UNICON Limited

Consulting Services to Draft a Business Plan for the Rehabilitation and Long Term Health Service Development

FINAL REPORT

November 2013
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<th>Full Form</th>
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<tbody>
<tr>
<td>ADL</td>
<td>Activities of Daily Living</td>
</tr>
<tr>
<td>CCC</td>
<td>Chronic Care Centres</td>
</tr>
<tr>
<td>CNAM</td>
<td>National Health Insurance Company</td>
</tr>
<tr>
<td>DR</td>
<td>Discount Rate</td>
</tr>
<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
</tr>
<tr>
<td>GEM</td>
<td>Geriatric Evaluation and Management</td>
</tr>
<tr>
<td>HSSAP</td>
<td>Health Services and Social Assistance Project</td>
</tr>
<tr>
<td>IRR</td>
<td>Internal Rate of Return</td>
</tr>
<tr>
<td>LTC</td>
<td>Long Term Care</td>
</tr>
<tr>
<td>MoH</td>
<td>Ministry of Health of the Republic of Moldova</td>
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<tr>
<td>MoLSPF</td>
<td>Ministry of Labour, Social Protection and Family of the Republic of Moldova</td>
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<td>NLSRC</td>
<td>National Level Specialised Rehabilitation Centre</td>
</tr>
<tr>
<td>NHS</td>
<td>National Health Service (UK)</td>
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<tr>
<td>NPV</td>
<td>Net Present Value</td>
</tr>
<tr>
<td>OECD</td>
<td>Organisation of Economic Cooperation and Development</td>
</tr>
<tr>
<td>PAHO</td>
<td>Pan American Health Organisation</td>
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<tr>
<td>PC</td>
<td>Palliative Care</td>
</tr>
<tr>
<td>PCCN</td>
<td>Patients with Chronic Care Needs</td>
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<tr>
<td>PHC</td>
<td>Primary Health Care</td>
</tr>
<tr>
<td>PHCRN</td>
<td>Patients with Highly Complex Rehabilitation Needs</td>
</tr>
<tr>
<td>PPP</td>
<td>Public-Private Partnership</td>
</tr>
<tr>
<td>PRM</td>
<td>Physical and Rehabilitation Medicine</td>
</tr>
<tr>
<td>PTSD</td>
<td>Post-Traumatic Stress Syndrome</td>
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<tr>
<td>RLSRU</td>
<td>Regional Level Specialised Rehabilitation Unit</td>
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<tr>
<td>RLTC</td>
<td>Rehabilitation and Long Term Care</td>
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<tr>
<td>SPV</td>
<td>Special Purpose Vehicle</td>
</tr>
<tr>
<td>TBI</td>
<td>Traumatic Brain Injury</td>
</tr>
<tr>
<td>UEMS</td>
<td>European Union of Medical Specialities</td>
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<tr>
<td>VFM</td>
<td>Value for Money</td>
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<td>WHO</td>
<td>World Health Organisation</td>
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Executive Summary

The Final Report of the consulting assignment to provide technical assistance “to draft a Business plan for the rehabilitation and long term health service development” addresses the issues remaining for design and implementation of the new Rehabilitation and Long Term Care (RLTC) service model for the Republic of Moldova.

Following the introductory chapter, the Chapter 2: Functional and Space Planning for RLTC Services of the report provides detailed recommendations on functional and space planning for facilities representing the three levels of RLTC services proposed in the Intermediary Report: (a) National level specialised rehabilitation centre (level 3) to be located in Chisinau; (b) Inter-rayon (Regional) level specialised rehabilitation centre (level 2) in Edinet; and (c) General rehabilitation centres (level 1) in Briceni, Donduzeni and Ocnita. The functional and space planning recommendations presented in this section served as a basis for estimation of required capital investments and financial analysis of PPP options for the RLTC Model and are intended to be a starting point for the detailed architectural and engineering and capital investment planning to be performed at the implementation stage of the Regionalization Strategy. These recommendations do not supersede architectural and engineering planning responsibilities to develop a complete and accurate designs for specific RLTC facilities in future.

This is followed by the Chapter 3: Financial analysis of the RLTC Model implementation presents financial analysis for the investment required for the RLTC Model implementation in the Pilot Rayons and nationwide. For consistency in technical assistance streams, UNICON took into account the methodology used and actual projections provided by the Sanigest International for the financial analysis and public investment evaluation of the Regionalisation Strategy implementation (including Public Private Partnership (PPP) opportunities) in the Republic of Moldova. The cost benefit analysis results for the Pilot Rayons (PR) show that while extra investments are required for (a) 24 bed level 2 rehabilitation unit in Edinet and (b) higher (than Sanigest Estimates) standard refurbishment and equipping of level 1 rehabilitation, LTC and PC beds in the three rayons, adding this additional investment at estimated 7.4 million Euros and extra annual operational expenses at 238 thousand Euros only moderately changes the public investment outlook projected by Sanigest. For the national roll-out, the negative Net Present Value of the proposed capital investments in the Regionalisation Strategy estimated by Sanigest is increased by 116,6 million Euros when net savings from the RLTC Model implementation are added. The net savings continue to be negative when it is spread out over 10 years, but is reduced to a third of the first estimate, approximately 160 million Euros. The public investment outlook changes favourably in case of the private sector engagement in co-financing of up to 50% of the investments in acute care inter-rayon hospitals and up to 70% of investment in tertiary level rehabilitation centre as part of a Private Public Partnerships.

Chapter 4: Private Public Partnership Opportunities for the RLTC Service Model argues that implementation of the new RLTC Model in the Republic of Moldova will require significant investments in infrastructure, equipment, human resources and technologies. As evidenced from the financial projections presented in previous section, only capital investments in infrastructure and equipment are estimated at more than 135 million Euros for the nationwide RLTC network. In the conditions when the annual total capital public expenditures in health does not exceed 5 million Euros, mobilisation of the public investment of this size in the medium term will be difficult and would require exploring an alternative options, including the PPP model. The international experience, including case studies and the national experience in health sector PPPs are discussed and analysed and key lessons for consideration in feasibility assessment for the proposed RLTC PPP opportunities.
The pre-feasibility assessment of RLTC PPP opportunities are presented in the Chapter 5: Feasibility assessment of PPP Opportunities. These opportunities were identified as a result of (a) the technical and financial analysis of various scenarios for the Regionalisation Strategy and the new RLTC model presented in the Intermediary Report & the section 4 of this report and (b) the discussions held with the key stakeholders, including senior management of the Ministry of Health. The assessment is structured in a way to cover the requirements of the Moldova Law on PPP No. 179 of 2008, as required by the ToR of the consulting assignment and include the PPP project description, rationale, objectives and key expected outcomes of the PPP project. It also reviews legal framework and considers technical feasibility of the project. The financial viability and sensibility analysis is conducted for four PPP options: (1) pure public, with 100% of public financing; (2) 50% of a private financing; (3) 70% of private financing; (4) full PPP with 100% private financing. The preferred option (option 3) for further feasibility study is recommended. The key risks envisaged, project delivery alternatives, procurement process are briefly discussed.

The report concludes with key challenges and mitigation strategies for the RLTC Model implementation in Moldova and proposes next steps in the implementation of the recommendations provided by the consulting assignment.
1. Introduction

Restructuring of the existing health delivery system is one of the key health policy priorities for the Republic of Moldova. The Moldovan Roadmap “Boost up the reforms: addressing health needs through investment policies” 2012–2014 envisages the creation of health zones with one regional and several community hospitals, the latter being envisaged as providing LTC, rehabilitation, palliative care and social services. It also intends the strengthening of referral systems within the health regions; the establishment of joint administrative management for hospital networks; the implementation of quality and performance management systems in all health institutions of the country; and the integration of specialised ambulatory care services into existing hospitals.

In order to achieve these objectives, The Ministry of Health (MoH) of the Republic of Moldova, through the World Bank supported the Health Services and Social Assistance Project (HSSAP), has contracted consulting company UNICON, Ltd to provide technical assistance “to draft a Business plan for the rehabilitation and long term health service development” by changing the profile of acute care hospital beds. The Business Plan is designed for four rayons of the Northern Region of Moldova, Briceni, Donduseni and Ocnița, as a pilot implementation area with the intention of subsequent national roll-out. The Business Plan should draw on the existing policies and action plans and reports generated by previous and parallel technical assistance work-streams, including the HSSAP commissioned consulting services for the National Hospital Master Plan (completed in 2009-2010) and the Development of the Regionalization Plan currently carried out by Sanigest internacional.

UNICON’s inception report provided (a) brief health system assessment; (b) initial situation analysis of the current system for rendering rehabilitation, long term health care and medical social services; (b) general overview of the international and regional (CIS) experiences in organization of the rehabilitation and long term care services; (d) initial planning standards (beds per population, average length of stay, etc.) for the Rehabilitation and Long Term Care (RLTC) services in the Republic of Moldova based on the review of international benchmarks and planning guidelines; I next steps in the development of the Business Plan, including the consultancy ToR’s revised specific activity schedule agreed with the Ministry of Health.

UNICON’s intermediary report presented results of the UNICON team’s work performed in intermediary phase of the consulting assignment and included: (a) detailed needs assessment and proposed model of care for RLTC services in Moldova; (b) recommendations on norms, standards and service planning guidelines for RLTC, including for the human resources; (c) outline and assessment of 3 scenarios for organization of the RLTC services with suggestion on preferred scenario; (d) investment cost estimates at national level for RLTC facilities of different level if the proposed planning norms are accepted. The report also described the decisions to be reached and necessary steps for the completion of the consulting assignment.

UNICON’s current and final report completes the consulting assignment by presenting: detailed functional and space allocation plans for upgrading/re-profiling the capacity of hospitals/units and centres at national and regional level, according to the future mission to provide RLTC services; Report further identifies four main opportunities for Public-Private Partnership (PPP). For each opportunity, in accordance with Law on PPP No. 179 of 2008, assesses overall feasibility of the PPP object and its objectives with economical – technical arguments for PPP projects; Cost-effectiveness and future costs (capital and maintenance costs) for the proposed development alternatives and economic benefits, the rate and duration of investment reimbursement are estimated and general
conditions for the preferred PPP option are developed; Finally, the Report outlines the implementation challenges and possible solutions for the initiating the functional RLTC model in Moldova.

2. Functional and Space Planning for RLTC Services

This section presents the recommendations on functional and space planning for facilities representing the three levels of RLTC services proposed in the Intermediary Report: (a) National level specialised rehabilitation centre (level 3) to be located in Chisinau; (b) Inter-rayon (Regional) level specialised rehabilitation centre (level 2) in Edinet; and (c) General rehabilitation centres (level 1) in Briceni, Donduseni and Ocnița.

The functional and space planning recommendations for RLTC services in Moldova were derived from the local and international health facility planning guidelines (Australian Health Facility Guidelines and Cost Benchmarks for the Australian States 2010, Ontario Functional Planning and Capital Expenditure Benchmarks 2011, USA Veterans Affairs CLC 2011, Fraser Health 2011, BPDG 2013, New Zealand Health Facility Planning Guidelines 2012, South Africa Hospital Planning Guidelines 2010). The recommendations provided by the TOP Consult for the National Hospital Master Plan 2009 were also taken into account.

The functional and space planning recommendations presented here served as a basis for estimation of required capital investments and financial analysis of PPP options for the RLTC Model and will be a starting point for the detailed architectural and engineering and capital investment planning to be performed at the implementation stage of the Regionalization Strategy. These recommendations do not supersede architectural and engineering planning responsibilities to develop a complete and accurate designs for specific RLTC facilities in future.
2.1. National level specialised rehabilitation centre (level 3) in Chisinau

Functional planning concepts and design guide for a national level specialised rehabilitation centre is presented for an estimated capacity of 120 beds for the patients with highly complex needs that includes Multitrauma, Traumatic Brain Injury (TBI), Spinal Cord Dysfunction, etc. The Intermediary Report recommends construction of two such centres eventually to meet the future demand for the specialised rehabilitation services in Moldova.

2.1.1. General Considerations

Patients with Highly Complex Rehabilitation Needs

The Patients with Highly Complex Rehabilitation Needs (PHCRN) has progressive degenerative disease affecting multiple organ systems or has sustained multiple life-threatening injuries and disability at the same time requiring specialized intensive rehabilitation and coordination of medical care. Traumatic Brain Injury (TBI) commonly is a key component of the multitrauma injury and results in brain injury (mild, moderate, and severe), Post Traumatic Stress Disease (PTSD), pain, fractures, hearing loss, spinal cord dysfunction, loss of vision, and burns. Respectively, such patient commonly needs coordinated interdisciplinary, or multidisciplinary care to address cognitive, emotional and physical rehabilitation. In addition to a team of physicians who specialize in physical medicine and rehabilitation – PMR specialists, - specialists in surgery, neurosurgery, neurology, internal medicine, psychiatry, infectious disease, prosthetics, orthotics, and spinal cord injury as part of the day-to-day planning and patient care. PRM specialists lead an interdisciplinary rehabilitation team consisting of physical therapists, occupational therapists, speech therapists, rehabilitation nurses, kinetotherapists, vocational therapists, social workers, neurophysiologists, psychologists, skilled nurses, wound care nurses, respiratory therapists, recreational therapists, clinical and/or social worker case managers. Each one of these medical specialties and health care disciplines has specialized expertise in caring for the PHCRN and family and are essential to ensuring the comprehensive care results in optimal outcomes.

Due to the nature of the injuries sustained and the length of time required for rehabilitation, the PHCRN has extended hospital stays. Treatment is provided in the acute and sub-acute inpatient, post-acute or transitional and outpatient settings. Patients can be expected to access the RLTC services in an outpatient setting for many years post injury, or the diseases progression.

In case of PHCRN, the entire family is affected. The family experiences multiple stressors including often being away from home and support systems, caring for children and/or elderly parents and possible job loss or financial strain due to the length of time away. The need for adequate family space within the inpatient room and on the inpatient floor is supported by the extensive role the family plays in recovery and long-term care of the patient.

Unlike a typical medical or surgical patient, the PHCRN will typically require long-term assistance from family members for activities of daily living (ADL). The family member acts as an extension of the medical staff by assisting with ADLs as they participate in the patient’s care. Oftentimes the family will spend much of the day (and night) in the inpatient room for fear of leaving the patient alone.

Research also indicates the need for “decompression” areas that allow the family to leave the patient room, yet remain on the unit. These areas can also be utilized for family counselling as the family dynamics are drastically changed when family member suffers severe impairment and/or disability.
The Multidisciplinary Team

National Level Specialised Rehabilitation Centre (NLSRC) will provide comprehensive multidisciplinary rehabilitation and coordinates complex medical, surgical, and mental health care, as well as long-term follow-up. The recommended core staffing for 120 beds, based on the staffing norms suggested in the Intermediary Report is presented in Table 1.

The individual with overall responsibility and authority in the care of patients identified within the RLTC system with highly complex rehabilitation needs will be the NLSRC Medical Director. The NLSRC Medical Director is recommended to be a Physical Medicine and Rehabilitation (PMR) physician with at least two years of experience in rehabilitation of brain injury and stroke, SCI, amputation and other complex impairments.

An essential component to the NLSRC system of care will be the Admission and Follow-up Clinical Case Management. The clinical case managers will provide clinical case management of referrals and follow-up for the ongoing rehabilitation plan of care after discharge. Individuals assigned to this function require knowledge and clinical reasoning skills necessary to review the medical status of the patient, identify all of the current medical problems, evaluate the acuity level, assess factors surrounding readiness for inpatient rehabilitation, and monitor patient status until transfer is completed. The clinical case manager will make recommendations for alternative care settings when appropriate. The clinical case manager will organise the rehabilitation health care services that promote optimal outcomes for patients. This includes assessing patients’ strengths, challenges, prognosis, functional status, goals, and needs for specific services and resources, and developing a plan that identifies short- and long-term goals. Additional responsibilities may include coordinating resources to implement the plan and evaluation of the effectiveness and appropriateness of the services provided throughout the entire spectrum of care.

The diseases and injuries leading to the highly complex rehabilitation needs create a dramatic change in the lifestyle and family interactions of the patients. For this reason, a strong component of the programme will be Social Work Case Management coordinated by the services subordinated to the Ministry of Labour, Social Protection and Family of the Republic of Moldova (MoLSPF). In collaboration with the clinical case management, the NLSRC will provide social work case management services for all patients and their families. Social work case management differs from clinical case management in that the social worker case manager addresses the psychosocial needs of the patient, advocates for the patient and family, provides supportive services for the family and caregivers, and addresses home and community environment issues. A social worker case manager will conduct a comprehensive psychosocial assessment, which includes review of cultural issues, patient support systems, family and caregiver support systems, financial and vocational status, and the living situation. In partnership with the clinical case manager, patient, and family, the social worker case manager will develop treatment and discharge plans and provide ongoing case management services including post-discharge. The social worker case manager may provide clinical services, such as individual and family counselling and grief counselling. The social worker case manager will contact the patient or family prior to transfer to answer questions they may have and to assist with the transition. Social worker case management services will continue through the rehabilitation process and post-discharge, providing assistance with transitions to the referring secondary or Primary Health Care (PHC) facility, or to the home and community.
Table 1: Recommended Staffing for NLSRC (120 beds)

<table>
<thead>
<tr>
<th>PERSONNEL DESCRIPTION</th>
<th>Full-time Equivalent (FTE)</th>
</tr>
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<tbody>
<tr>
<td>PMR Specialist</td>
<td>5</td>
</tr>
<tr>
<td>Chief Nurse</td>
<td>5</td>
</tr>
<tr>
<td>Skilled Nurse</td>
<td>62</td>
</tr>
<tr>
<td>Nurse Assistant</td>
<td>40</td>
</tr>
<tr>
<td>Admission and Follow-up Nurse Case Manager</td>
<td>10</td>
</tr>
<tr>
<td>Social Worker</td>
<td>10</td>
</tr>
<tr>
<td>Speech-Language Pathologist</td>
<td>12</td>
</tr>
<tr>
<td>Kinetotherapist</td>
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</tr>
<tr>
<td>Occupational Therapist</td>
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<tr>
<td>Recreation Therapist</td>
<td>6</td>
</tr>
<tr>
<td>Neuropsychologist</td>
<td>3</td>
</tr>
<tr>
<td>Psychologist</td>
<td>6</td>
</tr>
<tr>
<td>Family Therapist</td>
<td>6</td>
</tr>
<tr>
<td>Prosthetist</td>
<td>12</td>
</tr>
<tr>
<td>Driver Trainer</td>
<td>2</td>
</tr>
<tr>
<td>Administrative staff</td>
<td>24</td>
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</table>

Source: UNICON 2013

2.1.2. General approach to the NLSRC design

The NLSRC will be designed to provide the full range of care for PHCRN requiring a comprehensive interdisciplinary rehabilitation, medical care and coordination of cognitive and emotional/mental care.

The purpose of the NLSRC will be to concentrate the specialty trained staff and resources required in an environment dedicated to the unique needs of the PHCRN. The patient care goals include the initial acute, sub-acute and post-acute rehabilitation, additional outpatient rehabilitation, proactive case management, tele-rehabilitation (for lower level specialised and general care RLTC facilities), and long term follow-up. This care will occur in three phases - acute, transitional (sub-acute and post-acute), and outpatient. The NLSRC designs should provide for the differing needs across this care continuum.

Acute inpatient care/rehabilitation

Due to the medical complexity of the patients the acute inpatient rehabilitation provided to the PHCRN will be a 24 hours per day programme coordinated by a multidisciplinary team. This team will identify and address medical and rehabilitation needs associated with the initial injury, contraction of the disease or chronic disease exacerbation of the patient and will elaborate rehabilitation plan. Average length of stay for a NLSRC acute inpatient rehabilitation is expected not to exceed one week.
The physical design of the inpatient programme should be patient and family centred. The units will be designed to increase staff efficiency and create a safe, supervised and structured environment. The goal is to closely monitor patients for safety, while still allowing them access around the unit.

Inpatient units have therapy gyms, as well as smaller, less stimulating therapeutic areas, including activity rooms, and “quiet rooms” in which individual therapy or co-treatments (more than one therapeutic discipline providing treatment simultaneously) can be provided without distraction. The goal is to provide the least restrictive and most home-like environment possible.

**Sub-acute and post-acute (transitional) rehabilitation**

The Transitional Rehabilitation Programme for the PHCRN will provide comprehensive, post-acute physical rehabilitation and cognitive retraining and community re-entry rehabilitation. The programme is expected to last an average range of 3 to 6 months, but may continue as long as the patient is making significant progress. The transitional rehabilitation will also include care provided in the day hospital settings. Most rehabilitation treatment will take place in a group setting; however, all patients will also receive one-on-one therapy as needed. As the patient will prepare to leave the rehabilitation programme, vocational rehabilitation services, work preparation, or school activities will be supported by the staff and other members of the rehabilitation team.

Care Coordinators need to work closely with their assigned patients throughout the rehabilitation process to ensure they are getting every treatment necessary to make the fullest recovery possible. These Coordinators will conduct follow-up assessments for patients after their discharge for a minimum of one year to support a seamless transition to home, work, school and community integration.

**Outpatient Care**

Outpatient treatment at NLSRC will sustain the continuum of care from the inpatient stay and will serve as the point of entry into the system for PHCRN with follow up rehabilitation needs or delayed onset of underlying diseases symptoms. The outpatient care component of the NLSRC will be a separate level of care than Transitional Rehabilitation Programme and is utilized by individuals living and working in their communities. The physical facilities required for the delivery of outpatient care are minimal, in support of utilizing PMR resources within the hospital.

The Outpatient Rehabilitation Programme will be a combination of multiple individual patient programmes, not a prescribed day treatment model. It is a process of improvement, often of adjustment, uniquely designed and delivered for each patient based on individual medical, functional and clinical needs. Outpatients commute from home and typically attend visits with family members. The overall goal is multidisciplinary outpatient treatment coordination in support of patient independence in the community.

**2.1.3. Codes and standards**

Design, construction, and installation of NLSRC must be in accordance with this document and with the latest editions and/or revisions of all applicable codes and standards of the Republic of Moldova. No provisions of this report should be construed as authorization or permission to disregard or violate local and legal requirements.
2.1.4. Functional diagrams

As recommended by the Intermediary Report, the acute specialised rehabilitation units are recommended to be collocated with a high level acute care hospitals were multispecialty and intensive medical care units are available. Respectively, the NLSRC is recommended to be constructed/located within the vicinity of such hospital or medical campus. Overall functional diagram of the NLSRC is presented on Figure 1:

*Figure 1: Overall functional diagram of the NLSRC*

Recommended functional diagrams for key units and services of the NLSRC are presented below on Figures 2-4.
Figure 2: Functional diagrams for the acute inpatient rehabilitation unit for NLSRC
Figure 3: Functional diagram for the transitional rehabilitation unit for NLSRC

Figure 4: Functional unit for outpatient services for the NLSRC
2.1.5. Space planning and design

Flexible. The design of a NLSRC needs to respond to changing workloads, care objectives, and technologies such as wireless technologies for staff. Spaces should be universally designed to accommodate a range of related functions. Generic plans should be developed to respond to changes in use and assignment. Special spaces need to be designed and grouped to accommodate a range of functions and to accommodate change if possible.

Efficient. The design of a NLSRC should provide resources to accommodate increasing health care demands. Support spaces, such as storage and utility rooms, should be designed to be shared where possible to reduce the overall need for space. Functions with requirements, such as facility supply and transport areas, should be grouped or combined to achieve efficiency of operation. Duplication of facilities should be minimized where limited resources are available.

Responsive to user needs. User patient dignity and respect for individuality should be accommodated while considering operational realities. Patient vulnerability to stress from noise, lack of privacy, poor or inadequate lighting and other causes, and the subsequent harmful effect on well-being, are known and documented phenomena. A key architectural objective should be to reduce emphasis on the institutional aspects of care and to surround the patient and family with furniture, furnishings and fixtures that are more homelike, i.e., residential and comfortable. Proper planning and design appeal to the spirit and sensibilities of both patients and care providers. A spirit of neighbourhood or household should be encouraged. The NLSRC facilities need to be environments of healing that allow the building itself to be part of the therapeutic setting. The technical requirements to operate the building should be unobtrusive and integrated in a manner to support this concept. Sufficient space should be allocated for equipment and supplies to avoid storing or parking of medical equipment including medication carts and assistive devices in public view, in corridors, or in showers. Patient privacy needs to be provided while encouraging socialization and other group activities. Security, both from a patient and a facility perspective, needs to be addressed by planning, design and detail considerations. Access needs to be provided by application of the design standards to room and fixed equipment layouts.

2.1.6. Space allocation

The recommended summary space allocations for the NLSRC are presented in Table 2.

ACUTE REHABILITATION INPATIENT UNIT

Patient Rooms (Single)

Patient rooms are core spaces of the acute rehabilitation inpatient unit. Only single patient rooms are recommended to be located in the NLSRC. The patient rooms include both a family visiting area at bedside (near the window) and a separate family alcove for longer / overnight stays, consultations with caregivers and patient privacy during procedures without requiring the family to leave the room. Space allocation shown in includes that for the Alcove and Patient Toilet / Shower Room. Total estimated net space allocation for patient rooms for 30 inpatient beds is 960 sq. m.

Nurse Stations (centralised and decentralised)
Nurse Station – is a traditional, centralized nurse station. This option allows for more efficient use of space, staff redundancy/accountability and team work. Single location for technology, systems reporting. Design considerations include maximizing patient visibility from station, increased staff walking distances to rooms and provision of sound absorptive materials to reduce noise from station.

Decentralised nurse stations are also suggested for the inpatient unit area were the patients with most complex needs are located. This option provides for a decentralized nursing model via a corridor niche with direct observation into two paired patient rooms. Shared wall is the patient headwall for both rooms. Design considerations include type of equipment (computers, etc.), charting and filing to be done at satellite stations and whether such is to be part of the niche or portable. Space allocation shown in Table 2 is for one satellite station serving two patient rooms. For a 12 bed “complex care” unit with all standard rooms this total should be multiplied by six (6). In addition, a separate staff workroom for centralized functions and patient consultations / privacy should be provided (see Figure 2). Total estimated net space allocation for nursing stations is 64 sq. m.

**Group Recreation Therapy Room**

This space is intended to accommodate a variety of supervised and unsupervised recreational activities among patients and on occasion patients and family. Net space allocation for the recreation therapy room is 120 sq. m.

**Quiet Treatment Room**

The Quiet Room is place for patients with speech disorders and those who require a reduced stimulation environment due to effects of TBI, PTSD, treatment or environmentally related stress. Design considerations include provision of sound insulation and architectural detailing to eliminate sound transmitted into the room from adjacent spaces, as well as sound absorptive materials within the room. Light levels (daylight and artificial) must be variable, with room darkening capability provided. Furniture and finishes should promote relaxation and passive/reflective activities such as meditation. Views to the exterior should be provided, with subject matter conducive to relaxation. Intrusive/unappealing views and/or exterior noise sources should be screened. Estimated net space allocation is 12 sq. m.

**Rehabilitation Gym (specialised)**

The Inpatient Rehabilitation Gyms are provided dedicated Physical, Occupational, Recreational and Kinetotherapy space for PHCRN. This population is primarily differentiated from the common rehabilitation patients by the prevalence of Traumatic Brain Injury (TBI). These patients suffer from multiple serious injuries or conditions overlaid with the cognitive, emotional, and physical limitations due to brain injury. As such they do not respond well to typical Physical Medicine & Rehabilitation (PMR) treatment modalities such as therapy in a large gym setting. TBI patients often require a low stimulation environment and are sensitive to noise, light, and visual “clutter”. Due to perceived (though not always actual) functional limitations, non-TBI patients do not always mix well with this group.

These specialized needs require provision of some PMR type spaces which may seem duplicative of those in the transitional rehabilitation unit. Only Multitrauma / TBI specific therapy spaces should be provided in the Acute Rehabilitation Unit. Spaces whose uses may be shared, and those which contain highly specialized or cost-intensive
equipment (such as Gait Lab, Prosthetics Lab, Assistive Technology, Hydrotherapy, etc.) should not be duplicated and should reside in the Outpatient Rehabilitation Unit. Location and layout of the NLSRC should provide direct access to these shared spaces for TBI patients. Estimated net space allocation for the Rehabilitation Gym is 225 sq. m.

Cognitive/TBI Therapy Exam /Treatment Room

The Cognitive / TBI Therapy Exam / Treatment Room provides a quiet, intimate setting for patient-staff consultation, patient testing, evaluation and treatment. Estimated net space allocation is 12 sq. m.

The TBI / Cognitive Therapy Multipurpose Room

This space provides a space for group therapy sessions. Design considerations include the ability to control light (daylight & artificial), with room darkening available. Comfortable seating in a controlled stimulus environment. Finishes should help create a relaxed atmosphere. Sound control from adjacent spaces is important. Estimated net space allocation is 15 sq. m.

Dining Room

The Dining Room is a shared Patient and Family space. It provides for group interaction and socialization for patients. The Kitchen is used by family during 24/7 and/or long term patient stays. It allows family members to remain close to their loved ones, provides flexibility in scheduling meals and offers a lower cost alternative to restaurants or hospital food. The Dining Room & Kitchen are part of the overall Family suite of spaces which promote improved patient outcomes via an integrated model of care. Estimated net space allocation is 52 sq. m.

Family Multipurpose Room

The Family Multipurpose Room is a classroom-type space used for educational programs, family/staff consultations (separate from patient), and celebration of patient life events and recovery milestones. It includes a Family Resource Centre comprised of three Internet terminals and printed reading / research material.

As a design option, the Multipurpose Room may be combined with Family Living to provide a more open and relaxed environment. If such an arrangement is desired, an operable partition may be included to subdivide the space when required. The Multipurpose Room is part of the overall Family suite of spaces which promote improved patient outcomes via an integrated model of care. Estimated net space allocation is 48 sq. m.

Family Living Room

The Family Living room is the core of the NLSRC Family suite of spaces. It provides a place of relaxation and socialization for patient families. The Living space includes upholstered seating, televisions, video game modules, a table for four, and children’s play area. Internet access for family use and/or online gaming is optional.

As a design option, Family Living may be combined with the Dining Room / Kitchen and/or Multipurpose Room to provide a more open and relaxed environment. If such an arrangement is desired, operable partition(s) may be included to subdivide spaces when required. Estimated net space allocation is 46 sq. m.

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Apartment and kitchen for living skills training and vocational therapy

These spaces are provided for the living skills training and vocational therapy during the sub-acute rehabilitation of the PHCRN in NLSRC. The estimated net space allocation is 72 sq. m.

Support, staff and administrative areas

Support and staff areas include reception area, medication room, conference rooms, alcoves, staff offices, lockers, lounge and toilets, nourishment room for the staff, linen and storage rooms, utilities room, and housekeeping. Total estimated net space allocation is 650 sq. m.

TRANSITIONAL REHABILITATION UNIT

Transitional Patient Bedroom

Transitional Patient Bedroom is single patient room for medium stay (up to 60 days) providing more residential “imagery”. Estimated total net space for 60 beds located in 60 bedrooms is 1920 sq. m.

Transitional apartment type units

Apartment type units are dedicated to relatively small share of the PHCRN that would require post-acute medium to long term rehabilitation services (3 to 6 months) in the transitional rehabilitation setting and provides for a long term family stay. The units are equipped with in-unit laundry and kitchen. Total estimated net space for 10 apartment type units is 500 sq. m.

Nurse Station

Nurse station for the transitional rehabilitation unit are centralised nurse stations with common staff area, central filing, shared technology (telecommunication, computers, etc.), efficient space utilisation, single point of contact for visitors, and limited patient contact and visibility. Total estimated net space allocation for 4 nurse stations (one per each 20 patients) is 20 sq. m.

Dining Area

The dining area is used by NLSRC Transitional Rehabilitation Patients for on-unit dining on a daily basis. The dining room may be used for other purposes such as recreation therapy during non-dining hours. Estimated net space allocation is 52 sq. m.

Group Recreation Therapy Room

This space is intended to accommodate a variety of unsupervised recreational activities among transitional patients and family. Net space allocation for the recreation therapy room is 52 sq. m.

Support, staff and administrative areas
Support and staff areas for transitional rehabilitation unit include reception area, medication room, conference rooms, alcoves, staff offices, lockers, lounge and toilets, nourishment room for the staff, linen and storage rooms, utilities room, and housekeeping. Total estimated net space allocation is 480 sq. m.

OUTPATIENT REHABILITATION UNIT

Exam Rooms

Exam rooms are needed for initial examination of all incoming patients and outpatients – returning patients. Four exam rooms are suggested for the NLSRC. The total estimated net space allocation is 48 sq. m.

Cognitive Therapy/Counselling Room

This space is dedicated to quiet interviewing and treatment for Psychology/Neuropsychology. The estimated net space allocation is 24 sq. m.

Physical/Occupational Therapy Room

This space is intended to accommodate physiotherapy, psychosocial and vocational evaluation and therapy. Net space allocation for the physical/occupational therapy room is 85 sq. m.

Gait and Balance Lab

This space is intended to provide for the examination and determination of PHCRN gait performance and therapy progress. Estimated net space allocation is 55 sq. m.

Rehabilitation Gym (specialised)

The Outpatient Rehabilitation Gym is serving both outpatient and residential units and is dedicated to Physical, Occupational, Recreational and Kinetotherapy space for the transitional and outpatient post-acute rehabilitation of a PHCRN and other rehabilitation patients admitted to the NLSRC as day hospital or outpatients. Estimated net space allocation is 300 sq. m.

Hydrotherapy Room

This space is allocated for the skeletal, muscular and skin reconditioning therapies for transitional and outpatient reconditioning therapies for SCI, TBI and other patients with highly complex rehabilitation needs. Can also be used for the wellness therapies for other rehabilitation patients admitted to the NLSRC. Estimated net space allocation is 240 sq. m.

Assistive Technology Lab

A dedicated space that includes a variety of state of the art products, devices and equipment that may enable patients with disabilities to accomplish daily living tasks, assist them in communication, education, work or recreation activities, in essence, help them achieve greater independence and enhance their quality of life. Total estimated space allocation is 94 sq. m.
Speech Therapy Lab

The space is allocated for speech therapy provided to the TBI, stroke and other patients (transitional and outpatient) with speech disorders. Net estimated space is 28 sq. m.

Lounge

This space is intended to accommodate a variety of unsupervised recreational activities among patients and on occasion patients and family. Net space allocation for the lounge is 24 sq. m.

Support, staff and administrative areas

Support and staff areas for outpatient rehabilitation unit include reception area, medication room, conference rooms, alcoves, staff offices, lockers, lounge and toilets, nourishment room for the staff, linen and storage rooms, utilities room, and housekeeping. Total estimated net space allocation is 450 sq. m.

Table 2: Recommended space allocations for NLSRC

<table>
<thead>
<tr>
<th>Units/Areas</th>
<th>Net Space Allocation (sq. m)</th>
<th>Quantity</th>
<th>Total Space</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Acute Rehabilitation Inpatient Unit</strong></td>
<td></td>
<td></td>
<td>2086</td>
</tr>
<tr>
<td>Patient Rooms</td>
<td>32</td>
<td>30</td>
<td>960</td>
</tr>
<tr>
<td>Nurse Station (central)</td>
<td>20</td>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td>Nurse Station (decentralised)</td>
<td>9</td>
<td>6</td>
<td>54</td>
</tr>
<tr>
<td>Group Recreation Therapy Room</td>
<td>120</td>
<td>1</td>
<td>120</td>
</tr>
<tr>
<td>Rehabilitation Gym (specialised)</td>
<td>225</td>
<td>1</td>
<td>225</td>
</tr>
<tr>
<td>Cognitive/TBI Therapy Exam /Treatment Room</td>
<td>12</td>
<td>1</td>
<td>12</td>
</tr>
<tr>
<td>TBI Cognitive Therapy Room</td>
<td>15</td>
<td>1</td>
<td>15</td>
</tr>
<tr>
<td>Dining Room</td>
<td>52</td>
<td>1</td>
<td>52</td>
</tr>
<tr>
<td>Patient Laundry Room</td>
<td>12</td>
<td>1</td>
<td>12</td>
</tr>
<tr>
<td>Family Multipurpose Room</td>
<td>48</td>
<td>1</td>
<td>48</td>
</tr>
<tr>
<td>Family Living Room</td>
<td>46</td>
<td>1</td>
<td>46</td>
</tr>
<tr>
<td>Apartment, Living Skills Training</td>
<td>42</td>
<td>1</td>
<td>42</td>
</tr>
<tr>
<td>Support, staff and administrative areas</td>
<td>480</td>
<td>1</td>
<td>480</td>
</tr>
<tr>
<td><strong>Transitional Rehabilitation Unit</strong></td>
<td></td>
<td></td>
<td>3858</td>
</tr>
<tr>
<td>Transitional patient bedroom (single)</td>
<td>32</td>
<td>60</td>
<td>1920</td>
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<tr>
<td>Transitional apartment type units</td>
<td>50</td>
<td>20</td>
<td>1000</td>
</tr>
<tr>
<td>Nurse Station (central)</td>
<td>20</td>
<td>4</td>
<td>80</td>
</tr>
<tr>
<td>Dining Area</td>
<td>52</td>
<td>2</td>
<td>104</td>
</tr>
<tr>
<td>Recreation Activity Room</td>
<td>52</td>
<td>2</td>
<td>104</td>
</tr>
<tr>
<td>Support, staff and administrative areas</td>
<td>650</td>
<td>1</td>
<td>650</td>
</tr>
<tr>
<td><strong>Outpatient Rehabilitation Unit</strong></td>
<td></td>
<td></td>
<td>1587</td>
</tr>
</tbody>
</table>

Final Report
Exam Room | 12 | 4 | 48
Cognitive therapy/Counselling Room | 12 | 2 | 24
Procedure Room | 24 | 2 | 48
Group Recreation Therapy Room | 52 | 2 | 104
Driver Training Room | 37 | 1 | 37
Living Skills Training Room | 28 | 1 | 28
Gait and Balance Lab | 56 | 1 | 56
Rehabilitation Gym (general) | 300 | 1 | 300
Speech Therapy Lab | 28 | 1 | 28
Assistive Technology Lab | 94 | 1 | 94
Hydrotherapy Room | 240 | 1 | 240
Physical Therapy Room | 85 | 1 | 85
Support, staff and administrative areas | 450 | 1 | 450
**Total net space allocation for the Units** | **7,486**
**Total space allocation for NLSRC (Gross factor 1.75)** | **13,101**

*Source: UNICON 2013*

Summary net space allocation per units and total for NLSRC presented in Table 2. The table also shows that total gross space requirements for the NLSRC, which amounts to 13,101 sq. m. when factoring in the net to gross space factor of 1.75. This constitutes approximately 110 sq.m. per bed.

### 2.1.7. Equipment List for NLSRC

Essential equipment list recommended for the NLSRC is presented in the Annex 1.
2.2. Inter-rayon (Regional) level specialised rehabilitation unit (level 2) in Edinet

Functional planning concepts and design guide for the regional specialised rehabilitation unit is presented for 24 bed facility to be co-located with the Edinet acute care Inter-rayon hospital in Edinet. The Regional Level Specialised Rehabilitation Unit (RLSRU) are intended to serve a catchment population of 200 to 400 thousand and provide specialised rehabilitation services to the patients with neurologic, traumatology and orthopaedic and musculo-skeletal diseases.

2.2.1. General Considerations

Regional specialised rehabilitation services will be rendered by the multispecialty team including the nursing and therapy staff led by the PRM specialist (rehabilitologist) and will be provided in all care settings: inpatient, day-hospital/ambulatory and in exceptional cases in home. No transitional post-acute rehabilitation services will be provided. The main profile of the RLSRU services will be an acute inpatient rehabilitation in the dedicated ward, which implies 24 hour rehabilitation approach and a peer group of other patients undergoing similar programmes (i.e. “rehabilitation milieu”). The level 2 rehabilitation services will be co-located with Edinet Inter-rayon acute care hospital and supported by wards providing acute medical services, including an ICU. In this way, the patients with complex rehabilitation needs remain in or near to high technology diagnostic and treatment facilities, where relevant medical expertise is readily available in case of need (sudden exacerbation of the disease or deterioration of a patient’s condition).

In accordance with the “Hub and Spoke” principle for organization of the rehabilitation services in the Moldova RLTC described in the Intermediary Report, the RLSRU will serve as a hub for the adjacent level 1 general rehabilitation services provided by the Chronic Care Centres (CCC) of Briceni, Donduseni and Ocniţa by (a) assessing, organizing referral and accepting patient with specialised or more complex rehabilitation needs from the CCCs and (b) providing advice and support to the local rehabilitation teams, including on-site consultations and tele-rehabilitation.

The RLSRU will have two main sub-units: acute inpatient rehabilitation sub-unit and outpatient sub-unit. The recommended staffing levels according to the staffing normatives suggested in the Intermediary Report are presented in

Other general considerations (multidisciplinary approach, family and patient centeredness, organisation of services, etc.) described in the previous section for the NLSRC are also applicable for the RLSRU.

*Table 3: Recommended staffing for the RLSRU in Edinet*

<table>
<thead>
<tr>
<th>PERSONNEL DESCRIPTION</th>
<th>Full-time Equivalent (FTE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PMR Specialist</td>
<td>1</td>
</tr>
<tr>
<td>PMR Trainee</td>
<td>1</td>
</tr>
<tr>
<td>Chief Nurse</td>
<td>1</td>
</tr>
<tr>
<td>Skilled Nurse</td>
<td>26</td>
</tr>
<tr>
<td>Nurse Assistant</td>
<td>24</td>
</tr>
</tbody>
</table>
2.2.2. Codes and standards

Design, construction, and installation of RLSRU must be in accordance with this document and with the latest editions and/or revisions of all applicable codes and standards (construction, seismic, hygienic, etc.) of the Republic of Moldova. No provisions of this report should be construed as authorization or permission to disregard or violate local and legal requirements.

2.2.3. Functional diagrams

As recommended by the Intermediary Report, the acute specialised rehabilitation units are to be collocated with a high level acute care hospitals were multispecialty and intensive medical care units are available. Respectively, the RLSRU is recommended to be constructed/located within the vicinity of Edinet Inter-rayon acute care hospital. Overall functional diagram of the RLSRU is presented on Figure 5

*Figure 5: Functional diagram for ULSRU*

Proposed functional diagrams for inpatient and outpatient sub-units of the RLSRU are presented on Figures 6-7.
Figure 6: Functional Diagram for the Inpatient Acute Rehabilitation Sub-Unit of the RLSRU
2.2.4. Space planning and design
Space planning and design principles of flexibility, efficiency and responsiveness to users’ needs should be applied as described in the section 2.1.5.

2.2.5. Space allocation
The recommended summary space allocation for the NLSRC are presented in Table 4

ACUTE REHABILITATION INPATIENT UNIT

Patient Rooms (single and double)

Patient rooms are core spaces of the acute rehabilitation inpatient unit. Two types of patient rooms (single and double) are recommended to be located in the NLSRC. The patient rooms include both a family visiting area at bedside (near the window) and a separate family alcove for longer / overnight stays, consultations with caregivers and patient privacy during procedures without requiring the family to leave the room. Space allocation shown in Table 4 includes that for the Alcove and Patient Toilet / Shower Room. For double rooms partition with curtains should be available for ensuring a patient privacy in case of need. Total estimated net space allocation for the patient rooms for the 24 inpatient beds is 504 sq. m.
Nurse Station (centralised)

Nurse Station – is a traditional, centralized nurse station. This option allows for more efficient use of space, staff redundancy/accountability and team work. Single location for technology, systems reporting. Design considerations include maximizing patient visibility from station, increased staff walking distances to rooms and provision of sound absorptive materials to reduce noise from station. The estimated net space allocation for nursing station is 20 sq. m.

Group Recreation Therapy Room

This space is intended to accommodate a variety of supervised and unsupervised recreational activities among the RLSRU patients and on occasion patients and family. Net space allocation for the recreation therapy room is 52 sq. m.

Cognitive Therapy Multipurpose Room

This space provides a space for group therapy sessions for patients with central nervous system impairments (stroke survivors, the TBI, degenerative diseases, etc.). Design considerations include the ability to control light (daylight & artificial), with room darkening available. Comfortable seating in a controlled stimulus environment. Finishes should help create a relaxed atmosphere. Sound control from adjacent spaces is important. Estimated net space allocation is 15 sq. m.

Dining Room

The Dining Room is a shared Patient and Family space. It provides for group interaction and socialization for patients. The Kitchen is used by family during 24/7 and/or long term patient stays. It allows family members to remain close to their loved ones, provides flexibility in scheduling meals and offers a lower cost alternative to restaurants or hospital food. The Dining Room & Kitchen are part of the overall Family suite of spaces which promote improved patient outcomes via an integrated model of care. Estimated net space allocation is 52 sq. m.

Family Multipurpose Room

The Family Multipurpose Room is a classroom-type space used for educational programs, family/staff consultations (separate from patient), and celebration of patient life events and recovery milestones. It includes a Family Resource Centre comprised of three Internet terminals and printed reading / research material.
It also provides a more open and relaxed environment for patient families by incorporating upholstered seating, televisions, video game modules, a table for four, and children’s play area. The Multipurpose Room is part of the overall patient/family area which promote improved patient outcomes via an integrated model of care. Estimated net space allocation is 56 sq. m.

**Support, staff and administrative areas**

Support and staff areas include reception area, medication room, conference rooms, alcoves, staff offices, lockers, lounge and toilets, nourishment room for the staff, linen and storage rooms, utilities room, and housekeeping. Total estimated net space allocation is 220 sq. m.

**OUTPATIENT REHABILITATION SUB-UNIT**

### Exam Rooms

Exam rooms are needed for initial examination of all incoming patients and outpatients – returning patients. Two exam rooms are suggested for the NLSRC. The total estimated net space allocation is 24 sq. m.

### Cognitive Therapy/Counselling Room

This space is dedicated to quiet interviewing and treatment for Psychology/Neuropsychology. The estimated net space allocation is 12 sq. m.

### Physical/Occupational Therapy Room

This space is intended to accommodate physiotherapy, psychosocial and vocational evaluation and therapy. Net space allocation for the physical/occupational therapy room is 75 sq. m.

### Gait and Balance Lab

This space is intended to provide for the examination and determination of gait performance and therapy progress for the RLSRU patients’ of the relevant profile. Estimated net space allocation is 24 sq. m.

### Rehabilitation Gym

The RLSRU Rehabilitation Gym is provided for Recreational and Kinetotherapy space for both inpatients and outpatients admitted or visiting the Unit. The estimated net space allocation for the Rehabilitation Gym is 145 sq. m.

### Assistive Technology Lab
A dedicated space that includes a variety of state of the art products, devices and equipment that may enable patients with disabilities to accomplish daily living tasks, assist them in communication, education, work or recreation activities, in essence, help them achieve greater independence and enhance their quality of life. Total estimated space allocation is 54 sq. m.

Speech Therapy Lab

The space is allocated for speech therapy provided to the TBI, stroke and other patients (outpatient) with speech disorders. Net estimated space is 28 sq. m.

Lounge

This space is intended to accommodate a variety of unsupervised recreational activities among patients and on occasion patients and family. Net space allocation for the lounge is 24 sq. m.

Support, staff and administrative areas

Support and staff areas for outpatient rehabilitation unit include reception area, medication room, conference rooms, alcoves, staff offices, lockers, lounge and toilets, nourishment room for the staff, linen and storage rooms, utilities room, and housekeeping. Total estimated net space allocation is 450 sq. m.

**Table 4: Recommended space allocations for RLSRU**

<table>
<thead>
<tr>
<th>Units/Areas</th>
<th>Net Space Allocation (sq. m)</th>
<th>Quantity</th>
<th>Total Space</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Acute Rehabilitation Inpatient Sub-Unit</strong></td>
<td></td>
<td></td>
<td>921</td>
</tr>
<tr>
<td>Patient Room (single)</td>
<td>24</td>
<td>12</td>
<td>288</td>
</tr>
<tr>
<td>Patient Room (double)</td>
<td>36</td>
<td>6</td>
<td>216</td>
</tr>
<tr>
<td>Nurse Station (central)</td>
<td>20</td>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td>Group Recreation Therapy Room</td>
<td>52</td>
<td>1</td>
<td>52</td>
</tr>
<tr>
<td>Cognitive Therapy Room</td>
<td>15</td>
<td>1</td>
<td>15</td>
</tr>
<tr>
<td>Dining Room</td>
<td>42</td>
<td>1</td>
<td>42</td>
</tr>
<tr>
<td>Patient Laundry Room</td>
<td>12</td>
<td>1</td>
<td>12</td>
</tr>
<tr>
<td>Family Multipurpose Room</td>
<td>56</td>
<td>1</td>
<td>56</td>
</tr>
<tr>
<td>Support, staff and administrative areas</td>
<td></td>
<td></td>
<td>220</td>
</tr>
<tr>
<td><strong>Outpatient Rehabilitation Sub-Unit</strong></td>
<td></td>
<td></td>
<td>502</td>
</tr>
<tr>
<td>Exam Room</td>
<td>12</td>
<td>2</td>
<td>24</td>
</tr>
<tr>
<td>Cognitive therapy/Counselling Room</td>
<td>12</td>
<td>1</td>
<td>12</td>
</tr>
<tr>
<td>Procedure Room</td>
<td>24</td>
<td>1</td>
<td>24</td>
</tr>
<tr>
<td>Room Type</td>
<td>Net Area</td>
<td>Units</td>
<td>Gross Area</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>----------</td>
<td>-------</td>
<td>------------</td>
</tr>
<tr>
<td>Lounge</td>
<td>36</td>
<td>1</td>
<td>36</td>
</tr>
<tr>
<td>Gait and Balance Lab</td>
<td>24</td>
<td>1</td>
<td>24</td>
</tr>
<tr>
<td>Rehabilitation Gym (general)</td>
<td>145</td>
<td>1</td>
<td>145</td>
</tr>
<tr>
<td>Speech Therapy Lab</td>
<td>28</td>
<td>1</td>
<td>28</td>
</tr>
<tr>
<td>Assistive Technology Lab</td>
<td>54</td>
<td>1</td>
<td>54</td>
</tr>
<tr>
<td>Physiotherapy and Occupational Therapy Room</td>
<td>75</td>
<td>1</td>
<td>75</td>
</tr>
<tr>
<td>Support, staff and administrative areas</td>
<td>80</td>
<td>1</td>
<td>80</td>
</tr>
<tr>
<td><strong>Total net space allocation</strong></td>
<td><strong>1423</strong></td>
<td></td>
<td></td>
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<tr>
<td><strong>Total space allocation for NLSRC (net to centre gross factor 1.55)</strong></td>
<td><strong>2206</strong></td>
<td></td>
<td></td>
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</tbody>
</table>

Source: UNICON 2013

Summary net space allocation per units and total for RLSRU presented in Table 4. The table also shows that total gross space requirements for the RLSRU, which amounts to 2,206 sq. m. when factoring in the net to gross space factor of 1.55. This constitutes app. 90 sq. m. of gross space allocation per bed.
2.3. Chronic Care Centres in Briceni, Donduseni and Ocnita

The general functional planning recommendations for the Chronic Care Centres (CCCs) were provided by Sanigest International in its Intermediary and Final Reports (Sanigest Internacional 2013). The Sanigest recommendations were further revised by UNCON based on the recommended RLTC service planning standards presented in the Intermediary Report of the current assignment and the preferred scenario for the development of the RLTC services in the Northern Region.

2.3.1. General Considerations

Patients with chronic care and long term care needs

The CCCs in Briceni, Donduseni and Ocnita will be serving a defined segment of the population with sub-acute and post-acute chronic care and long term care needs, or shortly Patients with Chronic Care Needs (PCCN). These patients will be mostly the older age patients with single or multiple chronic diseases of cardiovascular, respiratory, gastrointestinal, muscle-skeletal, neurologic and psychiatric profile. The scope of services provided to these patients in CCCs will include sub-acute and chronic care, geriatric care and residential care. The types of services provided within the RLTC continuum and recommended distribution of the bed profiles across this scope are presented in Figure 8.

Figure 8: Scope and type of RLTC services provided and recommended distribution of beds by profiles in CCCs

- **Sub-acute and chronic care** (app. 60% of LTC beds)
  - Short and long term inpatient general rehabilitation
  - Cardiovascular, neurology, cancer (mainly day care)
  - Round-the clock supervised care
  - Pain management

- **Geriatric Care** (10% of beds)
  - Geriatric Evaluation and Management (GEM)
  - Psycho-geriatric conditions (dementia, Alzheimer’s disease, etc)

- **Residential Care, (30% of beds)**
  - Assisted living
  - Custodial care

Source: UNICON 2013

Due to the chronic nature of the diseases, prevalence of co-morbidities and the length of time required for treatment and rehabilitation, the PCCN has extended hospital stays. Treatment is provided in the acute and sub-acute inpatient, post-acute or transitional an and outpatient settings. Patients can be expected to access the RLTC services in an outpatient setting for many years post injury, or the diseases progression.
CCCs will work in coordination with acute care hospitals, in case of the Northern Region, with regional hospital in Edinet to ensure the care continuity. Patients whom encounter severe complications seen at CCC will be transferred at the inter-rayon level for immediate care. At the same time, patients discharged from the acute setting will in some instances transition to CCCs for long term care. A clear and integrated care pathway will ensure that this transition is successful.

In case of PCCN, often the entire family is affected. The family careers experience significant pressures including often being away from home and support systems, caring for children and/or elderly parents and possible job loss or financial strain due to the length of time away. The need for adequate family space within the inpatient room and on the inpatient floor is supported by the extensive role the family plays in recovery and long-term care of the patient.

As in case of PHCR needs significant part of the PNNC population require long-term assistance from family members for ADL. The family member acts as an extension of the medical staff by assisting with ADLs as they participate in the patient’s care. Oftentimes the family will spend much of the day (and night) in the inpatient room for fear of leaving the patient alone.

**The Multidisciplinary Team**

CCCs will provide comprehensive chronic care and coordinate multiprofile medical, rehabilitation and long term care as well as long-term follow-up. This will require the involvement of the multidisciplinary teams including general medicine specialists (or cardiologists), neurologists, orthopaedists, urologists, anaesthesiologists, rehabilitation staff, nurses and nurse aids. The recommended core staffing for CCCs in Briceni, Donduseni and Ocnița, based on the staffing norms suggested in the Intermediary Report are presented in Table 5.

As in the case of PHCRN, an essential component to the CCC system of care will be the case management and case managers. The diseases and injuries leading to chronic care needs often create a dramatic change in the lifestyle and family interactions of the patients, particularly in the case of elderly. For this reason, a strong component of the programme will be Social Work Case Management coordinated by the services subordinated to the MoLSPF. In collaboration with the clinical case management, the CCCs will provide social work case management services for all patients and their families. Social work case management differs from clinical case management in that the social worker case manager addresses the psychosocial needs of the patient, advocates for the patient and family, provides supportive services for the family and caregivers, and addresses home and community environment issues. A social worker case manager will conduct a comprehensive psychosocial assessment, which includes review of cultural issues, patient support systems, family and caregiver support systems, financial and vocational status, and the living situation. In partnership with the clinical case manager, patient, and family, the social worker case manager will develop treatment and discharge plans and provide ongoing case management services including post-discharge. The social worker case manager may provide clinical services, such as individual and family counselling and grief counselling. The social worker case manager will contact the patient or family prior to transfer to answer questions they may have and to assist with the transition. Social worker case management services will continue through the rehabilitation process and post-discharge, providing assistance with transitions to the referring secondary or Primary Health Care (PHC) facility, or to the home and community.
2.3.1. General approach to the CCC design

The CCC will be designed to provide the full range of care for patients with chronic care and long term care needs requiring a comprehensive interdisciplinary medical care, rehabilitation and coordination of cognitive and emotional/mental care.

Table 5: Recommended staffing for CCCs in Briceni, Donduseni and Ocnita

<table>
<thead>
<tr>
<th>PERSONNEL DESCRIPTION</th>
<th>Full-time Equivalent (FTE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>for 100 beds</td>
<td>Briceni</td>
</tr>
<tr>
<td>Total Number of Beds</td>
<td>222</td>
</tr>
<tr>
<td>Sub-acute and Chronic Care (number of beds)</td>
<td>60%</td>
</tr>
<tr>
<td>Generalist (or Cardiologist)</td>
<td>2</td>
</tr>
<tr>
<td>Neurologist</td>
<td>1</td>
</tr>
<tr>
<td>Anaesthesiologist (for Pain Management)</td>
<td>1.5</td>
</tr>
<tr>
<td>Orthopaedist</td>
<td>1</td>
</tr>
<tr>
<td>Urologist</td>
<td>1</td>
</tr>
<tr>
<td>Chief Nurse</td>
<td>1</td>
</tr>
<tr>
<td>Nurse</td>
<td>24</td>
</tr>
<tr>
<td>Nurse Assistant</td>
<td>20</td>
</tr>
<tr>
<td>Nurse Case Manager</td>
<td>2</td>
</tr>
<tr>
<td>Social Worker</td>
<td>2</td>
</tr>
<tr>
<td>Speech-Language Pathologist</td>
<td>1</td>
</tr>
<tr>
<td>Kinetotherapist</td>
<td>2.5</td>
</tr>
<tr>
<td>Occupational Therapist</td>
<td>1</td>
</tr>
<tr>
<td>Neuropsychologist</td>
<td>2</td>
</tr>
<tr>
<td>Psychologist</td>
<td>1</td>
</tr>
<tr>
<td>Prosthetist</td>
<td>0.5</td>
</tr>
<tr>
<td>Administrative staff</td>
<td>15</td>
</tr>
<tr>
<td>Geriatric Care (number of beds)</td>
<td>10%</td>
</tr>
<tr>
<td>Geriatrician</td>
<td>6</td>
</tr>
<tr>
<td>Psychiatrist</td>
<td>5</td>
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<tr>
<td>Nurse</td>
<td>24</td>
</tr>
<tr>
<td>Nurse Assistant</td>
<td>20</td>
</tr>
<tr>
<td>Residential Care (number of beds)</td>
<td>30%</td>
</tr>
<tr>
<td>Chief Nurse</td>
<td>1</td>
</tr>
<tr>
<td>Nurse</td>
<td>20</td>
</tr>
<tr>
<td>Nurse Assistant</td>
<td>12</td>
</tr>
</tbody>
</table>

Source: UNICON 2013
The purpose of the CCC will be to concentrate the specialty trained staff and resources required in an environment dedicated to the unique needs of the PCCN. The patient care goals include the sub-acute and post-acute rehabilitation, additional day hospital and outpatient medical care and rehabilitation, palliative care, long term residential care, proactive case management and long term follow-up. This care will occur in three care settings corresponding to the relevant units of the CCCs - sub-acute and chronic care, geriatric care and residential (nursing) care. The CCC designs should provide for the differing needs across this care continuum.

**Sub-acute and chronic care**

Due to the chronic nature of the diseases and multiple comorbidities associated with the old age, the care provided to the PCCNs will be a 24 hours per day programme coordinated by a multidisciplinary team. This team will identify and address medical and rehabilitation needs associated with the chronic disease exacerbation or planned follow-up treatment/rehabilitation of the patient and will elaborate medical treatment and/or rehabilitation plan. Average length of stay for a CCC sub-acute and chronic care unit is expected to be from 10 to 14 days.

The *sub-acute and chronic care* unit will not have narrow specialisation in bed profiles and will provide a range of services encompassing various medical and rehabilitation services: cardiovascular, general medicine (chronic care for urology, gastroenterology, muscle-skeletal, respiratory diseases), inpatient general rehabilitation (neurologic, orthopaedic, cardiovascular, pain management), and palliative care.

The unit will provide inpatient services, or round-the-clock supervised care, however the main focus will be towards provision of the day care for the PCCNs admitted to the CCC.

The physical design of the sub-acute and chronic care inpatient programme should be patient and family centred. The units will be designed to increase staff efficiency and create a safe, supervised and structured environment. The goal is to closely monitor patients for safety, while still allowing them access around the unit.

The sub-acute and chronic care unit along with the patient bedrooms will also have treatment and rehabilitation functional areas including therapy gym, as well as smaller therapeutic areas, including activity rooms, and procedure rooms in which individual therapy, co-treatments (more than one therapeutic discipline providing treatment simultaneously) and rehabilitation activities can be provided.

**Geriatric Care**

Geriatric care unit will be providing specific services targeted at the old age population and will focus on Geriatric Evaluation and Management (GEM), including the management of psychogeriatric conditions, such as Alzheimer’s diseases, dementias of various origins, etc. The unit will have inpatient beds for the GEM, however the diseases management services provided will be mainly day hospital, outpatient and home-based. The average length of stay for the GEM interventions is expected to be up to 7 days.

Social case management will be an essential part of the geriatric care provided by the CCCs.

**Residential Care**

The CCCs will provide long term residential care for relevant PCCNs. Two main types of residential care settings will be available at CCCs: (1) skilled nursing sub-unit providing long term care for the PCCNs requiring continuous
medical attention and ADL and (2) residential sub-unit for PCCNs without round-the-clock medical supervision needs. The design of the unit should allow providing the least restrictive and most home-like environment possible. The average length of stay for the residential care LTC care, as suggested by the UNICON’s Inception Report is expected to be 1 year, with mandatory eligibility review for each 4 months.

**Outpatient Unit**
Outpatient treatment at CCCs will sustain the continuum of care from the inpatient and resident stay and will serve as the point of entry into the system for PCCNs with follow up rehabilitation needs or delayed onset of underlying diseases symptoms. The outpatient care component of the CCCs will be a separate level of care than the day hospital care and will be utilized by individuals living and working in their communities. The physical facilities required for the delivery of outpatient care are minimal, in support of utilizing medical and PMR resources within the CCCs.

The outpatient care delivered at the CCCs will be a combination of multiple individual patient programmes, not a prescribed day treatment model. It is a process of improvement, often of adjustment, uniquely designed and delivered for each patient based on individual medical, functional and clinical needs. Outpatients will commute from home and often attend visits with family members. The overall goal is multidisciplinary outpatient treatment coordination will be to support of the PCCN independence in the community.

2.3.2. Codes and standards
Design, construction, and installation of CCCs must be in accordance with this document and with the latest editions and/or revisions of all applicable codes and standards of the Republic of Moldova. No provisions of this report should be construed as authorization or permission to disregard or violate local and legal requirements.

2.3.3. Functional diagrams
The generic functional diagram recommended for CCCs is presented on Figure 9
2.3.1. Space planning and design
Space planning and design principles of flexibility, efficiency and responsiveness to users’ needs should be applied as described in the section 2.1.5.

2.3.2. Space allocation
The recommended summary space allocation for the CCCs are presented in Table 6. In overall the CCC will include following:

- Entry / Reception / Patient and Visitor Amenities;
- Diagnostic facilities – functional diagnostic, basic imaging, pathology collection and storage;
- Inpatient / special care beds;
- Skilled Nursing / Residential care beds;
- Clinical support facilities including pharmaceutical services and basic lab;
- Outpatient health facilities including consult rooms, offices, workstations;
- Day care facilities (e.g. Oncology, Geriatric Care, Renal Dialysis);
- Ambulance station or bay;
- General support facilities – Morgue, Kitchen, Laundry etc;
- Staff amenities.

**SUB-ACUTE AND CHRONIC CARE UNIT**

**Patient Rooms (single and double)**

Patient rooms are core spaces of the acute rehabilitation inpatient unit. Two types of patient rooms (single and double) are recommended to be located in the CCC. The single patient rooms include a family visiting area at bedside, consultations with caregivers and patient privacy during procedures without requiring the family to leave the room. Space allocation shown in Table 4 includes that for Patient Toilet / Shower Room. For double rooms partition with curtains should be available for ensuring a patient privacy in case of need. The estimated net space allocation per single patient room is 15 sq. m and 26 sq. m per double patient room in each CCC.

**Nurse Station (centralised)**

Nurse Station – is a traditional, centralized nurse station. This option allows for more efficient use of space, staff redundancy/accountability and team work. Single location for technology, systems reporting. Design considerations include maximizing patient visibility from station, increased staff walking distances to rooms and provision of sound absorptive materials to reduce noise from station. One nurse station is recommended to be installed per CCC building floor dedicated to the Sub-Acute and Chronic Care Unit. The estimated net space allocation per nursing station is 20 sq. m.

**Group Recreation Therapy Room**

This space is intended to accommodate a variety of supervised and unsupervised recreational activities among the CCC patients and on occasion patients and family. Net space allocation for the recreation therapy room is 52 sq. m.

**Cognitive Therapy Multipurpose Room**

This space provides a space for group therapy sessions for patients with central nervous system impairments (stroke survivors, degenerative diseases, dementia etc.). Design considerations include the ability to control light (daylight & artificial), with room darkening available. Comfortable seating in a controlled stimulus environment. Finishes should help create a relaxed atmosphere. Sound control from adjacent spaces is important. Estimated net space allocation is 15 sq. m.

**Combined Physical and Occupational Therapy Room**

A relatively large treatment area is required to facilitate evaluation, therapeutic exercise, modalities and ambulating training. The treatment area needs to accommodate equipment such as electrotherapy machines, several plinths, gymnasium equipment, mats, treatment tables, parallel bars and steps. The estimated space allocation is 156 sq. m.

**Dining Room**

The Dining Room is a shared Patient and Family space. It provides for group interaction and socialization for patients. The Kitchen is used by family during 24/7 and/or long term patient stays. It allows family members to
remain close to their loved ones, provides flexibility in scheduling meals and offers a lower cost alternative to restaurants or hospital food. The Dining Room & Kitchen are part of the overall Family suite of spaces which promote improved patient outcomes via an integrated model of care. Estimated net space allocation is 42 sq. m.

**Family Multipurpose Room**

The Family Multipurpose Room is a classroom-type space used for educational programs, family/staff consultations (separate from patient), and celebration of patient life events and recovery milestones. It includes a Family Resource Centre comprised of three Internet terminals and printed reading / research material. It also provides a more open and relaxed environment for patient families by incorporating upholstered seating, televisions, video game modules, a table for four, and children’s play area. The Multipurpose Room is part of the overall patient/family area which promote improved patient outcomes via an integrated model of care. Estimated net space allocation is 56 sq. m.

**Functional Diagnostic Room**

The functional diagnostic room accommodating the basic functional diagnostic equipment: ECG unit, spirometer, pulse oximeter, blood pressure measuring device, etc. will serve both the Sub-Acute and Chronic Care Unit and Geriatric Unit. The total estimated space is 14 sq. m.

**Medical Imaging**

Medical imaging will usually be via mobile units (general x-ray and ultrasound). It may be operated by trained personal, included nurses. The provision of a separate X-Ray Room of 12 sq. m. is recommended and can store the mobile equipment when not in use. The X-Ray Room should be located within easy access for: movement of mobile machines to the exam rooms and treatment areas; access for clients referred from the outpatient unit area. The need for shielding of imaging room and/or treatment room should be addressed early in the design by consulting a shielding adviser or the equipment supplier. This will enable the full cost implications of the design of this space to be realised early in the design process.

The most efficient system of imaging would be a digital mobile system whereby films can be transferred directly to the Inter-rayon Acute Care Hospital in Edinet / radiologist for viewing, manipulation and reporting. Computed Radiology still requires plates to be physically transported to the nominated centre for viewing and reporting (with associated transport costs) in which case a reporting station and reader will be required. In either instance a computer for patient information will be required. However, a traditional dark room or daylight processing facility may be the selected option but given that the units by default will be underutilised, chemicals will have to be replaced before their use-by date, which is costly. The estimated space allocation for the medical imaging, including the storage room is 32 sq. m.

**Lab services and pathology**

The CCCs should have capacity to perform basic lab tests such as:

- Routine Chemistry
- Glucose tests to determine blood sugar levels
• Cholesterol Screening
• Serology
• Outpatient Blood Draw
• ABO and RH group blood typing

In the CCC it is expected that:

• routine urine testing will be done in the Dirty Utility Room;
• haemoglobin and blood sugar testing will occur in the Treatment or Consult/ Exam Room;
• specimens collected from clients and held prior to being sent to another centre for testing will be stored under refrigeration as necessary;
• a centrifuge may be required for the separation of samples prior to transfer.

All blood products must be stored in accordance with the national blood transfusion service requirements. Separate storage will be required for cross-matched and non-cross-matched blood.

Refrigerators and freezers must be connected to the emergency power supply and require continuous temperature monitoring devices – usually set above the equipment – and alarms. Alarms will be activated in the case of a power failure or when the temperature falls outside the specified range for the particular product and must ring into a 24 hour / 7 day per week staffed area. The estimated space allocation is 20 sq. m.

Pharmaceutical services

The pharmaceutical services and pharmacy areas should comply with the recommendations provided by the Sanigest Internacional (Sanigest Internacional 2013). A larger than usual and a wider range of pharmaceuticals will need to be held in CCCs to cover all eventualities and may be stored in the Clean Utility Room or separate Pharmacy Store. The room will require a refrigerator. Controlled temperature and humidity is required for drug storage; internal temperatures should not rise above 25°C. If the CCC provides a chemotherapy service, consideration will need to be given to supply and storage of medication and disposal of cytotoxic waste. It is assumed that drugs will be obtained in pre-prepared doses only and no drug preparation will occur on site. The estimated space allocation is 16 sq. m.

Sterilising Services

Sterilized instruments and sterile supplies will need to be available. It is assumed that there will be no full sterilizing on site and arrangements will need to be made – via the Inter-rayon Acute Care Hospital – for sterilized items to be delivered and returned on a predetermined frequency. However, a small benchtop sterilizer (autoclave) may be required for emergencies and located in a dedicated “clean-up” area.

Management of Medical Emergencies and Resuscitation Room

Facilities should be available for initial treatment, stabilisation and observation of PCCN with acute exacerbation prior to referral and transfer to a centre with a higher level of medical service. These patients may be residents,
walk-in emergency / acute patients or from the local community. Policies and protocols should be established for resuscitation of acute patients, aged residents and visitors, and management of accidents.

To accommodate these services, the Reception/Emergency are in the Sub-Acute and Chronic Care unit should be designed. The area will comprise an appropriate combination of:

- triage/exam room (hand-basin essential);
- sub-waiting;
- resuscitation room;
- treatment bay;
- minor procedures room;
- consult/exam/interview room/s;
- patient toilets.

Some of these functions can be combined as long as there is a private space available for triage and/or consultations / procedures. The Consult / Exam / Interview Room should have a second exit for staff safety and may need to be designed for management of violent or aggressive clients. It must be configured so that staff can sit closest to a door and access to an escape route cannot be cut off.

The Resuscitation Room provides for stabilisation and observation of acutely ill patients prior to referral and transfer to a centre with a higher level of service. This room should be equipped for resuscitation, cardiac monitoring, delivery of a baby and a range of procedures that can safely be undertaken in the facility. It should be easily observable by staff and privacy is essential.

A separate quiet area will be required if videoconferencing is utilised to link with regional and national centres with a lockable cupboard for equipment on a mobile trolley. The area requires ready access to x-ray facilities and to clean and dirty utility rooms. There should be a room that can be used for triage to ensure privacy and ensure triage does not occur in public view. A small sub-waiting area should be provided for waiting patients and families. It is assumed that the Resuscitation Trolley will be parked in or near this area for quick retrieval. It should be remembered that attendance at resuscitations might also be required in the residential section and outside in the grounds or surrounding areas. The total space allocation for the Reception/Emergency area is 54 sq. m.

**Ambulance bay**

The ambulance service is an important and integral service provider for CCCs. The service will be playing important role in transferring the patients to and from the CCCs. Increasingly partnering initiatives are being implemented between ambulance services and CCCs to improve the care delivered to communities. Consideration should be given to optimum sharing of facilities, particularly staff accommodation. A covered Ambulance bay should be available at CCC and provide direct access into the Reception / Emergency area of the Sub-Acute and Chronic Care Unit. The entry must be controlled and monitored and should not be used as a general point of access for those attending the Unit.

**Morgue**
Body holding facilities may be a cool room (temperature 0-5°C) or a refrigerated cabinet. The cool room or cabinet may be screened off with curtaining to provide a reasonable environment for viewing a body. The Cool Room must be sized and laid out to allow for safe manual handling including space to use and manoeuvre trolleys. Transfer of deceased persons from any part of the MSP to the morgue or local undertaker’s premises should be able to be achieved in a discrete manner to minimise the concern of other residents. The estimated space allocation is 12 sq. m.

**Support, staff and administrative areas**

Support and staff areas include reception area, conference rooms, alcoves, staff offices, lockers, lounge and toilets, nourishment room for the staff, linen and storage rooms, utilities room, and housekeeping. The storage rooms should include storage for equipment, general bulk, resource materials and sterile supplies. Total estimated net space allocation for these areas is 340 sq. m.

### GERIATRIC UNIT

**Patient Room (double)**

The Geriatric Unit of the CCCs will contain only double patient rooms designed in similar way as the double patient rooms of the Sub-Acute and Chronic Care Unit. The estimated space allocation is 26 sq. m.

**Procedure Room**

Procedure room of the Geriatric Unit will be used for GEM, wound care, administering minor medical procedures. The estimated space allocation is 14 sq. m.

**Support, staff and administrative areas**

Support and staff areas of the Geriatric Unit will include medication room, alcoves, staff offices, lockers, lounge and toilets, linen and storage rooms, utilities room, and housekeeping. Total estimated net space allocation for these areas is 60 sq. m.

### RESIDENTIAL UNIT

**Resident Room**

Resident rooms in both Skilled Nursing Sub-Unit and Residential Sub-Unit will be designed for the long term stay of the residents and thus recommended to be larger than the patient rooms in other units of the CCC and should create more home-like, comfortable environment. There must be opportunity for patients to keep / display personal mementos, items of furniture and mobility equipment such as wheel chairs, walking frames and scooters. Rooms size must reflect this requirement so that personal items do not compromise staff safety (eg space to use patient hoists and other patient care equipment). The estimated space allocation for the single resident room is 32 sq. m. and 48 sq. m. for a double resident room.

**Other Facilities**
Designs and space allocations for other Residential Unit facilities including Nurse Station, Dining Room, Patient Laundry Room, Family Multipurpose Room are similar to those recommended for the Sub-Acute and Chronic Care Unit. The space allocations for Support, Staff and Administrative Area are lower at 220 sq. m.

OUTPATIENT UNIT

Exam Rooms

Exam rooms are needed for initial examination of all incoming patients and outpatients – returning patients. Two exam rooms are suggested for the NLSRC. The total estimated net space allocation is 24 sq. m.

Cognitive Therapy/Counselling Room

This space is dedicated to quiet interviewing and treatment for Psychology/Neuropsychology. The estimated net space allocation is 12 sq. m.

Physical/Occupational Therapy Room

This space is intended to accommodate physiotherapy, psychosocial and vocational evaluation and therapy for both inpatients and outpatients referred to the CCCs. The treatment area needs to accommodate equipment such as electrotherapy machines, treatment tables, parallel bars and steps. Net space allocation for the physical/occupational therapy room is 75 sq. m.

Rehabilitation Gym

The CCC Rehabilitation Gym is provided for Recreational and Kinetotherapy space for inpatients, residents and outpatients admitted or visiting the CCC. A relatively large treatment area is required to facilitate evaluation, therapeutic exercise, modalities and ambulating training and accommodating several plinths, gymnasium equipment, mats, tables, parallel bars and steps. The estimated net space allocation for the Rehabilitation Gym is 80 sq. m.

Speech Therapy Lab

The space is allocated for speech therapy provided to the stroke and other patients (outpatient) with speech disorders. Net estimated space is 28 sq. m.

Lounge

This space is intended to accommodate a variety of unsupervised recreational activities among patients and on occasion patients and family. Net space allocation for the lounge is 36 sq. m.

Support, staff and administrative areas

Support and staff areas for outpatient rehabilitation unit include reception area, medication room, conference rooms, alcoves, staff offices, lockers, lounge and toilets, nourishment room for the staff, linen and storage rooms, utilities room, and housekeeping. Total estimated net space allocation is 220 sq. m.
### Table 6: Recommended space allocations for RLSRU

<table>
<thead>
<tr>
<th>Units/Areas</th>
<th>Net Space Allocation (sq. m)</th>
<th>Quantity</th>
<th>Total Space</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Briceni</td>
<td>Donduseni</td>
<td>Ocnița</td>
</tr>
<tr>
<td><strong>Sub-Acute and Chronic Care Unit</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patient Room (single)</td>
<td>24</td>
<td>42</td>
<td>30</td>
</tr>
<tr>
<td>Patient Room (double)</td>
<td>36</td>
<td>45</td>
<td>32</td>
</tr>
<tr>
<td>Nurse Station (central)</td>
<td>20</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Cognitive Therapy Room</td>
<td>15</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Combined PT and OT Room and Gym</td>
<td>156</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Group Recreation Therapy Room</td>
<td>52</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Procedure Room</td>
<td>14</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Reception/Emergency Area</td>
<td>54</td>
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<td>1</td>
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<tr>
<td>Functional Diagnostic Room</td>
<td>14</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Medical Imaging</td>
<td>32</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Lab services and pathology</td>
<td>20</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Pharmacy Room</td>
<td>16</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Morgue</td>
<td>12</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Dining Room</td>
<td>42</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Patient Laundry Room</td>
<td>12</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Family Multipurpose Room</td>
<td>56</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Support, staff and administrative areas</td>
<td>340</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>Geriatric Unit</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patient Room (double)</td>
<td>26</td>
<td>11</td>
<td>8</td>
</tr>
<tr>
<td>Procedure Room</td>
<td>14</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Support, staff and administrative areas</td>
<td>60</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>Residential Unit</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resident Room (single)</td>
<td>32</td>
<td>38</td>
<td>27</td>
</tr>
<tr>
<td>Resident Room (double)</td>
<td>48</td>
<td>15</td>
<td>10</td>
</tr>
<tr>
<td>Nurse Station (central)</td>
<td>20</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Dining Room</td>
<td>42</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Patient Laundry Room</td>
<td>12</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Family Multipurpose Room</td>
<td>56</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Group Recreation Therapy Room</td>
<td>52</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Support, staff and administrative areas</td>
<td>220</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>
Summary net space allocation per units and total for each CCC in Briceni, Donduseni and Ocnita are presented in Table 6. The table also shows that total gross space requirements for each CCC: 12,363 sq. m. for the CCC in Briceni, 9,730 sq. m. for the CCC in Donduseni and 10,908 sq. m. in Ocnita (factoring in the net to gross space factor of 1.65). This constitutes from 56 to 63 sq. m. of gross space allocation per bed.

2.3.3. Recommended spacing plans for the upgrade of the existing hospital infrastructure in Briceni, Donduseni and Ocnita

The Intermediary Report recommended using the existing rayon hospital buildings in Briceni, Donduseni and Ocnita to establish CCCs in these locations. This will be achieved through refurbishment and re-equipping of the selected buildings and demolition of other buildings. The vacated spaces are suggested to be used for car parking, patient outpatient activity areas and green zones. This section presents outlines and site plans for repurposing the existing hospital campuses in Briceni, Donduseni and Ocnita. The detailed architectural plans for these restructuring will be developed during the architectural design phase of the future Regionalisation Project.

Briceni

The site plan and current and future space allocations for the CCC buildings units in Briceni are presented on Figure 10 and Table 7 bellow. Out of 15 current buildings located in Briceni hospital campus, five main functional buildings are recommended to be retained and refurbished. In the process of repurposing some of the buildings need to be downsized through conservation of some building parts and/or floors.
Figure 10: Satellite photo and schematic outline of the site plan for Briceni Rayon Hospital

Table 7: Space allocations for the existing hospital buildings and departments and future space allocations for CCC in Briceni

<table>
<thead>
<tr>
<th>Current</th>
<th>Future</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buildings/Departments</td>
<td># of floors</td>
</tr>
<tr>
<td>Central treatment block</td>
<td>Blocul 47urative central</td>
</tr>
<tr>
<td>Administrative block</td>
<td>Blocul administrativ</td>
</tr>
<tr>
<td>Garage</td>
<td>Garaj</td>
</tr>
<tr>
<td>Pharmacy</td>
<td>Farmacia</td>
</tr>
<tr>
<td>Electric substation</td>
<td>Substatia electrica</td>
</tr>
<tr>
<td>Boiler functional</td>
<td>Cazangeria in functie</td>
</tr>
<tr>
<td>Infectious diseases dept.</td>
<td>Sectia de boli contagioase</td>
</tr>
<tr>
<td>Laundry</td>
<td>Spalatoria</td>
</tr>
<tr>
<td>Central boiler</td>
<td>Cazangeria</td>
</tr>
<tr>
<td>Storage</td>
<td>Depozit</td>
</tr>
<tr>
<td>Morgue</td>
<td>Bloc patomorfologie</td>
</tr>
<tr>
<td>Joint therapy building</td>
<td>Terapie mixta</td>
</tr>
<tr>
<td>Consultative Section</td>
<td>Sectia consultativa</td>
</tr>
<tr>
<td>Food block</td>
<td>Bloc alimenter</td>
</tr>
<tr>
<td>Stomatology dept.</td>
<td>Stomatologie</td>
</tr>
<tr>
<td><strong>Total Hospital Area</strong></td>
<td><strong>Suprafata terenului</strong></td>
</tr>
</tbody>
</table>

Source: UNICON 2013

Donduseni
The site plan and current and future space allocations for the CCC buildings units in Donduseni are presented on Figure 11 and bellow. Out of 15 current buildings located in Donduseni hospital campus, only eight are completed and functional. The remaining are conserved construction sites. From the existing buildings two main functional buildings are recommended for refurbishment (polyclinic and infectious diseases dept.), one hospital block under construction needs to be completed and dedicated to the residential unit. In the process of repurposing some of the buildings need to be downsized through conservation of some building parts and/or floors.

*Figure 11 Satellite photo and schematic outline of the site plan for Briceni Rayon Hospital*

<table>
<thead>
<tr>
<th>Current</th>
<th>Future</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Buildings/Departments</strong></td>
<td><strong># of floors</strong></td>
</tr>
<tr>
<td>1 Polyclinic</td>
<td>Policlinica</td>
</tr>
<tr>
<td>2 Hospital Block (conserved)</td>
<td>Bloc fost stationar (conservat)</td>
</tr>
<tr>
<td>3 Infectious diseases dept, pharmacy</td>
<td>Bloc (sectia boli infectioase, pharamcie)</td>
</tr>
<tr>
<td>4 Hospital Block under construction</td>
<td>Bloc stationar in constructii</td>
</tr>
<tr>
<td>5 Old administrate block</td>
<td>Bloc fost administrativ</td>
</tr>
<tr>
<td>6 Block support, laundry</td>
<td>Bloc alimentar, spalatoria</td>
</tr>
<tr>
<td>7 Water tower</td>
<td>Turn de apa cu 1 fantana artesiana</td>
</tr>
<tr>
<td>8 Boiler</td>
<td>Cazangeria</td>
</tr>
<tr>
<td>9 Garage</td>
<td>Garaj</td>
</tr>
<tr>
<td>10 Morgue</td>
<td>Morg</td>
</tr>
</tbody>
</table>
Ocnita

The Sanigest Internacional provided recommendations for the CCC in Ocnita in its Intermediary Report. UNICON generally agrees with suggested plan for repurposing of the existing Ocnita rayon hospital campus (see Figure 12).

*Figure 12: Site plan for the future CCC in Ocnita*

However, UNICON recommendations on building dedications and space allocations for the CCC in Ocnita are consistent with the functional planning principles laid-out in the earlier sections of this report and thus differ from the functional planning and floor plans suggested by the Sanigest (see Table 9).
**Figure 13: Current site plan for the hospital campus in Ocnita**

![Site Plan](image)

**Source:** Top Consult 2009

**Table 9: Space allocations for the existing hospital buildings and departments and future space allocations for CCC in Ocnita**

<table>
<thead>
<tr>
<th>Buildings/Departments</th>
<th>Current</th>
<th>Future</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td># of floors</td>
<td>space (sq. m.)</td>
</tr>
<tr>
<td>Treatment Block N 1</td>
<td>3</td>
<td>5,564</td>
</tr>
<tr>
<td>Treatment Block N 2</td>
<td>4</td>
<td>3,900</td>
</tr>
<tr>
<td>Support Block</td>
<td>1</td>
<td>642</td>
</tr>
<tr>
<td>Laundry</td>
<td>1</td>
<td>312</td>
</tr>
<tr>
<td>Boiler</td>
<td>2</td>
<td>840</td>
</tr>
<tr>
<td>Garage</td>
<td>1</td>
<td>462</td>
</tr>
<tr>
<td>Electrical substation</td>
<td>0</td>
<td>60</td>
</tr>
<tr>
<td>Water reservoir</td>
<td>0</td>
<td>400</td>
</tr>
<tr>
<td>Artesial fountain</td>
<td>1</td>
<td>350</td>
</tr>
<tr>
<td>CMP garage</td>
<td>1</td>
<td>150</td>
</tr>
<tr>
<td>CMP</td>
<td>1</td>
<td>468</td>
</tr>
<tr>
<td>Pharmacy</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td><strong>Total Hospital Area</strong></td>
<td><strong>1</strong></td>
<td><strong>13,388</strong></td>
</tr>
</tbody>
</table>

**Source:** UNICON 2013
2.4. Technical Considerations

Technical considerations outlined below are common for RLTC facilities of all three levels and are recommended to be taken account in addition to the existing national technical standards.

2.4.1. Architectural

Partitions

Interior partitions primarily should be gypsum wallboard on metal studs that are either painted or wallpapered. Interior partitions around patient rooms should have sound attenuation features such as batts between studs. Other areas where significant noise may be generated also should have sound attenuation features.

Floors

Flooring should be readily cleanable and unaffected by germicidal cleaning solutions. In food consumption and preparation areas, floors should be water resistant.

Floors in patient, support and other areas at high risk for spread of infections should be of non-porous material other than carpet such as vinyl composition tile. Floors in high-traffic areas such as offices and administrative service areas should be carpeted with a 100 mm high resilient base. Floors in toilet/shower rooms and bathing suites should be non-slip, ceramic tile with a non-slip, ceramic tile base. Floors in medical exam rooms, therapeutic services and most other spaces should be vinyl composition tile with a 100 mm high resilient base.

Ceilings

Ceilings primarily should be lay-in acoustic ceiling tile installed in an exposed or semi-concealed suspension system.

Protection/Safety

Continuous handrails should be used within Inpatient and Transitional Rehabilitation hallways and other pathways. Wall and ceiling guard protection should be used in all areas subject to damage from cart or other service traffic.

Interior Doors and Hardware

Interior doors should be 44 mm thick, solid-core, flush-panel wood doors or hollow metal doors in hollow metal frames. Hollow metal doors should be used where high impact is a concern and where fire rated doors are required. Interior door width for a typical patient rooms and toilet/shower rooms should be 1220 mm. Interior door width for special care patient rooms and toilet/shower rooms should be 1220 mm. Accessible hardware should be used throughout the inpatient and transitional facilities.
Rehabilitation Gym

Patients using wheelchairs for their mobility, would require a low, wide plinth for treatment and training. This would take place both with their wheelchair, and away from it. It is important therefore to include within the gym or its entrance for wheelchair storage while the patient is being treated. Space around the plinths would also need to cater for wheelchair access and therapist traffic.

Dimensions:
- 650 mm wide
- 1000 mm long
- 900 mm high

Turning area: 2000 mm

Plinth

Dimensions:
- 1800 mm wide
- 2000 mm long
- 550 mm high

Other considerations: Edges of the upholstery need to be reinforced due to repeated wheelchair contact and knocking.

Additional space is required for rehabilitation equipment, which includes:

Treadmill

Dimensions:
- 1220 mm wide
- 5000 mm long
- 2800 mm high

Other considerations: This includes ramp onto the treadmill, and space for an overhead suspension system.

Wall ladders and mirrors
Stationary bicycles

Dimensions:
- 2500 mm wide
- 2000 mm high
- 155 mm off the wall

Other considerations: May be bigger if reclining cycle 4

Standing frames

Dimensions:
- 720 mm wide
- 1000 mm long
- 1350 mm high

Tilt tables

Dimensions:
- 650 mm wide
- 2000 mm long
- 950 mm high off the ground

Other considerations: When raised up, 2000 mm high. Needs to fit in underneath the suspension frames.

Hoist – fixed or mobile

Dimensions:
- 1200 mm wide
- 2000 mm long
- 2000 mm high
Other considerations: Power points at storage areas to charge batteries.

**Suspension frame – fixed or mobile**

![Suspension frame](image)

Dimensions:
- 2800 mm wide
- 3000 mm long
- 2500 mm high off the ground

Other considerations: Reinforced to carry patients weight.

**Parallel Bars**

![Parallel Bars](image)

Dimensions:
- 800 mm wide
- 5000 mm long
- Adjustable Height

Other considerations: Need 1 meter working space on either side of the bars for the therapists to access the patient while walking. A posture mirror for the entry side of the bars fixed mirror if leading towards a wall. Otherwise 2 posture mirrors.

**Corner stairs unit**

![Corner stairs unit](image)

Dimensions:
- 1600 mm wide
- 1600 mm long
- 1400 mm height

Other considerations: Top of steps is 650 mm off the ground. It should be ensured that when the patient is standing on the top step, the ceiling is high enough as to not to hit their head.

**Oxygen and suction units**

These are required for the more acute patients who may become respiratory compromised and require urgent clearing of the airways and oxygen.

**Emergency call system linked directly with the ward and on-call system**

These need to be within reach of the healthcare professionals as well as the patients. They should therefore be within reach of a person in a wheelchair, and at the same time avoid accidental triggering from walking persons.
These should also be available in areas where the patient might be alone, for example in the toilet, changing areas, showers, etc.

**Ceiling and Roof**

The ceiling height should be ideally higher than 3 meters where possible. This not only adds to the feeling of space and activity, but allows for ball throwing activities which are often used in balance retraining. Overhead support treadmills and other such equipment requiring additional height will also be catered for. A ceiling height of between 3.5m and 4 m is ideal for the gym. A section of the roof needs to be reinforced, to allow for fixed suspension frame for patient training and fixed hoist system.

2.4.2. **Structural**

The national recognized building codes be used for the seismic design and construction of new buildings, and for the seismic safety assessment of existing buildings. For structural systems, International Building Code should be followed.

**Casework**

Modular casework storage systems should be chosen for flexibility including the incorporation of dimensions for ease of multiple re-use applications. Casework systems should be integrated with space planning to avoid corner installations and filler panels.

**Management Information Systems**

Management Information Systems (MIS) should be planned and designed on an individual facility basis to meet needs. The amount of information that is assembled and distributed through MIS is increasing at a rapid rate and expansion to meet future needs should be considered.

**Headwall Equipment Management Systems**

The headwall requirements for the acute rehabilitation inpatient rooms of RLTC facilities are to follow the guidelines for inpatient facilities that includes equipment for medical gasses or oxygen; nursecall and reading light. The patient room in transitional and residential units will only require nurse call and reading light.

**Heating, Ventilation and Air Conditioning**

HVAC systems should be provided to heat, cool and ventilate individual rooms or areas as required to satisfy design criteria. Supply air volume should be established to meet the cooling load requirements of the occupied space. The supply volume should be modified to meet minimum air change requirements or to maintain proper space pressurization relative to room exhaust requirements. Typically, clean areas such as clean utility should have
positive air pressure and soiled areas such as soiled utility, toilet/shower rooms and storage rooms should have negative air pressure with respect to adjoining areas.

Corridors should not be used to supply or to exhaust/return air from rooms. Corridor air may be used to ventilate toilets, housekeeping closets and small electrical or telephone closets opening directly on corridors.

HVAC design should minimize the short circuiting of air between supply and exhaust vents in rooms or areas. Exhaust systems should be designed to provide exhaust air to spaces to control the transfer of odors and provide proper room pressurization. Exhaust air and pressurization should be provided to match requirements for specific rooms or areas as specified in facility design. HVAC equipment and ductwork should provide resulting sound levels not to exceed 45 maximum NC levels in dining areas, 40 maximum NC levels in toilet/shower rooms, and 35 maximum NC levels in all other occupied spaces.

2.4.3. Plumbing

Water and Waste Systems

Plumbing service should be extended to the facility to serve the domestic hot and cold and fire protection systems. The RLTC facility’s cold water should be piped to all required plumbing fixtures and equipment. Hot water should be piped to all required plumbing fixtures and equipment. A hot-water recirculation system should be provided. The facility’s plumbing system should be drained by gravity through soil, waste and vent stacks. Medical waste should be drained through corrosion resistant piping into either a local or centralized acid dilution tank.

Medical Gas Systems

The RLTC facilities may be designed to accommodate either in-wall medical gases or portable equipment. Individual facilities should match patient needs for medical gases with the quantities and locations of medical gases during equipment planning.

2.4.4. Electrical

Illumination

Natural light should be maximized and artificial light should be adequate for patients and staff. Patient rooms should have as much natural light as possible from the outside; oversized windows to increase natural light and provide a “healing” view should be considered. General lighting, night lighting, and exam lighting are needed. A reading light should be provided for each patient. Reading light controls should be readily accessible to patients. A minimum of one night light fixture in each patient room should be controlled at the room entrance. All light controls in patient rooms should be inaudible.

Power

General purpose duplex receptacles are typically provided on each wall of a room or area. Patient rooms and toilet/showers should have duplex, grounded receptacles. Dedicated
duplex or special receptacles are provided for selected pieces of equipment such as refrigerators, freezers and ice makers. Staff work stations and other locations where personal computers (PCs) are used, are typically provided with multiple receptacles for the PC, monitor, printers, and other related electrical devices. Junction boxes are provided for equipment requiring a hardwired electrical connection. An emergency generator should be provided as an electrical source for power and lighting during an interruption of the normal electric supply. Duplex receptacles that are marked or coloured should be provided to connect key pieces of equipment to the critical branch of the emergency power system.

Security

Security for each component of the department will depend upon a perimeter security system. Individual patient rooms and visitor spaces shall not be individually locked, rather depend upon security entry portals. Each RLTC facility security office will have specific local requirements which should be addressed at the programming and early planning phase of the project.

Life Safety

The life safety program should provide a reliable system to protect building occupants, firefighting personnel, building contents, building structure and continuity of building function. The intent should be to provide an enhanced level of fire safety by reducing the probability of injury, loss of life or diminution of building function due to a fire. By limiting the development and spread of a fire emergency to the area of origin, the need for total occupant evacuation should be minimized.

Facility design aspects that relate to fire and life safety include:

- Structural fire resistance
- Building compartmentalization
- Fire detection, alarm and suppression
- Smoke control and exhaust
- Firefighting access/facilities
- Emergency power

New RLTC facility construction and renovation of areas of existing facilities are required to be fully protected by an automatic fire suppression system.

The minimum width of corridors in areas used by patients is 2440 mm. Corridors and passageways that are not used by patients may be 1120 mm or wider.

Energy Conservation

Energy conservation is emphasized in all aspects of the building design.

2.4.5. Communications

Telephone
Unless restricted by the program of services, a telephone should be available at each patient’s bedside. In addition, there should be one private telephone available per inpatient and transitional unit for patients who do not subscribe to private telephone service. Telephone outlets are typically provided at each staff work station or in each room.

Wall outlets are 450 mm AFF and desk outlets are 1200 mm AFF.

Information Systems

Information systems needs include computer and electrical outlets available at all work stations including decentralized charting locations. Desk or workstation outlets are 1200 mm AFF.

Nurse Call

A staff call system is provided for all inpatient and transitional rooms, toilet/showers, and other spaces used by patients. Specific needs for call system locations should be coordinated with the functional design of patient spaces. Wireless technologies for staff should be studied, along with hard wired or integrated systems, to meet the needs of individual facilities.

Television

Cable and electrical outlets for television should be provided at each inpatient and transitional patient bed area.

**2.4.6. Waste Management**

**Medical Waste**

Medical waste is generated in medical exam rooms or in patient rooms where it is bagged, collected and transported using specially designated, closed containers to the soiled utility rooms. The waste is held there until it is transported via the loading dock to the medical waste handling facility.

**General Waste**

General waste is generated in all spaces and is held in waste containers for collection. It is then collected by cart and transported via the loading dock to the waste handling facility.

**Recycling**

Means of sorting, collecting, transporting and disposing of recyclable materials should be analysed by locality and modified to suit local conditions and practices.

Optional use of disposable and recyclable products is an important design consideration in recycling alternatives that impacts physical space for waste disposal volumes.
Soiled Linen

Reusable soiled linens are generated in medical exam rooms and patient rooms. They should be collected in carts or hampers in the soiled utility rooms and transported to a soiled linen holding room near the loading dock for pick-up.

Utensils

Any washable items incorporated in the plan of care should be transported to the soiled utility room for sanitizing. Some items may be transported to a sterile processing department or service for cleaning and reprocessing.

Space Requirements

Space requirements for Waste Management will vary based on selection of waste collection and recycling methods. Space requirements need to be studied for each optional method or system considered.

2.4.7. Transportation

Patients

Patients and family members will typically arrive at the main entrance via private transportation. Some patients may arrive via ambulance at the ambulance entrance. The main entrance should have a covered drop-off area.

Patients are usually accompanied by family or other caregivers. Clear site and facility organization through the use of directional signage is required to assist in directing the patient and others to their destination.

Vehicles transporting patients for admission via the emergency entrance should be clearly directed to this location. Convenient access from visitor parking should be provided. Features such as clear access routes, public spaces, landmarks and signage are particularly important in the RLTC facilities to facilitate way-finding.

Staff

Staff entry be separated from other traffic such as patient/visitor and service. Staff facilities should be located convenient to staff entry.

2.4.8. Other Considerations

Records

Patient medical and financial records are maintained centrally and may be distributed and accessed electronically.

Pharmaceuticals.

Pharmaceuticals including narcotics are transported by pharmacy staff to individual patient units in locked transport containers. Narcotics are delivered to a locked medication cabinet in the medication room.
Material

Supply traffic (material) should be separated from patient/visitor traffic. Clean supplies are transported via supply carts to the clean utility rooms on the individual patient units where supplies are accessed by staff.

Linen

Supply traffic (linen) should be separated from patient/visitor traffic. Clean and soiled linen are transported in linen carts.

Sterile Supplies

Sterile items used in the medical exam rooms are transported via dedicated closed carts. Sterile items also may be stored in the clean utility rooms.

Food

Each of the three primary areas within the RLTC facilities; Inpatient, Transitional Care and Long Term Care will ultimately depend on the centralized food service department (kitchen) and materials handling systems. The Inpatient Unit will receive food directly from the kitchen with final preparation determined by the individual facility. Transitional Care will have a working kitchen within the facility to re-teach patients domestic cooking skills. All bulk food deliveries will come by way of the centralized materials handling department.

Outpatient nourishment stations will receive food deliveries and restocking of nourishments via the centralized food service department.

Waste

Waste is collected by environmental services staff and transported to soiled utility rooms in the individual patient units and trash collection areas near loading docks where it is disposed according to facility policies.
3. Financial analysis of the RLTC Model implementation

This section presents financial analysis for the investment required for the RLTC Model implementation in the Pilot Rayons and nationwide. For consistency in technical assistance streams, UNICON took into account the methodology used and actual projections provided by the Sanigest International for the financial analysis and public investment evaluation of the Regionalisation Strategy implementation (including Public Private Partnership (PPP) opportunities) in the Republic of Moldova (Sanigest Internacional 2013). As a result, following key assumptions for the investment scenarios for the Pilot Rayons and the country were adopted:

- Investments in infrastructure and equipment for RLTC facilities are phased over 10 years period;
- The same rates of discount (7%) and inflation rates (annual 4%) used by the Sanigest are utilised to estimate the Net Present Value (NPV) of the capital investment;
- Saving are estimated at 50% of the current operational costs of the rayon hospitals;
- The Cost Benefit Analysis (CBA) projections and Internal Rate of Return on Investment projections are revised using the UNICON estimates for additional investments and recurrent expenditures for RLTC services;
- PPP options consider 0%, 30% and 50% of the initial public investment in two 120 bed, level 3 rehabilitation centres in Chisinau, as PPP projects for CCCs were deemed not feasible.

3.1. Cost benefit analysis for the Pilot Rayons

The capital investments required for construction/refurbishment and equipment of the proposed RLTC facilities in the Pilot Rayons are presented in Table 10. The additional assumptions elaborated behind this estimates elaborated in the Intermediate Report are the following:

- 90 sq. m. per bed are estimated for the Edinet 24 bed Regional Specialised Rehabilitation Unit (Level 2) to be collocated with the new Acute Care Hospital, with 1,200 Euros per sq. m. cost for the new construction and 21,600 Euros of equipment cost per bed. These result in 129,600 Euros of total investments per bed.
- 80 sq. m. per bed are estimated for up to 50 general rehabilitation beds (level 1) to be located in the CCCs in Briceni, Donduseni and Ocnița, with 200 Euros per sq. m. refurbishment costs of the existing hospital buildings and 11,520 Euros of equipment cost per bed. These result in 27,520 Euros of total investments per bed.
- 80 sq. m. per bed are estimated for up to 18 palliative care beds to be located in the CCCs in Briceni, Donduseni and Ocnița, with 200 Euros per sq. m. refurbishment costs of the existing hospital buildings and 7,680 Euros of equipment cost per bed. These result in 23,680 Euros of total investments per bed.
- 60 sq. m. per bed are estimated for up to 490 Sub-Acute and Long Term Care beds (to include chronic care and residential beds) to be located in the CCCs in Briceni, Donduseni and Ocnița. The refurbishment and equipment investment costs were revised (compared to the Intermediate Report) after the consultations with stakeholders: the refurbishment costs per sq. m. were scaled down to 50 Euros per sq. m. of the existing hospital buildings and 2,100 Euros of equipment cost per bed. These result in 5,100 Euros of total investments per bed.
The final estimates for the capital investment in the infrastructure and equipment for the Pilot Rayons of Edinet, Briceni, Donduseni and Ocnita are estimated at 7,406,540 Euros.

Table 10: Estimated capital investments in infrastructure and equipment for the Pilot Rayons

<table>
<thead>
<tr>
<th>Facilities</th>
<th>Rehab level 2</th>
<th>Rehab level 1</th>
<th>Long Term Care</th>
<th>Palliative Care</th>
<th>Total Investment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>beds</td>
<td>cost per bed</td>
<td>beds</td>
<td>cost per bed</td>
<td>beds</td>
</tr>
<tr>
<td>Edinet</td>
<td>24</td>
<td>€ 129,600</td>
<td>194</td>
<td>€ 5100</td>
<td>7</td>
</tr>
<tr>
<td>Briceni</td>
<td>21</td>
<td>€ 27,520</td>
<td>158</td>
<td>€ 600</td>
<td>6</td>
</tr>
<tr>
<td>Donduseni</td>
<td>16</td>
<td></td>
<td>137</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Ocnita</td>
<td>13</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: UNICON 2013

The CBA for the Pilot Rayons is conducted using the capital investment estimates and assumptions presented above. For the CBA of the public expenditures for implementation of the RLTC Model in the Pilot Rayons, the estimated investments in Edinet are assumed to be spread over two years, while for other Pilot Rayons the investments in refurbishment and equipment are assumed to be expanded during the first year of the ten year period considered for estimating Net Present Value (NPV) of the investments and cost saving generated as a result of the efficiency gains and optimised operational budgets for the future CCCs (see also for details Sanigest Internacional 2013).

Table 11: Cost Benefit Analysis (CBA) of Regionalisation Strategy with added estimates for RLTC Model implementation in PR

<table>
<thead>
<tr>
<th>Saving generated</th>
<th>First Year</th>
<th>NPV (10 Years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conversion of rayon hospitals</td>
<td>€ 1,449,838</td>
<td>€ 9,156,944</td>
</tr>
<tr>
<td>Closure of satellite rural hospitals</td>
<td>€ 307,118</td>
<td>€ 2,857,953</td>
</tr>
<tr>
<td>Improved energy efficiency (Edinet)</td>
<td>€ 18,296</td>
<td>€ 123,852</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>€ 12,138,749</td>
</tr>
</tbody>
</table>

| Investment Costs                              |            |                |
| Investment required for Edinet (Sanigest estimates plus investment for level 2 rehab) |            |                |
| Sanigest                                      |            |                |
| Construction                                  | € 31,320,000| -€ 27,873,819  |
| Equipment                                     | € 7,180,000 | -€ 6,838,095   |
| Additional estimated by UNICON                |            |                |
| Construction                                  | € 5,150,000 | -€ 3,457,973   |
| Equipment                                     | € 2,261,640 | -€ 2,348,229   |
|                                                | € 7,411,640 | -€ 5,806,202   |
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Consulting Services to Draft a Business Plan for the Rehabilitation and Long Term Health Service Development

Additional operational budget for Edinet
Sanigest Estimate for Acute Care Hospital € 695,238 -€ 4,075,711
UNICON est. for Level 2 Rehab unit in Edinet € 238,272 -€ 1,396,828

Net Savings -€ 46,006,898 -€ 33,851,906
Savings as a percent of total investment 3.9% (4.7% Sanigest) 25.9% (39% Sanigest)

Source: UNICON and Sanigest 2013

The CBA results for the Pilot Rayons (PR) show that while extra investments are required for (a) 24 bed level 2 rehabilitation unit in Edinet and (b) higher (than Sanigest Estimates) standard refurbishment and equipping of level 1 rehabilitation, LTC and PC beds in the three rayons, adding this additional investment at estimated 7.4 million Euros and extra annual operational expenses at 238 thousand Euros only moderately changes the public investment outlook projected by Sanigest (see Table 11).

3.2. Cost benefit analysis for nationwide implementation of the RLTC Model

Three core investment scenarios were proposed by Sanigest for the national implementation of the Regionalization strategy:

- Six new zonal, or inter-rayon hospitals are constructed
- Nine new zonal, or inter-rayon hospitals are constructed
- Two new tertiary level facilities are built in Chisinau

Core scenarios were varied by Sanigest using PPP option with 50% co-financing of the capital expenditures (CAPEX) from the private partner.

UNICON suggests updating these scenarios:

- By adding additional construction/refurbishment and equipment costs for each zone for RLTC Beds using the estimates of the pilot rayon
- By adding construction and equipment costs for 240 specialized rehabilitation beds (level 3) located: either (a) in two narrow profile (e.g. neurologic and trauma) centres or (b) one multiprofile specialized rehabilitation centre in Chisinau (to be collocated with new national tertiary level hospital or hospitals).

As noted above, the scenarios were varied according to the PPP options (50% and 100% Public CAPEX) for tertiary rehabilitation centre (s) in Chisinau creating three additional scenarios. The results are presented in Table 12.

Table 12: Estimates for capital investments (CAPEX) for the nationwide implementation of the Regionalisation Strategy

<table>
<thead>
<tr>
<th>Scenario</th>
<th>SANIGEST Estimates</th>
<th>UNICON Estimates</th>
</tr>
</thead>
<tbody>
<tr>
<td>100% Investment Public CAPEX</td>
<td>100% public CAPEX</td>
<td></td>
</tr>
<tr>
<td>CAPEX with 50% Under PPP</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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The key results for the revised public investment scenarios for three PPP options show that:

- First scenario now includes additional investment costs for 6 zones: + 50.2 Million Euro (100% Public CAPEX), or 25.1 Million Euro (50% Public CAPEX)
- Second Scenario includes investment costs for 9 zones: + 75.4 Million Euro (100% Public CAPEX), or 37.7 Million Euro (50% Public CAPEX)
- Third scenario includes investment costs for 240 bed tertiary care rehabilitation centre along with two tertiary care hospitals in Chisinau + 50.2 Million Euro (100% Public CAPEX), or 25.1 Million Euro (50% Public CAPEX)

The CBA analysis was conducted using the same assumptions used by the Sanigest, however the actual estimates are adjusted using the capital investment scenarios presented above. The additional investments and operating costs required for the RLTC facilities are phased over 10 year period in the way presented in Table 13

**Table 13: Phasing of capital investment costs and additional operating costs for the RLTC facilities nationwide**

<table>
<thead>
<tr>
<th>Beds</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Year 6</th>
<th>Year 7</th>
<th>Year 8</th>
<th>Year 9</th>
<th>Year 10</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>€ 2,144,448</td>
<td>€ 2,859,264</td>
<td>€ 3,574,080</td>
<td>€ 4,288,896</td>
<td>€ 5,003,712</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: UNICON 2013

The summary results of the combined Sanigest/UNICON estimated public investment CBA are presented in Table 14

**Table 14: CBA of Regionalisation Strategy with added estimates for RLTC Model nationwide implementation**

<table>
<thead>
<tr>
<th></th>
<th>100% Public</th>
<th>50% Public</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Single Year</td>
<td>NPV 10 Years</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Savings Generated</th>
<th>221,589,215</th>
<th>1,885,888,315</th>
<th>229,574,215</th>
<th>1,964,167,093</th>
</tr>
</thead>
<tbody>
<tr>
<td>Closure of satellite rural hospitals</td>
<td>21,680,450</td>
<td>186,400,454</td>
<td>21,680,450</td>
<td>186,400,454</td>
</tr>
<tr>
<td>Improved energy efficiency in inter-rayon hospitals</td>
<td>2,727,929</td>
<td>23,453,722</td>
<td>2,727,929</td>
<td>23,453,722</td>
</tr>
</tbody>
</table>

### Additional Costs

| Investment required for 9 inter-rayon hospitals | 4,656,852,000 | 2,215,456,181 | 2,328,426,000 | 1,107,728,091 |
| Increase in OPEX for 9 inter-rayon hospitals (50% increase) | 103,661,310 | 891,241,427 | 103,661,310 | 891,241,427 |
| Additional equipment investments required | 519,050,168 | 386,278,708 | 259,525,084 | 193,139,354 |

### Savings as per cent of total investment

<table>
<thead>
<tr>
<th>3%</th>
<th>46%</th>
<th>6%</th>
<th>99%</th>
</tr>
</thead>
</table>

### Net Savings (Lei)

-5,033,565,883 | -1,274,724,375 | -2,437,629,799 | 1,003,135,333 |

### Net Savings Sanigest International Estimates (Euro)

-318,983,896 | -80,781,012 | -154,475,906 | 63,570,046 |

### Net Savings for RLTC (UNICON)

<table>
<thead>
<tr>
<th>€ (116,580,080)</th>
<th>€ (78,710,652)</th>
<th>€ (87,751,280.0)</th>
<th>€ (56,683,910)</th>
</tr>
</thead>
</table>

### Net Savings Total

| € (435,563,976) | € (159,491,665) | € (242,227,186) | € (6,886,137) |

### Source: UNICON and SANIGEST 2013

As evidenced from the table above, the total investment in infrastructure estimated by Sanigest amount to nine €32.4 million hospitals, equalling €291.6 million (MDL 4.7 billion), while equipment is €32.5 million total (MDL 519.0 million). These total amounts are included in the “Single Year” column, together with the corresponding cost or savings for the first year. In order to estimate the NPV of the third and fifth column, all operational costs and savings are adjusted to inflation, while the total capital expenditures detailed above are spread out over the 10 year period as described earlier in this section. When all investment is made in the same year, there is a negative balance of 319 million Euros. This negative balance is increased by 116.6 million Euros when net savings from the RLTC Model implementation are added. The net savings continue to be negative when it is spread out over 10 years, but is reduced to a third of the first estimate, approximately 160 million Euros. The public investment outlook changes favourably in case of the private sector engagement in co-financing of up to 50% of the investments in acute care inter-rayon hospitals and up to 70% of investment in tertiary level rehabilitation centre (s) as part of a Private Public Partnerships. In the case of such PPPs, the regionalization result in positive savings of about 7 million Euros. This result points to the potential for a successful project from a public finance perspective. Nonetheless, it is important to note that the calculations above do not consider the full cost of PPP since there would be repayment to the Special Purpose Vehicle (SPV) for the operation of the PPP. On the other hand, the international experience shows that from 20 to 40% of the costs for rehabilitation and long term care can be mobilized from the user fees and co-payments at market rates, which may further enhance the financial viability of the PPP option (s). Notwithstanding the direct savings, international experience also shows that averting and mitigating disabilities through the well-functioning rehabilitation and long term care services may have a massive economic impact both on individuals and a nation.
4. Private Public Partnership Opportunities for the RLTC Service Model

Implementation of the new RLTC Model in the Republic of Moldova will require significant investments in infrastructure, equipment, human resources and technologies. As evidenced from the financial projections presented in previous section, only capital investments in infrastructure and equipment are estimated at more than 135 million Euros for the nationwide RLTC network. In the conditions when the annual total capital public expenditures in health does not exceed 5 million Euros (Turcanu, et al. 2012), mobilisation of the public investment of this size in the medium term will be difficult and would require exploring an alternative options, including the PPP model.

The term “Public Private Partnership” ("PPP") refers to a long-term, contractual partnership between public and private sector agencies ("Partner"), specially targeted towards financing, designing, implementing and operating infrastructure facility services that were traditionally provided by the public sector with the purpose of making activities of public interest, that is concluded on the capacities of each partner to respectively distribute resources, risks and benefits. Typically PPPs differ from the traditional public procurement:

• rather than buying buildings, equipment or supplies, PPPs are long-term contracts for governments to buy a bundled service (facility, staff, supplies, equipment).
• PPPs involve annual payments over long-term after facility commissioning
• Payment is tied to performance not inputs/milestones
• Private party is typically responsible for all or part of the capital financing

The first systematic programme aimed at encouraging PPPs was introduced in the United Kingdom, with the establishment of the “PFI-Private Finance Initiative” in 1992. In a PPP, each Partner agrees to share responsibilities related to implementation and/or operation and management of a project. This collaboration or partnership is built upon the areas of expertise of each Partner, based on the allocation of resources, risks, rewards and responsibilities. The perceived benefits of PPP’s in general is to provide high quality public services effectively and cost efficiently avoiding extending construction time and to remove cost increases frequently encountered in projects executed in the public sector. The benefits of PPP’s for the public sector are: (i) to provide a new opportunity in public financing; (ii) to direct the private sector to areas where social benefit is high; (iii) to benefit from the correct determination of market needs; (v) to put resources into effective use; (vi) and to share joint liability with the private sector and to benefit from a more correct analysis of the risks in providing services. In overall the governments want PPP to provide more Value for Money (VFM) compared to traditional forms of procurement which do not transfer risks to the private sector. VFM is defined as the optimum combination of whole life cost and quality to meet the user’s requirement. Value for money depends on appropriate risk transfer between the public and private sectors. Financially, private financing is a way to provide infrastructure without increasing the public sector borrowing and reduce pressure on public finance constraints and is driven by pressures for governments to reduce public spending to meet political, legislated and/or treaty-mandated fiscal targets (i.e. Maastricht criteria). The benefits of PPP’s for the private sector is to reduce the commercial risks and to make the best use of public sources (Hamilton, et al. 2012).
PPP investment models were first implemented in motorways, roads and other infrastructure projects. More recently, these models have been implemented in school and hospital constructions. The global volume and number of PPPs in health care have increased significantly since the 1990s and USA, Canada, Australia, New Zealand and many Western European countries such as the UK, Spain, France, Germany and Italy have started to implement PPP models for project financing. As of the end of 2012, the investment volumes of private sector entities in public projects in health care infrastructure of OECD countries have reached EUR 35 billion by 2012. The PPPs as mechanisms for financing health infrastructure are receiving increasing attention Eastern European countries such as Czech Republic, Romania, Turkey, Kazakhstan and Georgia. For instance, during the last three years Turkey announced 4 billion Euro in hospital deals that would finance creation of over 25 thousand new hospital beds in the country.

PPP models vary from short-term simple management contracts (with or without investment requirements) to long-term and complex Design-Build-Finance-Maintain (DBFM) projects. The most common PPP models used for hospitals are as follows:

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Franchising</td>
<td>Public authority contracts a private company to manage existing hospital</td>
</tr>
<tr>
<td>DBFO (design, build, finance, operate)</td>
<td>Private consortium designs facilities based on public authority’s specified requirements, builds the facility, finances the capital cost and operates their facilities</td>
</tr>
<tr>
<td>BOO (build, own, operate)</td>
<td>Public authority purchases services for fixed period (say 30 years) after which ownership remains with private provider</td>
</tr>
<tr>
<td>BOOT (build, own, operate, transfer)</td>
<td>Public authority purchases services for fixed period after which ownership reverts to public authority</td>
</tr>
<tr>
<td>BOLB (buy, own, lease back)</td>
<td>Private contractor builds hospital; facility is leased back and managed by public authority</td>
</tr>
<tr>
<td>Alzira model</td>
<td>Private contractor builds and operates hospital, with contract to provide care for a defined population</td>
</tr>
</tbody>
</table>

Source: McKee et al 2008

4.1. Key lessons from international experience relevant for Moldova

Key lessons from international experience of health PPPs are derived by assessing the success or failure of PPP initiatives from the selected countries using some of the generally accepted health care delivery system performance criteria: access, equity, efficiency and replicability.
Access in health care is defined in terms of increasing physical and financial access to and availability of services. Issues raised by critics of PPP is that PPP is so expensive relative to conventional procurement that there is less to spend on care, new wards, beds, etc., also increases cost of health services and thus decreases both access to care.

Affordability of health services is an criterion that defines financial access to health care services. In the countries without universal coverage, PPPs through the escalating health services costs may worsen the affordability of these services and thus contribute to inequitable access to health services and negatively affect the public perception of PPP models;

Equity means social justice or fairness. Health equity is the absence of systematic disparities in health between more or less disadvantaged social groups. Promoting equity in health can be defined as improving health outcomes amongst the socially and economically disadvantaged.

Efficiency is the ratio of the output to the impacts of any system. Any efficient system is one which achieves higher levels of performance (output) relative to the inputs (resources, time, and money) consumed. Another key perceived objective of PPP. The measures for efficiency in health care industry include average length of stay in hospitals, cost of case treated, occupancy rates, etc.

Replicability is defined as property of a project that allows it to be duplicated at another location and can be easily adapted to another context. It is a major challenge to transfer PPP projects across borders: projects typically products of culture, institutions, legal framework and financial system unique to its own national environment. For the purposes of the current report we will be looking at Replicability of reviewed PPP case for Moldova.

The international experience shows that hospital based PPPs can be tailored to meet specific needs, with the private sector’s role ranging from facility management and non-clinical services, to specialized clinical services, and to full hospital management including all clinical services. These are based on generally but not exclusively long term contracts and project finance where the private sector takes over the running of certain functions that had previously been reserved for the public sector like design, finance, and maintain some services and where the public sector can shift certain risks onto the private sector to manage. The four sub-categories of such Health PPPs can be identified:

- Infrastructural PPPs
- Integrated PPPs
- Facility-based hospital PPPs
- Lease contracts

For the purposes of our report, we will concentrate on the first two models.

4.1.1. The Infrastructural PPPs

The basic characteristic of this model is the absence of clinical services in the range of services to be provided by the private partner. This model has been followed in a number of countries, namely, UK, Australia, Italy, Canada and Turkey. Most of the contracts based under the ‘infrastructural model’ are DBFM contracts, including the additional provision of several non-clinical services, such as cleansing, catering, security, parking, etc. The basic features of the Infrastructural PPPs are presented on
There are numerous examples of infrastructural PPPs internationally. Three case studies below are reviewed using the performance criteria described above.

**CASE STUDY 1 UNIVERSITY COLLEGE LONDON HOSPITAL (UCLH), LONDON, UK**

**Description.** The UCLH National Health Service (NHS) Trust is one of the UK’s largest providers of healthcare services, medical research and training. The Trust included eight hospitals spread across central London and were housed in antiquated, inflexible and cramped buildings. A private consortia, Health Management (UCLH) Plc., was selected as the private sector partner to replace the old building and construct new hospital under the DBFO (design, build, finance and operate) scheme (with Interserve providing the ongoing facilities services). It entered into a 40 year agreement under which the building will be leased back to the Trust in the exchange for an annual fee of £32m. In addition to building the new hospital, Health Management (UCLH) Plc. Was responsible for the provision of non-clinical support services (e.g. supplies, waste management, security, car parking, laundry and linen, estate management and building services).

**Access.** Yes. The services that used to be provided at three of eight scattered sites became centralized into a new 669 bed acute hospital in central London. As a result of the new building it became possible to treat 54,000 patients, 10% more patients than used to be treated.

**Equity.** Not applicable. This criteria is not applicable due to the fact, that services at the new hospital are provided for free (subsidized by the government).
Efficiency. Yes. Under the PPP arrangement it was envisaged that over the life of the project, i.e. 40 years, over £30m would be saved in comparison to the construction and operation of the hospital under the traditional procurement. Thus, the PPP option is 6.7% less costly than the traditional procurement.

Replicability. No. The UCLH has been one of the largest hospital redevelopment schemes under PFI, at £422 million, which led to the opening of over a hundred new hospital schemes across the country. This project is always referred as bravest and the best decision “ever made in this part of the NHS”. However, due to the amount of public investment by UK taxpayers required for the project, it is considered as hardly replicable in its whole scale not only in Moldova, but also in other developed countries.

Delivering better value for money has been the underlying premise for choosing PFIs against the traditional public procurement. However, according to the Public Accounts Committee ‘the use of PFI has been based on inadequate comparisons with conventional procurement which have not been sufficiently challenged’, whereas the UK House of Commons Select Committee concluded that PFIs are ‘an extremely inefficient method of financing’. This viewpoint should be carefully considered for Moldova PPP models.

CASE STUDY 2. ROYAL NORTH SHORE HOSPITAL (RNSH) AND COMMUNITY HEALTH FACILITY, SYDNEY, AUSTRALIA

Description. The Royal North Shore Hospital (RNSH) was opened as a cottage hospital in 1885, today it is a major public teaching hospital in Sydney, Australia and provides a comprehensive range of medical services. Its primary referral area accommodates 5.7% of the Australian population. In 2008 a PPP contract for $950 million was awarded to the InfraShore Consortium. The contract involved the financing, design, construction, operation (with the exception of the provision of clinical services) and maintenance of the facility for a period of 28 years. The consortium redeveloped and consolidated 53 outdated buildings on the RNSH campus into two purpose-built, patient-centred facilities, constructed a new multi-storey car park facility and provided some facilities management and non-clinical support services (e.g. cleaning, security, waste management, etc.). The building became fully operational in December 2012.

Access. Yes. At the time of tendering, the hospital provided fewer than 600 beds; however, since then, the hospital has increased the number of beds by over 20%. In addition, on completion, the redeveloped RNSH will be able to offer additional chemotherapy and renal dialysis chairs; enhanced diagnostic services and ambulatory care services; and a total of 29 procedure and operating rooms. In addition a new Clinical Services Building is scheduled for completion in 2014, which will contain a new burns unit, women’s and children’s health and mental health units.

Equity. Not applicable. This criterion is not applicable due to the fact that services at the new hospital are provided for free (subsidized by the government).
Efficiency. Yes. The cost benefit analysis of the private sector delivery of the RNSH PPP was conducted by applying the value for money assessment. The net benefit was reflected in the estimated cost savings of $13.4 million. Besides, it has been delivered on time and on budget for Northern Sydney Local Health District (NSLHD).

Repli canility. Possible. Although it is too early to judge whether new hospitals will be redeveloped following the RNSH model, it surely establishes an excellent precedent not only in Australia, but also for Moldova, albeit at lower scale in terms of the investments volume.

CASE STUDY 3.BRAMPTON CIVIC HOSPITAL, ONTARIO, CANADA

Description. In 2003 the William Osler Health Centre (WOHC), one of Ontario’s largest hospital corporation, reached an agreement to build a new Brampton Civic Hospital under a PPP mechanism with a private consortium. According to the agreement the consortium designed, built, and financed a new 608-bed hospital, and provided certain non-clinical services and planned to operate the facility over a 25-year period. In return the WOHC agreed to a monthly payment over 25-year period, beginning on the completion date of the hospital.

Access. Not applicable. With the opening of a new Brampton Civic Hospital in 2007, another William Osler Health Centre (WOHC) facility, Peel Memorial Hospital, was closed. This led to moving 234 patients, staff, records and equipment from the Peel Memorial Hospital to the new Brampton Civic campus due to limited human and financial resources to operate two hospitals. Accordingly the PPP transaction resulted in fewer net new beds for the community than originally anticipated.

Equity. Not applicable. The decision to build a new hospital in Brampton was taken to fulfil the needs of the growing population in Brampton, primarily through immigration, which was already stressing the system’s ability to provide necessary health services to the region. However, with the closure of other hospital in the region, the number of new ‘available’ beds was not sufficient not only to immigrants but also to the local people.

Efficiency. No. According to the Auditor General “the value for money assessment conducted for the Brampton Civic Hospital project was not based on a full analysis of all relevant factors”. Accordingly the cost of the project could well have been lower had the Brampton Civic Hospital and the related non-clinical services been procured under the traditional approach. Besides not long after the opening of the hospital two patients died. The families of these patients as well as the media argued that the long waiting time and lack of sufficient staff in the emergency room had led to medical errors, which led to the death of the patients.

Repli canility. No. The opening of the Brampton Civic Hospital led to several issues that created political tension. One of the main issues became the closure of the Peel Memorial Hospital. This created the perception that the area would be underserved and, thus undermining the whole idea of bringing the private sector investments into the healthcare.

Brampton case demonstrates failure in communication surrounding the PPP to the staff and the wider community that underscores the importance of this PPP component in future RLTC PPP case.
4.1.2. Integrated PPPs
This PPP model integrates all hospital services in a PPP contract, which includes supply of infrastructure and clinical services. There are two types of DBFM integrated PPP contracts: one based on the payment of availability and services, another based on per capita payments (and typically integrating also some non-acute-hospital services, such as primary care). This scheme allows the governments to transfer risk to the private sector (see Figure 15).

Figure 15: Basic Features of the Integrated PPP model

CASE STUDY 4. THE ALZIRA MODEL: HOSPITAL DE LA RIBERA, VALENCIA, SPAIN

Description. Hospital de la Ribera is a Spanish pioneer of the PPP model. A private company Union Temporal de Empresas-Ribera (Temporary Union of Companies) (UTERibera)\(^{1}\) entered a 10-year contract in 1997 with Valencian government to build a public hospital and manage clinical and non-clinical facilities in the town of Alzira. The hospital was opened in 1999, however, UTE-Ribera was not generating enough income to cover the costs, since the company underestimated cost inflation and the pace and nature of change in healthcare technologies and models of care. As a consequence, the private company was re-financed, and a second contract was awarded in 2003 for 15 years (extendable for 20 years). The unique feature is the fact that payment to the private entity is based on a perception basis not on the number of hospitalization. Also patients are free to go elsewhere for their treatment, which means that the private provider is incentivized to improve health outcomes of the population.

\(^{1}\) The UTE-Ribera was established by Adeslas, a Spanish private health insurance company (51%), the local building societies Bancaja and CAM (45%), and the construction company, Lubasa (4%).

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Access. Yes. The Hospital built new Health Centre, Haemodialysis Unit, Interventional Radiology Unit and a Medical Physics Gamma Camera as a part of the project, in addition invested into additional diagnostic tools in primary care and is providing of direct access to radiology, endoscopy, pathology tests, and so on, thus, providing access to high-quality health care services that previously were not provided or used to be provided in low quality.

Equity. Not applicable. This criterion is not applicable due to the fact that services at the new hospital are provided for free (subsidized by the government).

Efficiency. No. There are many controversial views regarding the effectiveness of the project. The Valencian government asserts that the Alzira model kept the local government from spending the initial investment of €68 million to build a new hospital, thus, avoided a significant increase in its local public debt. However, the same government paid the UTE-Ribera a sum of €69.3m on termination of the first contract, which consisted of €43.3m for the purchase of the infrastructure assets, and €26m compensation for lost profit despite the fact that the company was making losses during that period. Shortly after the termination the company known as UTE-Ribera II, which has the same parent companies as the first one, paid the government a premium of €72m for the new contract, which included taking over the infrastructure assets just bought back by the government.

Replicability. Possible. A study by the NHS European Office on whether the model could work in the UK concluded that while many aspects of the model look attractive from a UK perspective, there are some obstacles and issues that would need to be taken into account\(^2\). However, according to WHO’s department of Health Systems Financing the developing countries would struggle with such complex projects. Besides there are some concerns that if Alzira model applied in a true commercial environment, it would fail to be affordable in the long term\(^3\). However, in overall the model seems attractive and relevant for Moldova and some of its features can be readily transferred in the preferred PPP option for RLTC services in the country.

**CASE STUDY 5. THE QUEEN MAMOHATO MEMORIAL HOSPITAL PPP, MASERU, LESOTHO**

Description. The Government of Lesotho facing an urgent need to replace the deteriorating 450-bed Queen Elizabeth II Hospital (the main public hospital in the country) contracted Tsepong (a consortium headed up by South African healthcare provider Netcare) in 2008 (i) to construct a new 425-bed Queen Mamohato Memorial Hospital (390 public + 35 private beds); (ii) renovate 3 strategic primary health care clinics in the greater Maseru area; (iii) manage facilities and equipment; and (iv) deliver all clinical care services for 18 years (including 3-year construction period). In return, the Lesotho government agreed to pay Tsepong an annual fixed service payment (USD 32.6 million unitary charge) for delivery of all services, escalated only by inflation annually. In addition the private sector will be receiving profit from running a deluxe 35-bed private patient unit within the hospital. USD 120 million (85% debt + 15% equity) was raised to undertake the project. The construction of the hospital began on March, 2009 and was successfully completed and commenced operations in October 2011.

\(^2\) For example in the Alzira model the contract relates principally to outcome measures and only a small number of process measures. In the NHS in UK the practice is to use the contract to direct private providers on not just what to do, but also how to do it.

\(^3\) It is known that there was a political involvement in the Alzira model through local banks, where regional politicians sit on their governing bodies. These banks not only provided sufficient funding for the project despite the lack of viability of the investment, but also lent the project company loans at a favourable interest rate, at times below the average for an equivalent Spanish public debt bond.
Access. Yes. According to the official data the national hospitalization rate was 3.2% of the population each year, which means that previously the hospital could treat only 64000 patients on annual basis. However, the new hospital is expected to treat all patients who present at the hospital and filter clinics, which is up to a maximum of 20,000 in-patient admissions and 310,000 outpatient attendances annually. In addition the private operator as a part of its community development programme set up the Women and Rape Crisis Management centre at the hospital at its own cost and coordinating it with the Lesotho Government.

Equity: No. On the one hand the management has targeted women as a specific beneficiary group in the allocation of attention/resources. On the debit side, the above-mentioned deluxe unit will be run separately by Netcare, who will, it is argued, ‘keep all the profits’. Global health check has contrarily argued that the USD 32.6 million unitary charge to Netcare for the hospital and services represents a 100 per cent increase in costs given that the annual budget for the Queen Elizabeth Hospital and the filter clinics in 2007/2008 was less than USD 17 million.

Efficiency. Yes. According to the IFC report, the Lesotho project was affordable for the government, on an operational cost comparison; the government does not pay much for PPP than it used to spend on the operation of Queen Elizabeth II Hospital. Yet, it is receiving vastly improved facilities, medical services and patient care. The project also insured the maximum risk transfer to the private operator, protecting government from most of the financial, operational and legal risks inherent in a project of this nature.

Replicability. Yes. The Lesotho PPP structure is the first “integrated” PPP hospital project in Africa, and one of only a handful of similar projects worldwide. Besides it is still in its early stages and may lead to certain challenges in the long term period. Yet, this project demonstrated that it is possible in a low or middle-income country (with deteriorated health facilities, lack of equipment, shortage of staff and inefficient management) such as Moldova to embark on a very ambitious project that is attractive to private investors and affordable for the government and patients, who can benefit from high-quality health services.

Many features of the Lesotho model, particularly the risk sharing structure between the public and private partners, may serve as a good model for the future RLTC PPP in Moldova.

CASE STUDY 6. LATROBE REGIONAL HOSPITAL, VICTORIA, AUSTRALIA

Description. The Government of the State of Victoria with an objective to deliver improved health services to public patients in the Latrobe Valley signed a contract in 1997 with the private company, Australian Hospital Care Ltd. (AHCL), to design, finance, build and operate the new Latrobe Regional Hospital, as well as to provide (free of charge) core clinical services to public patients to specified quality standards and deliver other nonclinical services required to operate and maintain the hospital for a term of 20 years (with the possibility to extend for additional 5 years). In return the government paid the private operator a service charge. The new hospital commenced operations in September 1998. In 1999 the hospital lost AUS$ 6 million and was projecting ongoing losses. In 2000 the company was released from its contract in return for an agreement to drop legal action against the government. It sold the facility to the government for AUS$ 6.6 million (about half of its estimated value) and made an additional payment of AUS$ 1 million.

Access and Equity: Not applicable. It is hard to evaluate how this project was carried out in terms of these criteria, since the hospital was under the operation of the private company for only two years. Yet, if to refer to project
documents, the private operator supposed to deliver high-quality health care services, which includes “equitable access on the basis of clinical need regardless of financial or social circumstances; provision of effective linkages with other services providers for a smooth, integrated “seamless” transition between services for each episode of care; strategic targeting of services activity to maximise health outcomes in the context of demonstrated clinical needs of the region ...within the requirements of relevant funding frameworks “.

Efficiency: No. According to the post-evaluation project reports the Value for Money was miscalculated\(^1\) the government used an old benchmark to calculate the cost of a traditional procurement of the project (which was not giving sufficient attention to the qualitative aspects of the performance), and (2) the private company did not fully understand the revenue implication of financing model used by the government.

Replicability: No. This project is certainly a good example of what parties need to avoid in Moldova. One of the contributing factors in the Latrobe’s failure is that both parties mistakenly believed in the superiority of private sector management and innovation, where the government accepted an unsustainable bid price from the private sector. Therefore, it is important to note that (1) risks shall be borne by the party better able to manage them; and (2) accepting tenders at lowest cost is not necessarily in the best interests of governments.

This case provides good examples of pitfalls that should be avoided in the Moldova example.

4.2. Health sector PPP experience in Moldova

“Moldova Health PPP Project I: Diagnostic Imaging Centre in the Republican Hospital”

Moldova’s Ministry of Health asked International Finance Corporation to identify potential public-private partnerships (PPPs) in the health sector. After a thorough assessment, IFC concluded that one of the most attractive options for private sector investors would be to modernize the radiology and diagnostic imaging centre at the Republican Hospital in Chisinau.

IFC’s project team worked closely with the Ministry of Health throughout the project, which spanned several election cycles and changes in government counterparts. The team started by identifying the clinical services and equipment needed to provide high-quality healthcare services and reviewing relevant legislation. The team also built financial models to forecast operational and capital costs, determining how much revenue would be required for the centre to operate. IFC worked with government to increase tariffs for the future diagnostic services to an economic level that would properly reflect efficient capital and operating costs. The IFC team also helped the Ministry to market the project to potential investors with a solid track record in health care service delivery. It worked through the details of key provisions, such as contract duration, scope of services, payment issues, and performance obligations. These were reflected in tender documents and draft agreements. Finally, IFC assisted the Ministry in the competitive bidding process, including the procedures for tendering, evaluating and awarding the bid. Magnific, a Moldovan healthcare services provider, won the 12-year concession (with a possibility of a 12-year extension) to renovate, construct, equip and operate a new diagnostic imaging and radiology centre. The transaction mobilized $7 million in private sector investment and is expected to benefit over 100,000 people annually. According to the signed contract the operator will receive reimbursement from the CNAM and the hospital for each service rendered to public inpatients and outpatients within yearly fixed volume contracts. The
provider can also provide services to private patients at market rates. The concession, Moldova’s first PPP, laid the groundwork for further private sector participation in the health sector and other public services. The agreement was signed in November 2011. Despite the sound preparatory work and good start, it is still early to assess an overall success and sustainability of this PPP: by the year 2013, the Project has experienced certain difficulties caused by delays in construction and equipment phase.

“Moldova Health PPP Project II: Radiotherapy Center in the Oncology Institute”

Similar support was provided by IFC for the second PPP project in health: Radiotherapy Centre in the Oncology Institute. IFC team assisted the MoH in designing and implementing the feasibility study, preparation of the bidding documents and the bidding process itself. However, the bidding process failed due to the low interest from the qualified international, or national private partners.

“Moldova Health PPP Project III: Dialysis centers”

The World Bank supported the development of the third PPP project in health care. Under auspices of the project, the Republican Clinical Hospital’s dialysis unit and other medical institutions will be upgraded and equipped with modern equipment (up to 78 dialysis machines) under a public-private partnership project. The decision to initiate the project was taken in July 2013 and as of the time of writing the report the PPP project has proceed to the bidding stage and too early to assess the success.

Orhei Hospital Imaging Unit

Unlike the PPP projects described above, this PPP is the only existing PPP in Moldova health sector that was initiated by the local government. Its implementation started in 2011 and according to the key informant interview and press publications reviewed proceeded with significant problems, including less than expected patient volumes referred by the Orhei hospital for imaging services, insufficient involvement in the PPP development of the main stakeholder – public payer CNAM, low tariffs for services provided, misconceptions regarding the private provision of services, etc.

4.3. Prerequisites for the successful RLTC PPP option in Moldova

The international case studies and experience of PPP projects in health sector of Moldova described in the last two sections provide important lessons learned and solid ground for designing viable PPP option for the RLTC services in Moldova. Namely:

Mobilisation of political will: First of all for PPPs in health it is critical that there is political will from the highest level of government. Without strong backing from the Minister of Health (as there was in Lesotho) it will be enormously difficult to undertake PPPs. Political will is reflected in implementing strategic policy documents and plans, and in necessary legislation revisions and involvement of technical staff from Ministries and specifically the Ministry of Finance.

Institutional requirements (PPP Unit, standard contracts, management capacity to service contracts etc.): Contracts are critical to the success of the PPP initiative: both for infrastructure and for service contracts. There is a critical need for adequate contract management knowledge and for institutional development so that this action
can be properly delivered. (e.g. PPP unit created in the Health Ministry). The key challenges based on experience in numerous countries in Europe are the following:

- Shifting the specifications in contracts from inputs to outputs. This puts a considerable challenge on the public administration to define the Key Performance Indicators and to link “rewards” to the same.
- Establishment of long-term (20-30 years) performance based contracts and how to manage the monitoring.
- The setting of and enforcing of penalties where the contract has not been complied with.
- Incompleteness of contracts: The incompleteness of contracts is unavoidable, because long-term contracts will necessarily face technological, demographic, managerial, and political changes.
- Technological change. PPP contracts accommodate the risk to the private operator by sharing it among the parties. The same principle applies to new (more costly) medical treatments. For example if the PPP operators are receiving global fixed budget, then they will wish to avoid costly treatments such as transplants. The PPP contractors should include provisions for how to address whether the operators will be required to undertake such treatments and, if so, how they will be reimbursed.

**Appropriate Legal Frameworks:** New legislation, which provides for the removal of barriers to the use fop PPP (e.g. monopoly provisions for health care delivery) and need for greater attention in regulating and enforcing safety and quality of care, a body that can regulate health PPP contracts and reassure the public. Most countries use comes combination of independent monitoring, Ministry of health regulations/norms, and contract administration by the national health insurer.

**Procurement:** there are important differences between procurement methods. In Europe much is made of the “competitive dialogue”, or “bargaining”. A major difference between countries is whether there are detailed negotiations after the winning bid is selected. This method is not allowed by the current national legislation, while it may help to better align public and private partner’s interests, obligations and risk sharing and thus increase the viability of the PPPs.

**Thorough planning and involvement of all the key stakeholders:** Both PPPs currently functioning in Moldova health sector have experienced problems largely caused by flaws in feasibility assessment of these PPPs; e.g. (a) construction costs overruns and delays, included those related to licenses, permits and standard requirements not envisioned initially for the Diagnostic Imaging Centre in the Republican Hospital, or (b) overestimation of the patient volumes/demand for services in Orhei Hospital Imaging Centre PPP.
5. Feasibility assessment of PPP Opportunities

This section provides preliminary feasibility assessment of the PPP opportunities identified for the new RLTC Model Implementation in Moldova as a result of (a) the technical and financial analysis of various scenarios for the Regionalisation Strategy and the new RLTC model presented in the Intermediary Report & the section 4 of this report and (b) the discussions held with the key stakeholders, including senior management of the Ministry of Health. The assessment is structured in a way to cover the requirements of the Moldova Law on PPP No. 179 of 2008, as required by the ToR of the consulting assignment.

5.1. Project Description

The project proposal is to commission, develop, procure and deliver a state of art National Level Specialised Rehabilitation Centre (NLSRC) in Chisinau, Moldova that will combine both rehabilitation and wellness inpatient and outpatient services for the patients with complex rehabilitation needs and healthy individuals. In subsequent sections, UNICON presents prefeasibility assessment for the PPP opportunities in accomplishing this project. A further full feasibility study would be required at a further stage as to verify and further develop the assumptions and projections presented here and proceed with implementation of the proposed PPP model.

The scope of services to be provided by the NLSRC include specialised rehabilitation services, clinical support services, non-clinical support services, and administrative services. The proposed services under each major service group and suggested functional planning for the centre are presented in the section 2.1 of the current report.

It is anticipated that the NLSRC will be developed in two phases, the phase I will encompass the development of 120 bed NLSRC and an additional 120 beds in Phase II, as an addition to the existing facility or a new facility collocated with one of the new national level tertiary level hospitals recommended by the Regionalisation Strategy. Successful and on track launch of phase I is a necessary precondition for the phase II initiation. Current prefeasibility assessment focuses on the phase I of the proposed Project.

The first 120 beds of NLSRC is expected to be constructed as a standalone facility or developed through the refurbishment and repurposing of an existing hospital campus. The Railroad Central Hospital is currently considered to be used for this purposes.

The service model for the NLSRC is within the scope of the new RLTC service model for Moldova, that has been the developed in accordance with the current and future demographic and health care development trends and benchmarks globally and custom-tailored for Moldova.

5.2. Rationale for PPP

The development of the NLSRC will require significant capital investments, mobilisation of which through the public sources, considering the current public expenditure situation may prove difficult if not impossible in short to medium term perspective. Raising private capital for partial or full financing of the capital expenditures (CAPEX) for infrastructure development (construction or refurbishment) and equipping of the NLSRC may be the only viable solution, as it provides opportunity to extend the public financing of the created assets in smaller instalments and over longer term and more realistic period. This is particularly true, if the final VFM of the Project estimated as a
result of the full feasibility study will prove to be positive. Other important project specific considerations include transferring appropriate risks in design, build and operation of the NLSRC to an able private operator and expected improved access and efficiency of the provided services by NLSRC.

General conducive environment justifying the PPP option include on-going national policy and health policy processes in Moldova to engage private sector and available support from international bilateral and multi-lateral development partners to develop public sector capacity in engaging the private sector (World Bank/IFC, EBRD, EC, etc.).

5.3. Objectives and expected outcomes

The objective of the PPP project is to create and further expand capacity and improve rehabilitation services for the Moldova population. Primary target population is patients with complex and highly complex rehabilitation needs, however, the NLSRC will also serve the general population through provision of wellness and spa services. Expected immediate outcomes include meeting unmet demand for rehabilitation services and thus eliminating existing waiting lists for the rehabilitation services. Successful implementation of the project is expected to contribute to the prevention of permanent disabilities and improvement of quality of life for the disabled population in Moldova.

5.4. Technical feasibility

The experience of developing and implementing the PPPs in health sector already exists in Moldova. While it is still too early to assess successes and failures of these projects (see section 4.2 for details), both the positive and negative PPP experiences and lessons learned accumulated by the public sector commissioners in this process can be productively exploited for the proposed PPP opportunities for NLSRC.

5.5. Legislative Framework

Since adopting the PPP Law 179-XVI from 10.07.2008, the Government of Moldova applied considerable efforts for streamlining the legislative environment for PPPs in general and for health care sector in particular. For instance, some of the legal restrictions for the private entity to compete fairly with public entities in health care were removed and the public payers adopted the practice to purchase health services from the private providers.

The PPP law defines main forms for public-private partnership that include:

- service provision/execution contract;
- fiduciary administration contract;
- renting/leasing contract;
- concession contract;
- memorandum of association.

Depending on the level of involvement of the private partner, the following ways of achieving public-private partnership contracts are defined:
Design – Build – Operation (DBO) – a project through which the building and operation of the public-private partnership object are passed over to the private partner for a period not exceeding 50 years. The public-private partnership project can be funded integrally by the private partner. Whenever the term of the contract concluded with the public partner expires, the public-private partnership object is transferred free of charge to the public partner in good, operation shape free of any obligations and fees;

Build – Operation – Renewal (BOR) – a project through which the private partner commits itself to fund the building of the public-private partnership object, as well as all the costs related to its maintenance for a period of time not exceeding 50 years. The private partner is allowed to collect, in accordance with the provisions of the legislation in force, the adequate tariffs for the usage of the public good for a determined period of time. Whenever the contract term expires, the public-private partnership object is transferred free of charge to the public partner in good, operation shape free of any obligations and fees;

Build – Operation – Transfer (BOT) – a project through which the private partner commits itself to build, as well as to finance, operate and maintain the public good. The investor is allowed to collect tariffs for the usage so as to recover its investment and to cover the maintenance costs, as well as to obtain a reasonable profit. Whenever the contract term expires, the public-private partnership object is transferred free of charge to the public authority in good, operation shape free of any obligations and fees;

Build – Transfer – Operation (BTO) – a project through which the private partner commits itself to build a good which is passed over into public partner’s ownership immediately after finalizing the construction, and the public partner at its turn passes it over to the private partner for usage;

Leasing – Development – Operation (LDO) – a project through which the private partner gets for temporary usage, or for temporary ownership and usage a public good, committing itself to pay its price in instalments during a period of time not exceeding 50 years. The public partner gets the right to obtain incomes from services provided and gets the good in its ownership whenever pays integrally the price set for the good.

Rehabilitation – Operation – Transfer (ROT) – a contract through which the public good is transferred to the private partner who commits itself to rehabilitate, operate and maintain the public good for a period not exceeding 50 years. Whenever the contract term expires, the public-private partnership object is transferred free of charge to the public partner in good, operation shape free of any obligations and fees.

In summary, the legislative framework in Moldova allows for almost all those forms and models of PPPs that were described above and maybe the most relevant for the country. Moreover, the law on PPPs allows the public authorities to develop any type of PPP projects, beyond the ones specified in the law. The only potential caveat is the fixed and rigid duration of the bidding process (limited to 60 calendar days for selection of the winning bid and additional 30 days for contract negotiation) and the absence of the competitive dialogue mechanism as a procurement method allowed by the legislation. Also, EBRD assessment of the quality of the PPP legislation and of the effectiveness of its implementation conducted in 2011 assigned relatively low score to the effectiveness of the PPP law execution (Gide Loyrette Nouel; EBRD 2011).
5.6. Financial Analysis of PPP Options

5.6.1. Estimated CAPEX
The estimated CAPEX is based on the assumptions developed in the Intermediary Report and earlier sections of this report (see section 3 for details). The CAPEX is projected for a newly constructed 120 bed facility with 110 sq. m. per bed and average cost of construction equalling 1,300 Euros per sq. m. The equipment costs are estimated at 28,600 Euros per bed (app. 20% of the construction cost). This amounts to 171,600 Euros per bed or 20,592,000 Euros of total CAPEX for NLSRC (Phase I), out of which 3,432,000 Euros are estimated for the equipment.

5.6.2. Estimated O&M expenditure over the life of asset
The Operation and Maintenance (O&M) expenditure is estimated using the current O&M expenditures for a similar facility operated by a Neurologic Rehabilitation Unit in Chisinau per patient day (32 Euros) that is prorated on an annual basis. Considering current low level of medical personnel salaries and low share of expenditures for medical supplies and pharmaceuticals in the current expenditures of medical facilities, including the one taken for the reference cost, the NLSRC O&M expenditures are projected 120% of this benchmark for the first year of operation and an average 5% nominal annual relative (to the prices paid by purchasers) increase in O&M is projected over the first three operational years of the Project and held constant (assuming that any increase in the costs will be followed by respective increase in tariffs and prices) over the remaining life of the Project planned at 25 years. These O&M does not include depreciation of assets that is added as a separate line item. Straight line depreciation is used with useful life for buildings set at 25 years and 7 years for the equipment.

5.6.3. Total estimated capital investment
Total estimated capital investment includes the estimated CAPEX and the NPV of the estimated O&M expenditures and additional working capital (at an average 100,000 Euros per annum) at a Discount Rate (DR) of 7%.

5.6.4. Revenue Generating Potential
Funding for the project is expected to come from several sources, with CNAM anticipated to be the primary public source. Other funders may include both the MoH (direct financing) and the MoLSPF. The user charges will levied for private patients for the services provided beyond the scope of the State Guaranteed Health Package financed by CNAM, or for additional amenities (“luxury” payments) provided to certain patients. The detailed payment structure, payers’ obligations, tariffs charged (including approved process for the tariff revisions) will be defined as a result of the full feasibility study. However, at these stage the following assumptions are made: the initial (first year of the operation) price per patient bed-day for the inpatient cases financed by CNAM is estimated based on the current tariffs paid to two specialised rehabilitation facilities in Chisinau and are estimated at 53 Euros per day, The “private” inpatients tariffs are estimated at higher level at 70 Euros per day, which is the minimal rate for similar services provided by specialised rehabilitation centres in the neighbouring countries (Ukraine, Russia), where such high level services exist. The average net revenue per outpatient case is estimated at 10% of the average payment of 150 Euros. Future price increases are expected but not factored in as it is expected that the OPEX will increase at the same rate. Yet, if kept as assumed, the prices are expected to be below market prices, and probably well below the actual cost of the services, if acceptable levels of labour costs will have to be considered.
The 120-bed NLSRC is intended to accommodate the demand for over 35 thousand bed-days (at average 80% occupancy rate) and 7,500 outpatient cases a year. It is anticipated that minimum 20% of the bed-days will be provided to the “private” patients (to be verified through the full feasibility study). The outpatients are considered as “private” source paid through user charges, however eventually CNAM may assume responsibility to provide case base payment for certain share of the outpatients undergoing the treatment in the NLSRC. However, this will not change the revenue outlook, as it is assumed that the case based payment rate will be the same as for the “private” patients.

5.6.5. PPP financing options

Four financing options are considered: (1) pure public, with 100% of public financing; (2) 50% of a private financing; (3) 70% of private financing; (4) full PPP with 100% private financing. The grant financing opportunities may be considered for all options with public co-financing, but are incorporated in the analysis for only one option (3) for demonstration purposes. The debt/equity ratio is assumed at 70/30 for the private contribution. Projected term for the loan is 15 years with annual nominal interest rate at 12% (with effective weighted average cost of capital – debt/equity - at 11.3%) and a grace period of 1 year.

5.6.6. Financial viability analysis

As mentioned above, a 25-year projection was prepared for estimating discounted free cash flows of the NLSP, comparing the four different scenarios with varying financing structure. In order to estimate the financial viability of the project, and Equity Cash Flow NPV was estimated. This represents the resources available to shareholders after the payment of debt.

It is assumed that the NLSRC will continue to function after the completion of the 25 year concession period and thus terminal value of the project in year 25 was incorporated in the financial viability analysis using the perpetuity growth model for another 10 years. As noted earlier, all cash flows consider a 7% discount rate (DR) and 4% average local inflation rate, except for availability payments, which are assumed to increase at a rate equal to a conservative projection for the average country GDP growth rate at 2% per year.

Table 16 summarizes the financial viability for the project by assessing the discounted cash flows available to a private partner or partners by subtracting from the estimated revenues the capital investment and debt payments, and adding noncash expenditures to estimate the NPV of the four project financing scenarios. The results show that without availability payments from the public authority the NPV of the project is negative or insignificant if only the service revenues provided by the public payers and individual patients are considered. Thus, an availability payment for services and capacity is included in the financial viability analysis as a precondition for ensuring acceptable return on investment (Internal Rate of Return at 10%) and positive cash flow.

Table 16: Financial Viability Analysis for the proposed PPP Options
Capital Investment | (13,694,344) | (8,929,562) | (1,714,643) | (1,795,375) | (1,880,144) | (1,880,144) | (1,880,144)  
Depreciation     | 989,600     | 989,600     | 989,600     | 989,600     | 989,600     | 989,600     | 989,600    
Service revenues | -           | -           | 1,462,129   | 2,088,756   | 2,088,756   | 2,088,756   | 2,088,756   
Net Borrowing    | -           | -           | -           | -           | -           | -           | -          
Availability Payment | - | - | - | - | - | - | - 
Terminal value   | -           | -           | -           | -           | -           | -           | -          
Net revenue      | (13,694,344) | (7,939,962) | 737,086     | 1,282,981   | 1,198,212   | 1,198,212   | 2,904,949   
Equity Cash Flow | (13,694,344) | (7,939,962) | 737,086     | 1,282,981   | 1,198,212   | 1,198,212   | 2,904,949   
IRR              | 2.5%        |             |             |             |             |             |             
NPV              | (€7,747,977)|             |             |             |             |             |             
DR               | 7%          |             |             |             |             |             |             

**Option 2: 50% Private**

<table>
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<th>Years</th>
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<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<tr>
<td>CAPEX</td>
<td>(13,694,344)</td>
<td>(9,129,562)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>OPEX</td>
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<td>(1,614,643)</td>
<td>(1,695,375)</td>
<td>(1,780,144)</td>
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<td>(100,000)</td>
<td>(100,000)</td>
<td>(100,000)</td>
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<tr>
<td>Capital Investment</td>
<td>(13,694,344)</td>
<td>(8,929,562)</td>
<td>(1,714,643)</td>
<td>(1,795,375)</td>
<td>(1,880,144)</td>
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<td>Service revenues</td>
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<td>1,671,005</td>
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<td>-</td>
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<tr>
<td>Terminal value</td>
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<td>76,606</td>
<td>416,225</td>
<td>334,108</td>
<td>336,813</td>
<td>3,130,233</td>
</tr>
<tr>
<td>Public investment/Grant</td>
<td>6,177,600</td>
<td>4,118,400</td>
<td>-</td>
<td>-</td>
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<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Equity Cash Flow</td>
<td>(3,192,424)</td>
<td>(938,682)</td>
<td>76,606</td>
<td>416,225</td>
<td>334,108</td>
<td>336,813</td>
<td>3,130,233</td>
</tr>
<tr>
<td>IRR</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NPV</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>DR</td>
<td>7%</td>
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**Option 3: 70% Private and 30% Grant**

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<td>-</td>
<td>(1,614,643)</td>
<td>(1,695,375)</td>
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<td>(1,780,144)</td>
<td>(1,780,144)</td>
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<td>(100,000)</td>
<td>(100,000)</td>
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<td>989,600</td>
<td>989,600</td>
<td>989,600</td>
<td>989,600</td>
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<tr>
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<td>2,088,756</td>
<td>2,088,756</td>
<td>2,088,756</td>
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<td>Net Borrowing</td>
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<td>(1,399,098)</td>
<td>(1,399,098)</td>
<td>(1,399,098)</td>
<td>(1,399,098)</td>
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<td>-</td>
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<td>-</td>
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<tr>
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<td>416,225</td>
<td>334,108</td>
<td>336,813</td>
<td>3,130,233</td>
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<tr>
<td>Public investment/Grant</td>
<td>6,177,600</td>
<td>4,118,400</td>
<td>-</td>
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<tr>
<td>Equity Cash Flow</td>
<td>(3,192,424)</td>
<td>(938,682)</td>
<td>76,606</td>
<td>416,225</td>
<td>334,108</td>
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<td>3,130,233</td>
</tr>
<tr>
<td>IRR</td>
<td>10%</td>
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<td></td>
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<tr>
<td>NPV</td>
<td>€1,956,841</td>
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<td></td>
</tr>
<tr>
<td>DR</td>
<td>7%</td>
<td></td>
<td></td>
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</table>

Final Report
Terminal value  
Net revenue (7,640,296) (3,903,930) 26,864 373,483 298,506 308,494 3,682,147  
Public Investment/Grant 4,108,303 2,738,869 - - - -  
Equity Cash Flow (3,531,993) (1,165,062) 26,864 373,483 298,506 308,494 3,682,147  
IRR 10%  
NPV €2,437,039  
DR 7%  

Option 4: 100% Private  

<table>
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<tr>
<th>Years</th>
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<tbody>
<tr>
<td>CAPEX</td>
<td>(13,694,344)</td>
<td>(9,129,562)</td>
<td>-</td>
<td>-</td>
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<td>-</td>
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</tr>
<tr>
<td>OPEX</td>
<td>-</td>
<td>(1,614,643)</td>
<td>(1,695,375)</td>
<td>(1,780,144)</td>
<td>(1,780,144)</td>
<td>(1,780,144)</td>
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<tr>
<td>Working Capital</td>
<td>-</td>
<td>200,000</td>
<td>(100,000)</td>
<td>(100,000)</td>
<td>(100,000)</td>
<td>(100,000)</td>
<td>(100,000)</td>
</tr>
<tr>
<td>Capital Investment</td>
<td>(13,694,344)</td>
<td>(8,929,562)</td>
<td>1,714,643</td>
<td>(1,795,375)</td>
<td>(1,880,144)</td>
<td>(1,880,144)</td>
<td>(1,880,144)</td>
</tr>
<tr>
<td>Depreciation</td>
<td>989,600</td>
<td>989,600</td>
<td>989,600</td>
<td>989,600</td>
<td>989,600</td>
<td>989,600</td>
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</tr>
<tr>
<td>Service revenues</td>
<td>-</td>
<td>-</td>
<td>1,671,005</td>
<td>2,088,756</td>
<td>2,088,756</td>
<td>2,088,756</td>
<td>2,088,756</td>
</tr>
<tr>
<td>Net Borrowing</td>
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<td>5,765,760</td>
<td>(1,998,711)</td>
<td>(1,998,711)</td>
<td>(1,998,711)</td>
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<td>-</td>
<td>1,150,000</td>
<td>1,173,000</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1,727,024</td>
</tr>
<tr>
<td>Net revenue</td>
<td>(5,045,704)</td>
<td>(2,174,202)</td>
<td>97,251</td>
<td>457,270</td>
<td>395,961</td>
<td>419,890</td>
<td>4,738,670</td>
</tr>
<tr>
<td>Public Investment/Grant</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Equity Cash Flow</td>
<td>(5,045,704)</td>
<td>(2,174,202)</td>
<td>97,251</td>
<td>457,270</td>
<td>395,961</td>
<td>419,890</td>
<td>4,738,670</td>
</tr>
</tbody>
</table>

IRR 10%  
NPV €3,363,627  
DR 7%  

Source: UNICON 2013  

The preferred financing option will be determined by the full feasibility study, however financial viability analysis presented provides sufficient grounds to orient decision makers towards the preferred option considering immediate public policy priorities. For instance, the first two options would require significant upfront public investment that may not be feasible in the current situation. Moreover, pure public scenario has negative NPV and very low IRR at 2.5%, which makes this option less desirable from the VFM perspective. The fourth scenario has highest NPV at app. 3.4 Million Euros, however, to achieve the optimal IRR at 10%, the project would require very significant availability payments (at annual 1.15 Million Euros, or more than half of the estimated service revenues) in addition to the service fees collected from CNAM and other public payers and individual patients. The third option appears to be the most balanced, particularly if the grant financing for the 30% of the required public investment share is mobilised. Sensitivity analysis show that the viability of these options enhance when the share of the private customers are projected at 40 percent of all patients and/or services prices and tariffs are adjusted upwards at a real increase rate of 5% annually. In this case, the availability payment for the third option will be brought down to less than 150,000 Euros per year. The NSLRC PPP will become more attractive if the current
estimated investment cost at over 20 Million Euros will be reduced by more than half if an existing building in decent condition (e.g. Railway hospital) will be commissioned for this purposes.

5.7. Key risks envisaged

The proposed project is likely to be exposed to the conventional risks associated with PPPs in general and health sector PPPs in particular that are exhaustively described in the recent and relatively recent technical assistance commissioned HSSAP (Burduja and Taylor 2009); (Glde Loyrette Nouel; EBRD 2011); (Sanigest Internacional 2013); (Conseil Sante 2013). These risks include planning and construction risks, O&M risks, implementation risks, risks and environment risks most of which affect the fiscal risk of a PPP project. Many of these risks are adequately addressed and managed through alternative PPP modalities, which mostly differ by the risk sharing arrangements between the partners and are discussed in the next section.

While theoretical principles for the risk sharing are well known: risks should be borne by the party best able to control, manage, or hedge against them-their application in practice often raises numerous difficulties. A careful analysis will often be necessary to distinguish between risks and costs that are truly exogenous to the private operator (that is, those against which the company cannot protect itself) and those that are not. Only exogenous costs should be passed on to other parties such as consumers, suppliers, or the conceding authority. Considering the experience within the region and in the country, specific risks that would require special attention during the preparation and negotiation of the proposed PPP options in Moldova case would include:

Faced by a private operator:

- Compliance with existing standards and requirements for construction, quality, hygiene, etc.
- Obtaining necessary permits and licenses for construction and operation;
- Future regulatory changes;
- Unfear competition with public providers;
- Unrealistic demand projections, or lower than expected demand;
- Absence of qualified medical and technical personnel and extended time required for their training;
- Delays of non-payments for services and/or availability payments

Faced by the public authority:

- Change in the policy direction supporting the PPPs;
- The requirement for sovereign guarantee;
- Need for favourable treatment of the PPP project
- High availability payments and “buy-back” price

All these risks should be carefully assessed and mitigation strategies suggested during the full feasibility study of the project.

5.8. Project delivery alternatives

While service execution and leasing contracts may also be considered for the NLSRC PPP, the most successful health PPPs reviewed earlier are forms of concession with variations of the procurement method known as DBFM

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or DBFMO. This method achieves maximum risk transfer and value for money and also reduces interface risks for the public authority to a minimum. In this case a private partner undertakes responsibility and risks associated with the entire project cycle, while public authority is responsible for timely payments of services fees (as a public payer) and so called “service availability payments” for services and facilities. When pre-agreed performance and availability standards are not met by the private partner, payment deductions are made. DBFM sees the maintenance and lifecycle budgets for the hospital agreed upfront, so that the hospital will remain in good condition during the entire period of concession contract. Respectively the DBFM model is recommended as a base option for the NLSRC PPP. The DBFM may be transformed to the ROT contract if the option with using the existing building of the national railway hospital will be realised.

DBFM/DBFMO alternatives to be carefully considered during the next steps of this project’s development include the choice between the infrastructure or integrated PPPs. As described above, these alternatives mainly differ in who takes responsibility for the medical services provision: public or private partner. There are successful examples of both alternatives (see section 4). However, considering the major gap in qualified human resources for RLTC services, engaging an able and knowledgeable private partner in human resources development may be a preferable option. The same applies to the transfer of experience and excellence in quality of RLTC services provided to the population. Hence, preference should be given to the integrated PPP model, with the assumption that a detailed feasibility assessment and

5.9. Bidding process

Two stage competitive bidding process has been used in the health sector PPPs implemented in Moldova. Current legislation does not permits for the competitive dialogue process that is a procurement process standard in EU. Considering the long term national goal of harmonisation with EU legal framework, the government should consider amendment of appropriate legal acts that will allow the competitive dialogue procedure, as it best suits the current need in flexibility of the PPP design that may be essential in fluid policy environment observed in Moldova.

5.10. Performance indicators and evaluation criteria

Striking an adequate balance between certainty and flexibility is another main challenge of concession design. Performance targets, for example, can be designed so as to allow for renegotiations under specific, pre-established procedures. Usually, they should focus on the end results to be achieved rather than on the means to be used in order to preserve the flexibility of the concessionaire’s operational arrangements. Success factors can be clearly defined in the contracts, but they are often missing from many PPP contracts, and that leads to conflict. Some of the specific measures from the performance metrics gathered through PPP projects globally that maybe considered for inclusion in the Moldova PPP contract are presented in
6. Challenges in RLTC reform implementation

Key challenges in the nationwide RLTC implementation include:

Financing

- lack of funds to finance societally acceptable RLTC service benefit package
- inadequate payment rates for necessary rehabilitation, LTC and palliative care services
- Threat of the rising costs

Lack of qualified human resources for RLTC:

- May become major constraint not only for RLTC PPP as mentioned above, but also for nationwide implementation (both lack of the necessary personnel with required skill-mix and the future fate of the existing human resources)

Inter-sectoral coordination between the health and social sectors in financing and management of the RLTC services may also present a challenge, as this is observed in many countries of the region.

6.1. Possible Strategies to mitigate challenges

- Avoid or mitigate strategic mistakes of many of the industrialized countries by adopting “modest” package of RLTC benefit package: high dependency, inflated demand for LTC services, over institutionalization, cost escalation.
- Allocate more funding and increase unit cost for RLTC services
- Maybe start covering the most vulnerable population through the means testing system
- Introduce short and medium term retraining courses in PRM both for doctors and nurses on the basis of existing (limited) and the future NLSRC in Chisinau
- The locally and centrally (MoLSPF) financed social (and social medical) services should be closely integrated into the proposed chronic care management model for the RM
• This will include both PHC (family doctors teams and community based social services centres) and Secondary Care services (skilled nursing and residential care)
• Such successful cooperation example exists currently (e.g. Republican Experimental Centre of Prosthesis, Orthopaedics and Rehabilitation)
• Social workers should assist the Family doctors teams in the case management covering social aspects of care for the disabled and people with long term conditions

7. Next Steps

Necessary next steps for the implementation of the new RLTC model in Moldova are the following:
• Reconcile the findings and recommendations from both TA streams for the Regionalization Strategy
• Develop and approve a detailed implementation plan for the RLTC services model in the Republic of Moldova
• Introduce recommended legislative changes (e.g. recommended standards, norms, pathways)
• Commission formal feasibility study for the PPP Project for the National Level Specialised Rehabilitation Centre in Chisinau
References


Gide Loyrette Nouel; EBRD. 2011. “Assessment of the quality of the PPP legislation and of the effectiveness of its implementation.”


