealth, employment and that complements and enhances conventional tourism products. The updated and professional information through the digital magazine Wellness Destiny and the international training activities, propose the training of the sector at a regional level, from an area known for its uncontaminated beaches, nature, enviable climate, historical and cultural heritage, thermal waters, good health system and high professional level recognized worldwide, to consolidate as a reference in health tourism and quality wellness destination.

DEVELOPMENTAL FACTORS OF ROMANIAN BALNEARY RESORTS

MUNTEANU C., DOGARU G, MUNTEANU D., HOTETEU M.

Romanian Association of Balneology, Romania

Economic relevance of balneology and healthy-aging is easily noted in the context of the socio-economic development at national and global levels. Demographic imbalanced pyramids and strong growth of the population aged over 65years are a serious challenge for the humankind. Human ageing and longevity are complex and multi-factorial traits that results from a combination of environmental, genetic, epigenetic and stochastic factors, each contributing to the overall phenotype. Currently, health is understood as the removal of diseases in a defensive manner to the pathological process and with higher costs. Would be more effective the maintenance of health through prevention mechanisms identified by modern science. The study of the mechanisms by which various natural or health factors can, positively or negatively, influence the ageing process opens the path to design and obtain new products for the benefit of elderly people to maintain health for a long time and so to have socially active and positive role for others.

Healthy ageing should ideally start in childhood and take a lifelong perspective. Yet it is never too late to start. Investing in prevention can have important benefits for the individuals involved and has also societal benefits, since it is better to finance effective strategies to prevent diseases than to use the resources to cure them. Combining the balneotherapy with using products with healthy-ageing effect provides a significant advantage and represents the sustain ability of the strategies for healthy ageing.

Balneotherapy is acting by three main ways: thermally, mechanically and chemically. We suggest that the joint use perspective of natural therapeutic factors and physiotherapy with new robotic assistive interventions might increase the clinical importance of balneal resorts, and also include the modern trend of availing robotic assistive equipment to the benefit of patients. Applied aspect of the research seeks to maximize the economic exploitation of natural resources for health needs in a sustainable manner. In Balneal Resorts, traditional balneal rehabilitation interventions are now combined with robotic assisted possibilities, revealing a modern and advanced technological development of the medical/clinical units from the Balneal Resorts. This can improve, including medical address ability and increase health tourism in the respective resorts. The increasing interest in mechatronic/robotic technologies, for medical rehabilitation, changes the upper and lower limb neurological impairments therapeutic approach and introduces in the medical repertoire of methods, beside the current physiotherapists interventions, robotic-assisted medical interventions.

RECOVERY OF CHILDREN IN THE MOUNTAIN RESORT OF KAZAKHSTAN

MUSAEVA K.K.

Children›s Clinical Sanatorium "Alatau", Kazahkstan

Clinical sanatorium "Alatau" is the only children›s somatic sanatorium of the Republican level.

The basic profile - Bronchial asthma.

1. General description of the "Alatau" sanatorium: Territory, climate.
2. Educational work: Cultural events, learning English, children›s activities, games, city tour
3. Healing procedures: shungite therapy, Hydrotherapy, light therapy.
4. Efficiency of children›s health improvement.

COMPARISON OF SOCIAL THERMALISM IN HEALTH SYSTEMS

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Social Thermalism refers to access of balneotherapy in National Health System. Although Brazil has no great tradition in balneotherapy, Social Thermalism is proposed in the National Policy of Integrative and Complementary Practices in Brazilian in the Public Health System. However, it is necessary to establish guidelines, financing, training for the implementation of balneotherapy in Brazil. Therefore, it is necessary to understand the social thermalism in different health systems in order to elaborate a proposal for Brazilian health system. Objectives: To compare Social Thermalism in different European health systems, aiming a proposal of possibilities to enhance this practice in Brazil. Methodology: Official documents were studied from European countries that have Balneotherapy in public health system. The following aspectswere analyzed: Access / Coverage, Financing, Organization and provision of services, Essential medical products and technologies, Problems and current trends. Preliminary results indicated that there are different forms of access of balneotherapy in National Health System, for example, while in France there are no restrictions as to age, in Spain the IMSERSO (thermalism program) is aimed at those over 65 years of age. Also another difference is about therapeutic indication and duration of treatment: in Germany there is a mandatory prescription by specialist in resort therapy or spa doctor; in Spain the prescription is indicated by the doctor. Portugal: spa doctor, general practices or specialist. France and Italy there are a mandatory prescription by general practitioners or specialist.

Number of days of treatment: Germany: 18, Spain: 10 to 12 days; France: 18; Italy: 12 and Portugal 12 to 21 days. Financing: Portugal - after cutting off in 2011, Ministry of Health studies a proposal for reimbursement in 2018. France: Social security reimburses treatments since 1947; however occurred a freezing of the base of reimbursement for cares since 2013. Problems and current trends: health systems experience similar problems, such as tendency of not to cover certain treatments by health plan, freezing of financing, lack of investment in infrastructure, lack of research support. Also there are few health professionals specialized in this area. Therefore, it is necessary to stimulate training of health professionals in this area, investing in research that promote benefits of this modality, elaborating guidelines and financing for maintenance of health resorts and application of thermal practices. Preliminary considerations: This study aims to deepen comparison of balneotherapy in different National Health Systems, describing their approaches and distances, giving visibility to the problems faced in health systems and to identify future trends. This knowledge may facilitate discussions for growth of balneotherapy in public health policies in Brazil.

EVALUATION OF THE QUALITY OF MEDICAL SERVICES

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Text: Accreditation is an external evaluation of the medical organization for compliance with approved standards. It is a key mechanism of quality management system that provides assessment and uninterrupted improvement of medical care quality. The quality is reached by factors identification that affects defects emergence in medical care provision technological processes and recommendations elaboration to eliminate the revealed defects.

Control of Quality Management:

Effective management:

- Continuous provision of the organization with goods and services;
- Creation of a supportive (non-punitive) environment;
- Funding of quality processes;
- Motivation of employees;

Process management:

- Standardization of operating procedures;
- Development and approval of the diagnostic and treatment protocols;
- Monitoring of quality indicators;
- Monitoring of operating activities KPI;

Risks management:

- Openness and transparency in reporting of incidents (incident reports);
- The root cause investigation and analysis of incidents;
- Projects to improve the processes;
- Questionnaires and interviews with patients, managerial decision-making;
- Analysis of complaints;

- Questionnaires and interviewing of employees;

Management of personnel:

- Continuous training of personnel;
- Evaluation of efficiency of the staff at all levels;

Prevention of risks:

- Commission checks;
- Prevention efforts of possible hidden risks.

SUSTAINABLE HEALTH TOURISM: ISSUES AND CHALLENGES

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Tunisia has significant thermal water reserves around 1048 million m3 and very advantageous geothermal provisions that allow it to diversify its tourism products.

The strategic study of the thermal sector in Tunisia in 2020, has shown that the thermal potential not yet exploited is very important.

The south has a very high potential for hot water, it is the seat of several deep layers and the quantities not exploited are important.

The preservation of water resources is an essential element in ensuring the sustainability of the sector. The first major challenge facing Tunisia is to ensure that water never becomes a limiting factor for the economic and social development of present-day Tunisia and that of future generations.

In order to guarantee the development, protection and sustainable management of these resources, accompanying measures have been put in place in the thermal sector.

HEALTH RESORT TREATMENT OF METABOLIC SYNDROME IN THE REPUBLIC OF BELARUS

PALUYANAVA I.

The Republican Centre for Health Resort Treatment, Republic of Belarus

The last decades are characterized by a significant increase in cases of metabolic syndrome in the world and in the Republic of Belarus.

Metabolic syndrome is considered one of the most actual problems of medicine. Its medical and social importance is due to the fact that patients with metabolic syndrome about 4 times the frequency of life-threatening cardiovascular diseases and diabetes mellitus.

Experts of the World Health Organization define it as «the pandemic of the twenty-first century». This is due to the wide spread of metabolic syndrome - up to 30% or more in the population.

Currently, metabolic syndrome is defined as a symptom complex that combines insulin resistance, abdominal obesity, hyperglycemia, hypertriglyceridemia, dyslipoproteinemia, arterial hypertension, linked in a single pathogenetic chain. The main link in the pathogenesis of metabolic syndrome is the insulin resistance associated with visceral obesity.

Pharmacological treatments do not yet have effective drugs that can be used to solve the problem of metabolic syndrome in the complex. Most often are used drugs to reduce cholesterol in the blood, blood pressure, appetite suppression in order to reduce body weight. However, it is known that various natural and preformed physical factors such as mineral water, mud-therapy, diet, massages and physical activity, can have a real modifying effect on the processes of hormonal regulation of metabolism.

The purpose of our study is to identify the role of resort factors in the treatment of this disorder.

All patients with metabolic syndrome receive diet recommendations.

Patients are explained that the minimum physical activity of moderate intensity should be 30 minutes daily: walking, including Nordic, mechanotherapy, swimming, hydrokinesotherapy, skiing, cycling.

Mineral water is used in the form of mineral drinking therapy and as a balneological factor - for baths.

The program of complex treatment of patients with metabolic syndrome also includes acupuncture.

Mud therapy and mud-bath correct the parameters of carbohydrate, lipid metabolism, reduces the severity of clinical manifestations of the disease.

The complex program of health resort treatment of metabolic syndrome also includes one of the types of massage (manual massage; underwater shower-massage or pneumocompression therapy), physiotherapy, herbal medicine, swimming pool and saunas 2 times a week. All patients with metabolic syndrome attend psychological programs to change eating behavior and increase motivation.

Conclusion. As a result of the clinical study of patients with metabolic syndrome receiving individual complex programs of health resort treatment, there is a tendency to reduce body weight, reduce waist circumference, reduce cholesterol and normalize blood pressure. To preserve the result of treatment, the lifestyle must be combined with a rational diet, optimal physical activity and using the methods of increased motivation.

BALNEOTHERAPY FOR FUN: CHINESE TOURISTS IN HOT SPRING DESTINATION

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The history of China's Balneotherapy

As early as the records "the flowing hot spring, washes away the filth, drives away evil spirits, and returns to the right way" of Ode of Hot Spring by Zhang Heng in the Eastern Han Dynasty to the Commentary on the Waterways Classic by Li Daoyuan in the Northern Wei Dynasty, there have been 31 records of hot spring in China, among which Lushan Mountain Hot Spring and Taiyi Mountain (Zhongnan Mountain) Hot Spring have detailed description of curative effect. Because of the its health benefits, hot spring bathing went into the residence of the upper ruling class. Many hot spring areas became temporary residence of the royal family, while the public use of hot spring was rarely recorded in the official history. For example, the Tang Dynasty poet Bai Juyi wrote Everlasting Regret, saying that "granted shower in Huaqing Pool in cold spring, with slippery hot spring water washing her silky skin." Although the beauty effect of the hot spring was clear, what impressed the world was the political marriage of Imperial Concubine Yang. In the 14th century, the Mongols established a vast empire across Eurasia, and the Chinese and Western civilizations had an unprecedented intersection. Western balneotherapy has entered China for the first time. According to archaeological discovery, the remaining Yude Hall in The Palace Museum in Beijing was built in the Yuan Dynasty, built by Byzantine craftsmen at that time. Its architectural form was influenced by the Roman spa, which became the historical witness of the introduction of balneotherapy from the West into China. However, the sinicization of this only combination of Chinese and western balneotherapy was only used by the imperial palace of the Yuan Dynasty and it was not popularized in Chinese society after all. When the empire that unites Eurasia is gone, Yude Hall is forgotten gradually in the humble corner of Palace Museum.

Influenced by the revival of western balneotherapy in the 19th century, Chinese warlords and senior officials built a number of hot spring accommodations throughout the country during the Republican period, such as Tangshan in Nanjing, Tanggangzi in Liaoning and Conghua hot spring. Unlike in the west, balneotherapy in China attaches great importance to the theory of natural health and neglects the development of water quality, medical facilities and complementary therapies. For example, the Pearl River Nursing Home built in the Conghua hot spring in the Republican period was named as the place of heavenly medicine, with an inscription of "a disease cannot be cured by medicine, but only by heaven", which means to restore health through the efficacy of the natural environment.

From 1950s to 1970s, China began the construction trend of nursing homes. More than 1,500 nursing homes of all kinds were set up in the 1960s, many of which are hot spring sanatoriums. At this stage, Chinese hot spring sanatorium introduced relatively completed balneotherapy from the Soviet union and became an important part of the national medical system. However, as the institutional reform in the 1990s was gradually pushed forward, the state›s financial support for nursing homes gradually decreased, and a large number of nursing homes closed down due to the lack of patients. The development of balneotherapy

in China fell into a low ebb again.

Reform and opening-up in 1980s drived the redevelopment of hot spring tourist destinations in China. According to the China Hot Spring Association, there were 2,538 hot spring enterprises in China (excluding Hong Kong, Macao and Taiwan) as of 2017. In 2017, the total number of hot spring tourists reached 770 million, and the total revenue of national hot spring enterprises reached 242.83 billion yuan. China›s hot spring tourism has experienced rapid growth in the past 30 years. Many new hot spring projects include the hot spring pool, water park, restaurant and high-end hotel, and balneotherapy has been preserved in many hot spring projects. However, what do China›s vast tourist population think of balneotherapy, and what do they do with their consumption in modern hot springs, all of which are worthy of attention.

Method and data collection. From May to July 2017, the China Hot Spring Association selected 26 representative hot spring enterprises in Beijing, Chongqing, Guangdong Province, Shandong Province, Fujian Province, Jiangsu Province, Guangxi Province, Hunan Province, Liaoning Province, Hebei Province and Hubei Province, and distributed 2,600 questionnaires for tourists, and recovered 1,938 valid questionnaires, with an effective rate of 74.5%. The questionnaire surveys the basic personal information of tourists and the consumption behavior of visiting hot spring destinations.

Results. *Basic characteristics of visitors*

(1) 65.28% of the visitors are aged between 19 and 38.

According to the questionnaire results of hot spring tourists, among the age structure of tourists in China›s hot spring tourism market in 2017, young consumers aged 29 to 38 accounted for the largest proportion, reaching 34.21%; the proportion of consumers aged 19 to 28 was not far from the former, accounting for 31.07%; consumers aged 39 to 48 took the third place, accounting for 17.77% of the total; the proportion of middle-aged consumers aged 49 to 58 was far different from the former, accounting for 8.24%; the number of elderly consumers over 59 was less, only 3.30%; the proportion of young consumers under the age of 18 was the smallest, with only 1.96% (Figure 1). The change of age structure is not very big, and generally similar to the structure in recent years. The young and middle-aged are the main force of travel.

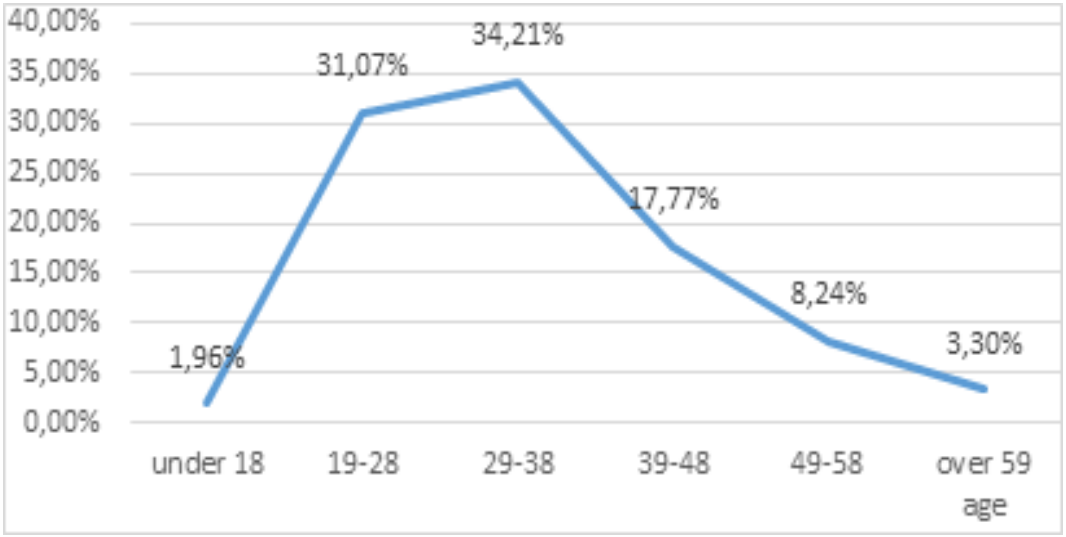

Figure 1 - Age structure of Chinese hot spring tourists

The main consumer group is families with children

According to the results of the visitor survey, in the Chinese hot spring tourism market in

2017, more than half of the total tourists were married with children, accounting for 59.94%; the proportion of unmarried consumers was lower than that of married consumers with children, which was 33.01%; the proportion of married consumers without children was the smallest, at 7.05% (Figure 2). It can be seen that most of the hot spring tourists are already economically independent and have established families with independent consumption capacity. Families in China tend to be small. In 2017, a family of three consisting of parents and one child accounted for the highest proportion of families, with 82% in urban areas and 55% in rural areas. Smaller Chinese families have better consumption ability. In addition, the implementation of the two-child policy in China also means that the consumption structure of hot spring tourism, which is mainly married with children, will still be the main trend in the future.

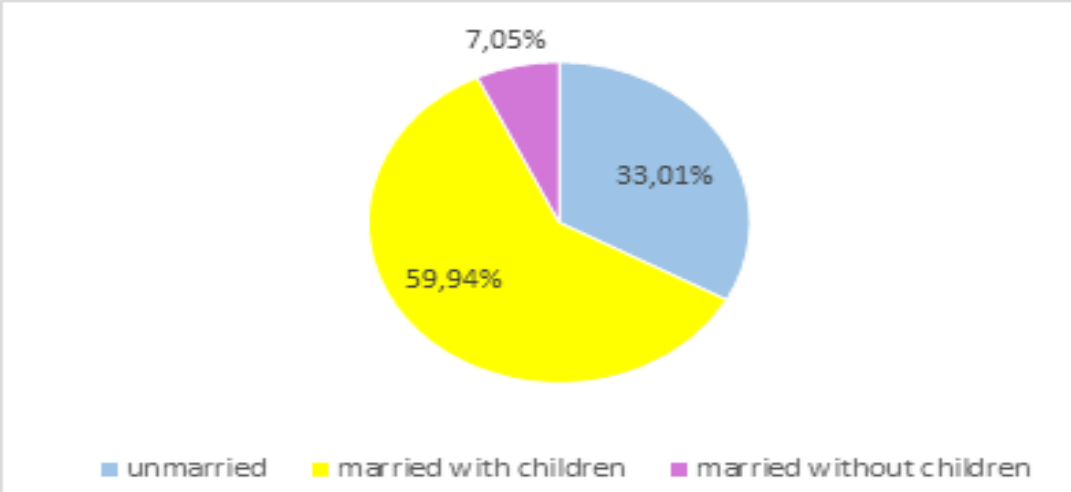

Figure 2 - Family structure of Chinese hot spring tourists

Behavior characteristics of hot spring tourists

Per capita hot spring bath number is up to 4 times/year.

According to the results of the questionnaire, the mainstream of the hot spring tourism market is tourists taking hot spring bath for more than 4 times a year, accounting for 32.82%; followed by the number of the first time visitors to hot springs, accounting for 20.23%; the third time visitors and the second time visitors account for 19.14% and 18.99% of the total number of visitors respectively; at the bottom of the list is the number of the fourth time visitors, with only 8.82% (Figure 3).

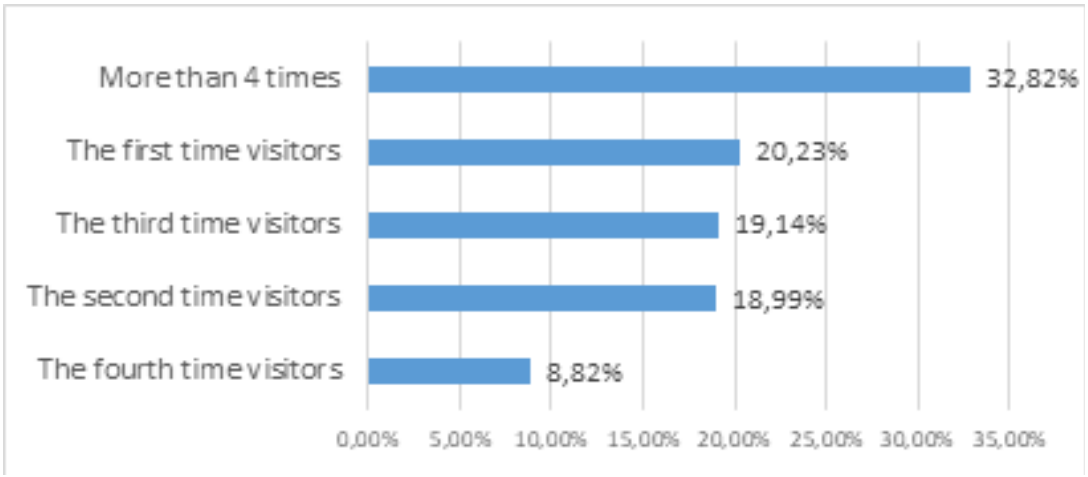

Figure 3 - Revisiting rates for Chinese hot spring visitors

This shows that the repeat tourists of Hot springs account for the overwhelming majority. The number of tourists with two or more bathing in hot spring accounts for 79.77% of the total

number of tourists surveyed, which indicates that China›s hot spring industry has a good market foundation, and the common people have gradually formed the consumption habit of hot spring entertainment and vacation. On the other hand, the market demand potential of initial tourists of hot spring tourism is not small. It is the next challenge and opportunity for hot spring enterprises to deeply explore and meet the market demand of these customers and make it a new central force.

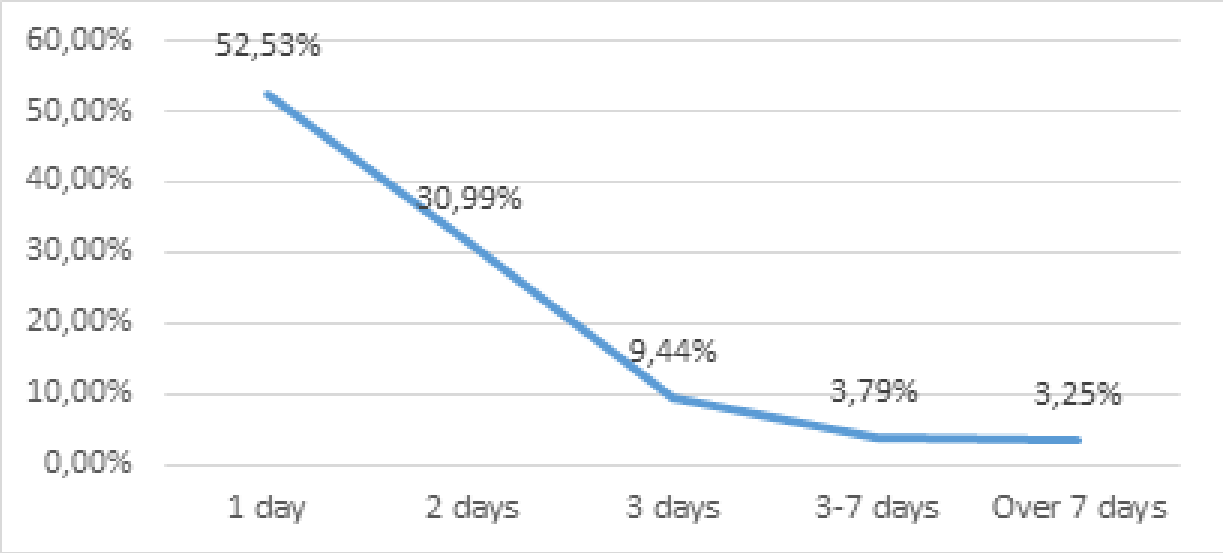

Figure 4 - Length of stay for Chinese hot spring tourists

The average cost of a hot spring tour is 677.43 yuan.

The average per capita consumption of hot spring bath for tourists is 677.43 yuan, with the highest per capita consumption of 20,000 yuan and the lowest of 42.86 yuan. The difference in per capita consumption level between different hot spring projects is large. 55.80% of hot spring tourists spend less than 677.43 yuan on average, while 44.20% of hot spring tourists spend more than 677.43 yuan on average. This indicates that the hot spring tourism market is increasingly differentiated, and some tourists have higher consumption capacity and higher requirements for the hot spring project facilities. Others will not spend more on hot springs.

Promoting health and relaxing are the main purposes of hot spring tourists.

According to the questionnaire results, tourists believe that the value of promoting health and relaxing in hot springs are the most important, with an important score of 4.63 and 4.6 respectively. Secondly, the tourists consider the security and privacy of the hot spring is also more important, with a score of 4.44. The value of experiencing traditional health preservation and getting close to nature are relatively important, with the scores of 4.38 and 4.37 respectively. The score of feeling family atmosphere and effective pain relief are 4.36 and 4.33, higher than the average score of importance level (Figure 5). It can be seen that relaxing the body and mind and promoting health are the main motives of most hot spring tourists, who believe that hot spring bathing is a way of recreation and health maintenance. Therefore, hot spring enterprises should pay attention to this consumer demand.

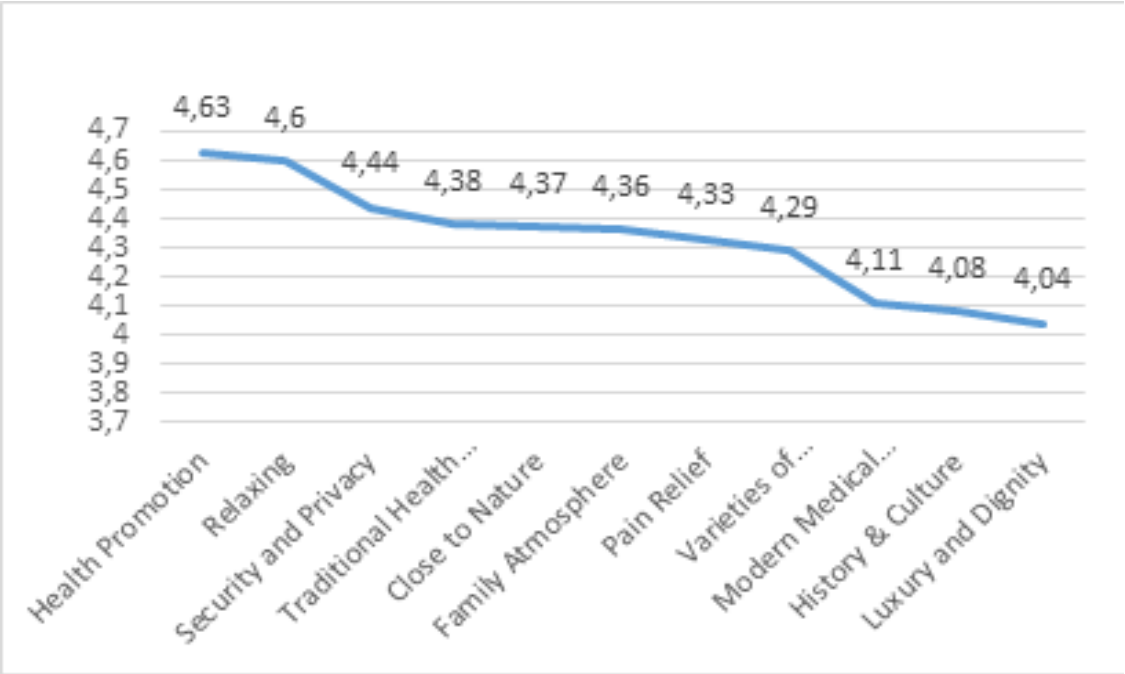

Figure 5 - The main purpose of Chinese tourists to visit hot springs

Visitors prefer related experience products of balneotherapy.

The results of the questionnaire show that tourists who prefer natural hot spring take up 25.57%. Secondly, the proportion of tourists who prefer to experience the medical hot spring pool (add materials such as traditional Chinese medicine, petal, tea, wine and milk, etc.) is 17.80%. The percentage of people who like hydrotherapy pool (such as strike, bubble, whirlpool, etc.) is similar to the percentage who like hot spring swimming pool, at 10.17% and 9.50%, respectively. The proportion of tourists who like hot spring slate bath is 5.59%. At the same time, some tourists express their love for SPA, accounting for 5.19% of the total number of tourists surveyed. Moreover, the hot spring mud mine and sand bath and the hot spring water park are also favored by a few tourists, the proportion is 4.82% and 3.40%, respectively. Other hot spring facilities, such as naked bath, the Dead Sea floating and hot spring museum, are less popular with tourists(Figure 6). Most Chinese tourists have a special preference for natural hot spring pools, and they have a high interest in experiencing the original nature of natural hot spring. Therefore, Chinese hot spring enterprises should show more characteristics of natural ecology in the design, so that tourists can experience more natural ecological elements in products.

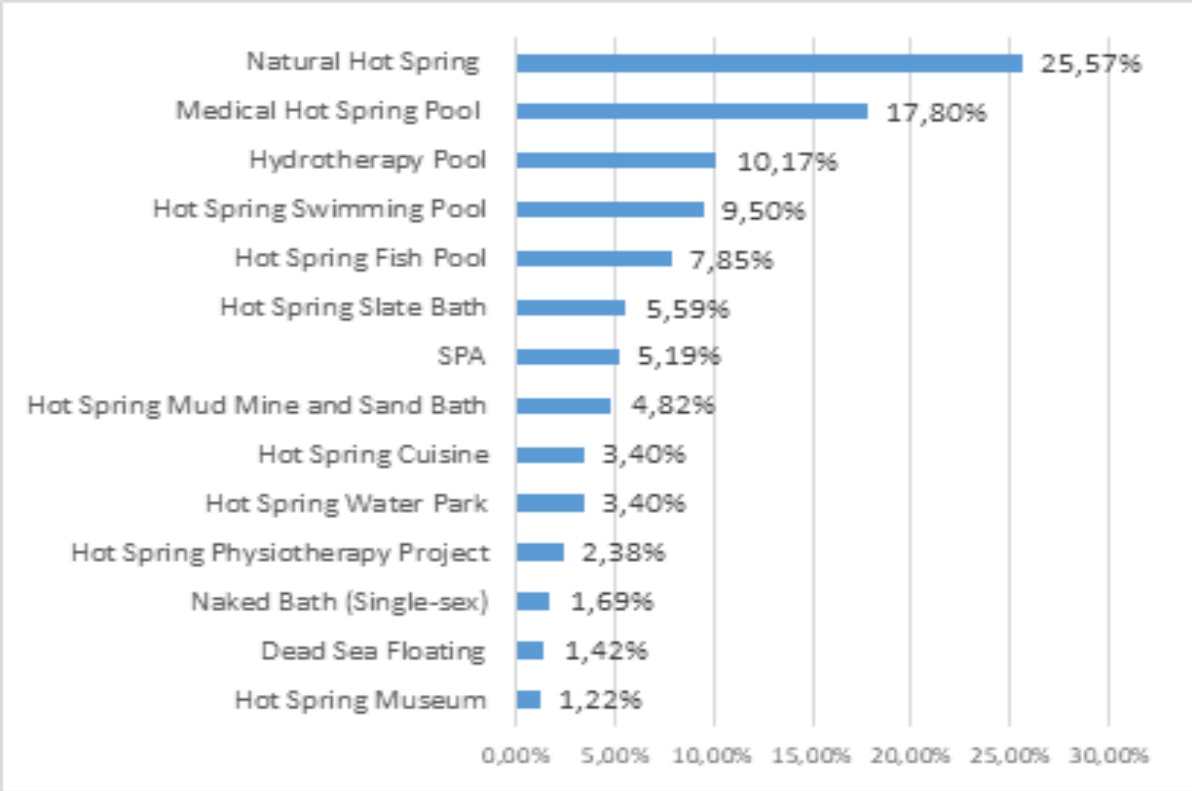

Figure 6 - The hot spring products that visitors enjoy most

Conclusion and discussion

China›s hot spring tourism has a large market size and has formed a relatively stable consumption pattern. Tourists› consumption of hot springs is fundamentally based on the demand for health and relaxation. Especially in the context of China›s increasing urbanization, young urban working group and affluent urban families are looking for places to spend their weekends for leisure and relaxation. Because many provinces in China have hot spring resources, it is a natural choice for urban people. However, Chinese hot spring tourists do not pay much attention to the medical effect of hot spring. They consume hot spring resources in the way of entertainment and relaxation. As a result, Chinese consumers will not stay in hot springs for too long, nor will they be able to truly recover in a short time. They only seek a short period of entertainment and leisure at the hot spring destination.

There are two main reasons for this result. First, China›s recent hot spring projects have been developed to attract tourism. Instead of inheriting the medical traditions such as balneotherapy in nursing homes in China since the 1950s, these programs are mainly aimed at attracting group tourists. As a result, many Chinese hot spring projects only regard the health effect of hot spring as a propaganda means, but do not actually develop the products of hot spring convalescence. Visitors cannot realize the medical benefits of balneotherapy at such hot spring destinations, nor do they have the opportunity to experience balneotherapy. Second, China›s health insurance system does not include balneotherapy, which leads visitors to pay for all balneotherapy themselves. This limits the development of balneotherapy in China and makes the operation of existing hot spring sanatorium facing great difficulties. Many of China›s hot-spring nursing homes have been forced to reform, gone bust or been privately purchased and turned into recreational hot spring events in the last 30 years. Therefore, if China›s medical insurance system cannot be reformed to absorb balneotherapy into its reimbursement program, China›s hot spring program will continue to focus on short-term tourists as the main source market, and medical projects such as balneotherapy will not have more attraction to Chinese tourists than leisure and entertainment programs.

NATURAL RESOURCES AS A FACTOR OF DEVELOPMENT OF NATIONAL RESORT CLUSTERS OF THE NORTH CAUCAUS

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Natural medical factors favourably differ in safety, availability, dosage simplicity, absence of by-effects and immunity to the action of disorder agents. More humane, social and scientifically progressive principles are the basis of sanatorium-and-health resort treatment: preventive and rehabilitation trend, succession between out-patient and diagnostic, hospital and sanatorium institutions, high specialization of the administered treatment. Sanatorium-and-health resort service of Russia has proved its medical and economic efficiency in the system of medical rehabilitation and health improvement of Russian people for decades.

There are more than 130 medicinal mineral springs are concentrated in this unique nook surrounded with a picturesque ring of Caucasian Mountains. There are 115 spa-hotels, equipped with the advanced equipment only of four cities in the Caucasian Mineral Waters region. Spa -hotels have many well qualified and highly experienced doctors and medical teams. They can offer health services in Wellness centres, natural thermal and mud baths. There are 2 medical institutes. At present Caucasian Mineral Waters region is a nationwide centre of balneology and sanatorium-resort treatment. Hydro-mineral springs, climatic conditions, sanatoria and boarding houses are some kind of a «supporting frame» of the tourist- recreational regional complex. The worked out infrastructure, available human resources and natural ecological conditions is a competitive condition, a factor of stable recreation functioning.

At the resort region of the North Caucasus complex monitoring (mineral springs -trace element composition, aerosol, trace gases NOx, CO, O3, CH4; periodically – heavy metals) is performed at two high levels (860 masl - a park zone of a large mountain resort, 2070 masl - alpine grassland, the net station). The results of the measurements are used in programs of bioclimatic, landscape and medical monitoring to specify the influence of aerosol on rehabilitation properties of the environment and human adaptative reserves. The natural aero ionization ∑(N+)+(N-) varied from 960 ion/cm3 to 1460 ion/cm3 in the resort park (860 m); from 1295 ion/cm3 to 4850 ion/cm3 on the Alpine meadow (2070 m); from 1128 ion/cm3 to 3420 ion/cm3 – on the tested site near the edge of the pinewood (1720 m). In the group of volunteers the trip from low-hill terrain zone (860 m) to the lower zone of highlands (2070 m) caused the activation of neuro and humoral regulation, vegetative and central parts of nervous system, psychoemotional status, normalization of frequency spectrum of brain activity and organism adaptation level.

Drinking mineral water treatment is used for medical rehabilitation diseases of the gastrointestinal tract, metabolism, excretory and cardiovascular system. Short-term metabolic reactions (single dose) and effects after the course of procedures (14-21 days) are distinguished in the structure of the biological effect of the MW.

COMPREHENSIVE REHABILITATION PROGRAM IN CUBA. MAIN RESULTS OF A DECADE

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Cuba is a country of eleven million people, with, free and accessible to 100% of the Cuban national health care system. There are three levels of care comprehensive rehabilitation program being present in the same, well-defined for each service level and 613 total goals.

Rehabilitation services are comprised of various medical specialties that are responsible for health promotion, prevention of disability and motor, psychosocial and work partner of the individual rehabilitation and family in the different age groups, there subprograms home and community rehabilitation. Today we prepare to face the great challenge of our aging population and improve the quality of life of Cubans.

This work allows to present the main results of this program in the last decade, for which a retrospective exploratory study of data collected by the National Statistical System in the period from 2007 to 2017, which allowed us to evaluate was made, some aspects of the operation of rehabilitation services and its impact on the health picture of the Cuban population. We conclude that this program has successfully responded to in a decade an average of more than 9 million patient days, with high quality and satisfaction.

THE CAPABILITIES OF THE RESORT TOWN OF ANAPA IN THE HEALTH IMPROVEMENT OF THE RUSSIAN PEOPLE ON THE EXAMPLE OF SANATORIUM-RESORT COMPLEX “DILUCH”

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JSC «DiLUCH» - Sanatorium-Resort Complex, the Resort Town of Anapa, Russia

There is being realized the concept of development of sanatorium and resort complexes for the period until 2030 in the Krasnodar Krai, where therapeutic tourism is considered as an essential component of an innovative development, goals, tasks, principles and directions of state policy in the field of sanatorium treatment are defined. In economic terms, Anapa is one of the most developed regions of the Krasnodar Krai. According to an informal survey of more than 250 thousand people, Anapa became one of the three most popular resorts in Russia and won first place in the rating of «10 Best Russian Cities» in 2017. The resort town of Anapa is the only children›s recreational zone in Russia. Anapa combines all natural and climatic (Mediterranean type of climate - maritime, mountain and steppe climatic zones) and balneological factors (sea, sun, air, mineral waters) with an attractive municipality and

service sector, what allows to take tourists on all disease profiles. There are 6 mineral water deposits, more than 5 million tons of liman sulpharated hydrogen therapeutic muds in the territory of Anapa. Every year about 3.7 million tourists go on vacation in Anapa, which is 21.3% of vacationers in the Krasnodar Krai. The length of the beaches is 19.8 km. There is the bright sun 280 days a year in Anapa. Sanatorium and resort complex DiLUCH is the largest diversified medical institution in Anapa, where 16-18 thousand adults and 2 thousand children from the age of two receive treatment on a year-round basis, 55-65 thousand people from all regions of Russia - individual procedures and consultations. DiLUCH uses all the natural resources of Anapa in medical, rehabilitation and preventive directions in combination with the professional application of all known prefomed physio-therapeutic methods. The laboratory-diagnostic center allows to conduct more than 400 types of examinations, consultations of doctors in 36 specialties. DiLUCH provides comfortable living conditions in 6 buildings, diet food, cultural and entertainment programs, medical support. DiLUCH has its own healing beach, pump room. The resort uses specialized programs due to the disease profile and shortened health courses. The result of treatment is a state improvement in 98,7% of cases.

TERMAE 4.0. NEW BUT OLD ALGORITHMS FOR THERMAL MEDICINE IN BALNEAL AND REHABILITATION SANATORIUM TECHIRGHIOL

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Balneal and Rehabilitation Sanatorium of Techirghiol Ovidius University, Faculty of Medicine, Romania

Aim to present the Romanian approach of rehabilitation as holistic and integrative medicine.

Materials and methods – legislation, regulation for health, health education and environment.

Results. What is new, what is old in balneotherapy? Everything's new but old in the same time. We are now on the eve of the fourth industrial revolution (4.0) and modern medicine including thermal medicine fully benefits of the scientific and technological progress. Balneotherapy continuously shows its value and therapeutic virtues in the context of modern life. What do expect society from medicine and what can offer balneal/thermal medicine. Keeping health and preventing illnesses is the golden dream of medicine and to accomplish it nowadays means multidisciplinary cooperation within the frame of research, education and legislation.

In Romania balneotherapy represents the heart and the hub for physical medicine and rehabilitation because what else could be balneotherapy if not a hydro-thermo-therapy with thermo / mineral waters used in rehabilitation? Historically, in thermal resorts, around the balneotherapy, have added (in a natural way) the scientific acquisitions from physical medicine (electromedicine, phototherapy, and physiotherapy), have bloomed, flourished and developed alternative and/or complementary therapies such as acupuncture, homeopathy, herbal medicine, and geriatrics just because they gain therapeutic potential from each other.

The main characteristics of Romanian balneotherapy are:

- unity between balneotherapy, physical medicine and rehabilitation;

- the coherence of education, training and practice of specialist medical doctors and therapists;

- holistic and integrative approach.

We strengthen cooperation and collaboration with specialists in various fields by emphasizing that balneotherapy is part of the European common heritage and that it is up to us, the balneologists, neurologists, cardiologists, rheumatologists, physicists, biochemists, geologist, etc, to keep and to transmit to young people the heritage of knowledge on the sanogenic virtues of natural therapeutic factors.

Conclusion. In Romania, the practice of balneal medicine has been continuously enriched, following the European direction.

Today, balneotherapy is part of physical medicine and rehabilitation, in accordance with European regulations/requirements. The teaching is coherent, the professionals of the field study the same disciplines with the adequate content at the level of their diploma.

HISTORICAL MEDICAL RELATIONS OF ITALY-GEORGIA

SURMANIDZE R.

Ajara Doctors United Scientific Community, Georgia

Italy-Georgia friendly relations begins from the first years of the new nation, which has gone beyond our travels and naturalists, and has acquired scientific, socio-economic literature.

Unique assistance from Italian scientists is special in the study of the Georgian coastal area, the recovery and health of the resort. Italy-Georgia›s medical relations are now on a new stage, leading to rich climatic-balneological resources, scientific research and exploration, which has a great perspective and greatly contributes to the rapprochement of the two countries.

THE IMPORTANCE OF TERRITORIALITY IN THE PLACE BRANDING PROCESS

TSARTSARA S.I.

South East Europe Long Term Care

The years of economic crisis and administrative reform have caused sharp reduction of social care costs towards local authorities which has limited their developmental capabilities and, on the other hand, social benefits.

The study focuses on Care provision for a population over 60 as an example, but the model is applied in all areas of Health Tourism development and provision from Municipalities which own such resources.

The process of economic adjustment of 11 out of 18 countries of the Eurozone has limited the means of municipalities, increasing their income. The research question is how to produce a design model for Local Authorities with an inverse availability of resources and budget to the growing needs of elderly care in a context of population cohesiveness and aging - especially in remote, rural, coastal, mountain and border regions where accessibility is an issue for the population.

Health Tourism resource-based development at the local level highlights the added value of territory through the territoriality process and makes the region›s resources the center of the branding strategy of their site. A methodology will be presented that demonstrates that territoriality brings real income for the local areas with resource based development, branding and marketing of the site and investment planning. An innovative environment must come from a territorial entity (Aydalot, 1986).

After that, the innovative organizational and territorial structure leads to a learning dynamic. In other words, it is the creation of an ecosystem in a territory where its stakeholders, in a coordinated way, will manage sustainable sector development of heatlh tourism, specially in areas where the primary resource is Thermalism springs, muds, waters etc to shape a very particular Product in that sense.

CHEMICAL AND PHARMACO-TECHNOLOGICAL EVALUATION OF ADJARA REGION PEAT PELOIDS

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“Peloids” is an internationally recognized name of all kind medical muds. They are natural mixture of inorganic and organic materials and performs homogenous, finely dispersed mass with definite physical and chemical properties

The effectiveness of peloids is due to high content of biologically active substances. High content of organic substances in peloids, such as chemically and biologically active organic carbon compounds formed by long-term chemical and microbiological processes, provides their application prospects in clinical practice.

The objective of the research was evaluation chemical and pharmaco-technological properties of Adjara region Peat Peloids.

The following tasks were to be solved to achieve the goal: Study chemical properties of Adjara region Peat Peloids; Determination spectrum of organic and inorganic substances; Formulation of nanocomposite containing sphagnum peat peloids; Formulation composition and development preparation technology of topical dosage form, plaster, containing nanocomposite of sphagnum peat peloids; Study anti-inflammatory and antibacterial activity of peat peloids;

The materilas of the research: sphagnum peat peloids of different ages (Ispani, Anaklia, Chirukhi, Peranga, Churia). Research strategy was to held experiments gradually from simple to complicated.

Technological and biologic methods were used to solve research tasks. Research was held using modern instrumental methods of analysis&apparatus (UV spectrophotometer, Scanning Electron Microscopy, X ray fluorescence, Centrifuge, Dry oven, Ultraturax, AFM, XRD).

It is estimated that Kolkheti sphagnum peat peloids contain a wide range of organic substances: humic acids, amino acids, fatty acids, carbohydrates and others.

As a result of the research composition, design and preparation technology of plaster containing nanoconstructed system of sphagnum peat peloids is determined. Based on the research data Isapani sphagnum peat peloids and formulated dosage form (plaster) obtained anti-inflammatory action. Based on serial dilution (macro) method antibacterial activity of high concentration (1:1) sphagnum peat peloids (Ispani) was established.

FOLK HEALER – PLATON

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Batumi Shota Rustaveli State University, Georgia

Platon Gigineishvili is among those few doctors who played great part in healthcare of Adjarian population at the beginning of 20th century, and throughout his life, he had a sacred name of the healer.

Within the period of 1922-1942 Platon Gigineishvili was the head of Therapy Department at the Republican Hospital, at the same time he was also performing as the principal of Tuberculosis, Childcare and Infection departments.

Platon was a member of the self-government of Batumi in 1902-1910. He actively participated in the process of drying out the bogs; fought against Malaria and Typhoid. Along with other doctors, Platon Gigineishvili is considered to be one of the founders of the outpatient services for Adjara population. He actively participated in sanitation - educational activities. He was conducting popular lectures.

Platon Gigineishvili played a big role in the development of Adjarian resort business. The first data on the balneological significance of the Black Sea region of Adjara appeared after a year from regaining independence from the Ottomans, but nobody paid attention to this case. He actively participated in sanitation - educational activities. He was conducting popular lectures.

The Society of Adjarian Doctors, led by Platon Gigineishvili, played a great role in the development of medicine in the region. Scientific units of different fields created within the society for accomplishing various tasks are still interesting and exemplary.

Particular attention of the society was paid to the study of climate and balneological conditions of Adjara, mountainous region, development of resorts, geography of the area, study of flora, fauna, climatology and their medicinal effects.

The doctor's contribution was appreciated and Platon Gigineishvili was one of the first who was granted the status of Honorary Doctor of the Georgian SSR in 1941 and in 1946, he was awarded as Honorary Doctor of Adjara.

BINH CHAU HOT SPRING BECOMES THE FIRST VIETNAMESE MEMBER OF FEMTEC

VU LINH

Binh Chau Hot Spring, Vietnam

Binh Chau Hot Spring in Vietnam is the first Vietnamese member to join FEMTEC in 2018.

Binh Chau Hot Spring is the only hot spring source available in the southern part of Vietnam, located approximately 125km away from Ho Chi Minh City. The hot spring was found in early 20th century by a French scientist and the Saigon Binh Chau Corporation has been developing the hot spring to the public for more than a decade now.

In 2017, the number of visitors reached over 300,000 per year and in light with the increasing demand for wellness tourim, the corporation decided to substantially invest in a new development plan. Binh Chau Hot Spring aims to offer to its visitors a holistic experience of hydrotherapy within a preserved environment. The new Binh Chau Hot Spring will highlight its fantastic location between the sea and the forest and create a full range of activities around the hot spring and nature in general. Such activities will include a hot spring theme park, an ecological park (bamboo reserve, botanical garden...) and a 4-star international hotel.

As far as hydrotherapy treatments are concerned, Binh Chau Hot Spring will provide both traditional and modern medicine. While the hot spring theme park will largely take its inspiration from the Japanese onsen, the treatments provided to the visitors will include a wide range of thalassotherapy techniques often used in Western countries and also traditional Vietnamese techniques (cupping, acupuncture...) that are well known among the Vietnamese public.

Thanks to this unique positioning, Binh Chau Hot Spring aims at promoting the vertues of the hot spring and hydrotherapy to domestic and international visitors and consequently to become a major tourism attraction in the province of Ba Ria Vung Tau.

In conclusion, it is a great honor and a high responsibility for Binh Chau Hot Spring to represent Vietnam and showcase our savoir faire to the world but we are deeply convinced of our mission and will devote all our best efforts in promoting FEMTEC and the benefits of hydrotherapy worldwide.

----------ИНФОРМАЦИЯ----------

Национальный центр детской реабилитации Корпоративного Фонда «University Medical Center» оказывает образовательные услуги по организации циклов повышения квалификации и переподготовки, семинаров, стажировок на рабочем месте для врачей и средних медицинских работников, педагогических кадров на платной основе как на своей базе, так и с выездом в другие организации.

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Образовательные мероприятия, проводимые на базе Национального центра детской реабилитации КФ «University Medical Center»

Наименование услуги	Количество часов	Предполагаемые периоды проведения	Контингент слушателей
Переподготовка «Медицинскаяреабилитология (взрослая, детская)»	864	февраль – май, август-ноябрь	Специалисты с высшим медицинским образованием по специальности «Общая медицина», «Педиатрия», «Лечебное дело», «Восточная медицина» и интернатурой
Переподготовка «Неврология (функциональная диагностика по профилю основной специальности) (детская)»	864	февраль – май, август-ноябрь	Специалисты с высшим медицинским образованием по специальности «Общая медицина», «Педиатрия», «Лечебное дело», «Восточная медицина» и интернатурой
Переподготовка с участием российских специалистов с выдачей соответствующего документа РФ по специальности «Дефектология»	650	сентябрь-июль	Специалисты с высшим образованием, со средним специальным медицинским или педагогическим образованием
Переподготовка с участием российских специалистов с выдачей соответствующего документа РФ по специальности «Логопедия»	780	декабрь-июнь	Специалисты с высшим образованием
Повышение квалификации «Актуальные вопросы медицинской реабилитации»	108/216	по мере набора групп	Врачи реабилитологи, неврологи
Повышение квалификации «Актуальные вопросы неврологии, в том числе детской»	108/216	по мере набора групп	Врачи неврологи, реабилитологи, врачи общей практики
Повышение квалификации «Актуальные вопросы физиотерапии в реабилитации»	108/216	по мере набора групп	Врачи реабилитологи, неврологи
Повышение квалификации «Головные боли в практике врачей общей практики»	54	по мере набора групп	Неврологи, врачи общей практики
Повышение квалификации «Внедрение новых методик лечебной физической культуры в реабилитации (Войта-терапия, Бобат-терапия, PNF-терапия, гидрокинезотерапия)»	108	по мере набора групп	Специалисты с высшим и со средним медицинским образованием, работающие в сфере реабилитации

Повышение квалификации «Лечебная физическая культура(ЛФК,Войта-терапия, Бобат-терапия, PNF-терапия, гидрокинезотерапия»	108/216	по мере набора групп	Специалисты со средним медицинским образованием, работающие в сфере реабилитации
Повышение квалификации «Специализированная медицинская сестра реабилитации»	108	по мере набора групп	Специалисты со средним медицинским образованием, работающие в сфере реабилитации
Повышение квалификации «Общие сестринские технологии»	108	по мере набора групп	Специалисты со средним медицинским образованием, работающие в сфере реабилитации
Повышение квалификации «Актуальные вопросы сестринского уходу за детьми с неврологическими заболеваниями»	108	по мере набора групп	Специалисты со средним медицинским образованием, работающие в сфере реабилитации
Повышение квалификации «Актуальные вопросы ЛФК»	54/108/216	по мере набора групп	Специалисты с высшим и со средним медицинским образованием, работающие в сфере реабилитации
Повышение квалификации «Гидрокинезиотерапия»	54	по мере набора групп	Специалисты со средним медицинским образованием, работающие в сфере реабилитации
Повышение квалификации «Эрготерапия»	54	по мере набора групп	Педагогические и средние медицинские работники, работающие в сфере реабилитации
Повышение квалификации «Логопедический массаж»	36	по мере набора групп	Специалисты с высшим педагогическим образованием
Повышение квалификации «Нейропсихологическая диагностика»	54	по мере набора групп	Специалисты с высшим педагогическим образованием
Повышение квалификации «Инновационные методы коррекционной педагогической реабилитации (МДК и организаций образования, детские сады)»	54	по мере набора групп	Специалисты с высшим педагогическим образованием
Повышение квалификации «Организация инклюзивного образования в условиях образовательных учреждений (Клиника, диагностика, формы и методы работы с детьми с ограниченными возможностями)»	72	по мере набора групп	Специалисты с высшим педагогическим образованием
Повышение квалификации «Инновационные формы и методы коррекционной работы с детьми с РАС (расстройства аутистического спектра)»	108	по мере набора групп	Специалисты с высшим педагогическим образованием

Переподготовка «Монтессори-педагогика для детей от 8 мес до 6 лет»	256	по мере набора групп	Специалисты с высшим педагогическим образованием
Повышение квалификации «Коррекция и социализация тяжело больных детей»	54	по мере набора групп	Специалисты с высшим педагогическим образованием, социальные работники
Повышение квалификации «Менеджмент качества и безопасности пациентов по национальной аккредитации и международного опыта JCI»	54	по мере набора групп	Специалисты с высшим медицинским образованием
Повышение квалификации «Актуальные вопросы менеджмента в здравоохранении»	54	по мере набора групп	Специалисты с высшим медицинским образованием
Стажировка на рабочем месте	40	в течение года	Специалисты с высшим медицинским, педагогическим и со средним медицинским образованием

Мазмұны

Содержание

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