INITIAL FEASIBILITY STUDY FOR THE EXTENSION OF HEALTH SERVICES IN WADI KHALED CLUSTERS

(ASSESS THE TECHNICAL FEASIBILITY OF THE HEALTH CARE CENTERS PROJECTS IN WADI KHALED CLUSTERS)

ADELNORD-PROJECT

Projet d'Appui au Développement Local dans le Nord du Liban (ADELNORD)

TABLE OF CONTENTS

ACRONYMS, ABBREVIATIONS & GLOSSARIES:

AAMI	Association for the Advancement of Medical Instrumentation	**NEC**	National Electric Code
ADA	Americans with Disabilities Act (1990)	**NFPA**	National Fire Protection Association
AIA	American Institute of Architects *(Guidelines for the Design and Construction of Health Care Facilities)*	**IEC 60364**	Electrical Installations for Buildings
ASHE	The American Society for Healthcare Engineering	**IEC 62040**	Uninterruptible power systems-Standard
ASHRAE	American Society of Heating, Refrigeration, and Air-Conditioning Engineers	**IEC 62304**	Medical Device Software-Standard
AUB	American University of Beirut	**IMA**	Islamic Medical Association
AusHFG	The Australasian Health Facility Guidelines	**IMC**	International Medical Corps.
BDN	Basic Development Needs	**IOM:**	Institute of Medicine
CBI	Community Based Initiatives	**ISO**	International Organization for Standardization
CBR	Community Based Rehabilitation	**KFAED**	Kuwait Fund for Arab Economic Development
CCA	Common Country Assessment	**MD**	Medical Doctor
CDR	Council for development and reconstruction	**MEP**	Mechanical, Electrical & Plumbing works
DDS	Doctor of Dental Surgery	**MOPH**	Ministry of Public Health
EC	European Commission	**MOSA**	Ministry of Social Affairs
EML	Essential Medications List	**MSF**	Medecins Sans Frontieres
EMRO	Eastern Mediterranean Regional Office (WHO)	**NHS**	National Health Service (UK)
ENT	Otolaryngology	**NCD**	Non-Communicable Disease
ESFD	Economic & Social Fund for Development	**NGO**	Non Governmental Organization
EU	European Union	**OPEC**	Organization of the Petroleum Exporting Countries
FFM	Faculté Française de Médecine	**OPHT**	Ophthalmology
FGI	Facilities Guidelines Institute	**PH**	Public Health
FM	Family Medicine	**PHC**	Primary Healthcare Center
FPH	Faculty of Public Health	**PPM**	Planned Preventive Maintenance
GP	General Practitioner	**SS**	Stainless Steel
HFA	Health for All (WHO Concept)	**TA**	Target Area
HIT	Health Information Technologies	**UL**	Université Libanaise (Lebanese University)
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome	**UNICEF**	United Nations Children's Fund *(formerly United Nations International Children's Emergency Fund)*
HQ	Headquarter	**UOB**	University of Balamand
HRD	Human Resource Development	**USAID**	United States Agency for International Development
HTM	Health Technical Memorandum	**USJ**	Université St. Joseph
HVAC	Heating, Ventilation and Air Conditioning	**VHA**	Veterans Health Administration (US)
IDB	Islamic Development Bank	**WB**	World Bank
IEC	International Electrotechnical Commission *(Standards)*	**WBDG**	Whole Building Design Guide
IEC 60601	Medical Electrical Equipment-Standard	**WHO**	World Health Organization
		WHF	Al Waleed bin Talal Humanitarian Foundation - Lebanon

ENGLISH-FRENCH-ARABIC GLOSSARY:

ENGLISH	FRANCAIS	عربي
Description	**Description**	**توصيف**
Waiting/Multipurpose	Salle d'attente/Polyvalente	قاعة الانتظار متعددة الاغراض)الاستماع الت(
Toilet (Public)	Toilette (Publique)	مرحاض للزوار
Toilet (Staff)	Toilette (Personnel)	مرحاض للموظفين
Toilet (Patient)	Toilette (Malade)	مرحاض للمرضى
Nurse Station	Poste d'infirmières	مركز التمريض)للممرضات(
Clean Utility room	Salle de services propres	غرفة الخدمات النظيفة
Dirty Utility room	Salle de services sales	غرفة الخدمات الوسخة
Resuscitation room	Salle de réanimation	غرفة الانعاش
Consultation-Examination room	Salle de consultation et d'examen	غرفة استشارات وفحص
Treatment-Dressing-Injection room	Salle de traitement, de pansement et d'injection	غرفة العلاج والتضميد والحقن
Minor procedures room (surgeries)	Salle de petites procédures (chirurgies)	غرفة العمليات الصغرى)الجراحة البسيطة(
Delivery room	Salle d'accouchement	غرفة التوليد
Laundry room	Buanderie/Blanchisserie	غرفة غسيل الملابس
Linen room	Salle de linge propre	غرفة الملابس النظيفة
Laboratory	Laboratoire	المختبر
X-ray imaging room	Salle de radiologie	غرفة التصوير الاشعة
X-ray machine	Appareil à rayons X	جهاز تصوير الاشعة
Fluoroscopy	Fluoroscopie	تنظير المفاصل الوريدي(
Mobile	Mobile	متحرك سيار
Electronic patient monitoring	Surveillance électronique des patients	مراقبة المرضى الكترونيا
Patient monitor	Moniteur de patient	جهاز مراقبة العلامات الحيوية الحثية(للمريض
Spot check	Contrôle (surveillance) sur place	مراقبة في الموقع
Holter monitor	Moniteur Holter	جهاز هولتر لمراقبة نبضات القلب
Oral care	Soins bucco-dentaires	صحة الفم
Dental unit	Unité de soins dentaires	جهاز وكرسي علاج الاسنان
Dental clinic	Cabinet dentaire	عيادة طب الاسنان
Washing and decontamination (disinfection) room	Salle de lavage et de désinfection	غرفة غسيل وتعقيم
Packing and Assembly room	Salle d'emballage et de confection	غرفة تحضير وتغليف
Sterilization room	Salle de Stérilisation	غرفة التعقيم
Eye examination clinic	Clinique d'ophtalmologie	عيادة طب العيون
ENT clinic	Cabinet ORL	عيادة طب الانف اذن وحنجرة
Mental Health clinic	Cabinet santé mentale	عيادة الصحة النفسية)العقلية(
Mammography	Mammographie	تصوير الثدي
Panoramic x-ray imaging	Imagerie panoramique à rayons X	تصوير الفك الاشعة
Pharmacy	Pharmacie	الصيدلية
Phlebotomy room	Salle de prélèvement sanguin	غرفة سحب الدم
Defibrillator	Défibrillateur	جهاز صدمة كهربائية)لانعاش القلب(
ECG (Diagnostic)	ECG de diagnostique	جهاز تخطيط القلب
Stress Test unit	Unite d'épreuve d'effort avec ECG	جهاز فحص الجهد مع تخطيط القلب
General Practitioner	Médecin Généraliste	طبيب صحة عامة
Cardiologist	Cardiologue	طبيب امراض القلب
Pulmonologist	Pneumologue	طبيب جهاز تنفسي

ENGLISH	FRANCAIS	عربي
Description	**Description**	**توصيف**
Pediatrician	Pédiatre	طبيب الاطفال
Gynecologist-Obstetrician	Gynécologue et obstétricien	طبيب نسائي وتوليد
Ophthalmologist	Ophtalmologue	طبيب عيون
ENT doctor	Médecin en ORL	طبيب أنف اذن وحنجرة
Psychiatrist	Psychiatre	طبيب نفسي
Urologist	Urologue	طبيب مسالك بولية
Gastroenterologist	Gastroentérologue	طبيب جهاز هضمي
Family physician	Médecin de famille	طبيب العائلة
Dentist – Dental surgeon	Dentiste-Chirurgien dentiste	طبيب و جراحة الاسنان
Clinical psychologist	Psychologue clinicien	اخصائي [illegible] نفسي
Chronic diseases	Maladies chroniques	امراض مزمنة
Diabetes	Diabètes	مرض السكري
Trauma	Traumatologie	الصدمات المرض والاصابات الحادة
Hypertension	Hypertension artérielle	ضغط الدم المرتفع
Hematology	Hématologie	علم الدمويات
Bacteriology	Bactériologies	علم الجراثيم
Microbiology	Microbiologie	علم الاحياء المجهرية
Immunology	Immunologie	علم المناعة
Biochemistry	Biochimie	كيمياء حيوية
Analyzer	Analyseur	جهاز تحليل آلي
Crash cart	Chariot d’urgences	عربة نقل واز السعافات الاولية
Patient stretcher	Brancard malade	عربة نقل مرضى
IV stand	Porte sérum	حامل المصل متحرك
Syringe pump	Pousse seringues	جهاز حقن (ابر) آلي
Infusion pump	Pompe à perfusion (Compte goutes)	جهاز مصل آلي
Autoclave (Sterilizer)	Autoclave (Stérilisateur)	جهاز تعقيم بالبخار
Washer –disinfector	Laveur-Désinfecteur	جهاز غسيل و تطهير اللوازم الطبية
Ultrasonic washer	Dégraisseur ultrasonique	جهاز غسيل بالموجات الصوتية
Water purification system	Système d’épuration des eaux	جهاز تطهير (تنقية) المياه
Coagulation analyzer (homeostasis)	Analyseur de coagulation (d’hémostase)	آلة فحص تجلط الدم
Semiautomatic	Semi-automatique	شبه اوتوماتيكي
Biological safety cabinet	Poste de sécurité microbiologique	خزانة الاحتواء للسلامة البيولوجية
Microscope	Microscope	مجهر
Incubator	Incubateur	حاضنة مختبر
Tympanometer	Tympanomètre	جهاز فحص طبلة الاذن
Audiometer	Audiomètre	جهاز فحص السمع
Spirometer	Spiromètre	جهاز فحص التنفس
Portable	Portable	محمول-جوال
Ultrasound unit	Appareil d’échographie	جهاز تصوير بالموجات فوق الصوتية
Dialysis machine	Appareil de dialyse (rein artificiel)	جهاز غسيل الكلى
Therapy	Thérapie	العلاج
RO (reverse osmosis) treatment plant	Système de traitement de l’eau par osmose inverse.	وحدة تنقية المياه بالتناضح العكسي
UPS (uninterruptible power supply)	Alimentation électrique secourue	مزود الطاقة الكهربائية الاحتياطي
Power generator	Groupe électrogène	مولد كهرباء
Calibration	Calibration	معايرة
Air handling unit	Groupe de traitement de l’air	وحدة معالجة الهواء
ElISA reader and washer		جهاز وغسالة اليزا لمقايسة المناعية الانزيمية

ENGLISH	FRANCAIS	عربي
Description	**Description**	**توصيف**
Operating light	Scialytique	مصباح جراحي
Flow meter	Débitmètre	مقياس التدفق
Suction regulator	Régulateur d’aspiration	جهاز تنظيم وقوة الشفط
Diagnostic set (Otoscope & Ophtalmoscope)	Trousse pour diagnostique (Otoscope et ophtalmoscope)	جهاز فحص داخل الأذن و فحص العين
Stainless steel treatment and dressing cart	Chariot de soins et de pansements	عربة الجر وتضميد مصنوعة من الفولاذ المقاوم للصدأ)
X-ray viewer	Négatoscope	مجهاز عرض صور الاشعة
Suction pump	Pompe d’aspiration	مضخة شفط
Film processor	Développeur de film radiographique	جهاز تحميض صور الأشعة
Ventilator (respirator)	Ventilateur (respirateur)	جهاز تنفس اصطناعي
Bench top	Paillasse	مدة
Immediate Emergency Response Care Pack	Kit d’urgences et de secours	مجموعة مواد ولوازم طوارئ

1. INTRODUCTION

Lebanon can strike many as a vibrant and modern country where the quality of life is of high standard sometimes rivaling that of the prosperous western countries. Behind that façade lays a disturbing and bitter reality: Outside Beirut and the largest towns Lebanon is truly a third world country. Indeed its rural areas especially the remote villages are heavily neglected if not forgotten by the central government and its agencies. It's only at the onset of political events that these areas are briefly remembered; empty promises of development and would be prosperity pour in to attract support from the locals, only to disappear after the events are over and done with.

The Northern Parts of the country (Akkar, Dannieh and Hermel) constitute pockets of poverty that have attracted local ministries, NGO's and World Financial institutions that performed numerous local evidence based needs assessments and studies to try to provide possible solutions to ongoing problems.

The needs are great and they involve all aspects of daily life. There are shortcomings in governmental services, basic utilities and infrastructure (Power, roads, transportation, water, sewage, waste management, communications…), healthcare and health education , social services, education, career advancement and orientation, work opportunities through economic development (both public and private)… They require major interventions and investments from the central government, foreign governments help packages, Financial institutions grants, the continuous assistance of non-profit (local and international) organizations, benefactors' contributions, and the empowerment of local municipalities through decentralization to have the funds and authority to undertake and complete pressing local projects.

In 1998 the MOPH launched ambitious projects in health reform: namely the "Carte Sanitaire System" and the hospital accreditation system. The CDR has been active in the healthcare area, building and equipping public hospitals and healthcare centers all over the Lebanese territory. It has received donation and funding from various countries and organizations, like the IDB, WB, WHF, OPEC, KFAED, the Italian government, and the Saudi Government.
However when the projects are handed over to the end users they face numerous problems, mainly in staffing and funding. In the area off Akkar there are only 2 public health centers a 75 beds hospital in Halba and a PHC in Akkar-el-Aatiqa. These two centers are not enough to respond to local populations needs in Akkar and especially to those living in the remote parts.

When looking at various socio-economic and development indicators we can see the WADI KHALED region in AKKAR Northern Lebanon is the poorest and most underdeveloped part of the country. The area is divided into two clusters (Eastern and Western) with a registered population of about 39638 inhabitants (31114 are resident during the summer season). The population of this region only recently (in 1994) acquired the Lebanese Nationality. Despite this fact and due to the lack of governmental assistance and because of tribal belongingness and inter-marriages, the impoverished inhabitants consider Syria to be their second home and rely on cross border trade (legal and illegal) with the bordering Syrian towns namely Homs and Tal-Kalakh to fulfill their basic needs (including the purchase of foodstuffs, building materials, healthcare, medicine and fuel). The escalating strife in Syria has halted many of these activities; also many Syrian refugees have come to Wadi Khaled to seek refuge with relatives on the Lebanese side. They are now relying on the Lebanese market to meet these needs, at a higher premium adding to their burden.

The European Union in collaboration with ESFD through the CDR initiated a program "Appui au Développement Local dans le Nord du Liban (ADELNORD)" to assess primary needs for development in this target area. The program targets three essential components:

- Infrastructures,
- Community development,
- Environmental.

The following is an initial feasibility study of the needs and possible solutions for the furbishing of primary healthcare centers in each of the clusters; under the community development component.

2. MISSION INFORMATION AND OBJECTIVE

2.1 Information on the Program

The program " Appui au Développement Local dans le Nord du Liban (ADELNORD)" finds its justification in the existence of strong inequalities what concerns economic and social development.

The general objective of the program is threefold:
• To contribute to the national unity and to the improvement of living conditions of the people of Lebanon through valuation of the potentialities of the region that suffers a lack of development;

• To contribute to a national land use strategy; and

• To contribute to the improvement of environmental protection.

The specific objective of the program shows the participative approach with local communities in sustainable management of agricultural and natural resources. The program principles underline the sustainability of the economic activities oriented to local development in harmony with the natural environment.

Three results are formulated for the program:
• Administrations, local communities, private sector and civil society are mobilised around sustainable land development strategies.

• Agriculture is diversified, productivity and efficiency are improved. Use of Good Agricultural Practices (GAP) is systematized and employment in the agricultural sector is maintained and increased.
• Mountain ecosystems are protected.

To reach these results the Program runs two main components:

• The « Agricultural Infrastructures » component that realizes infrastructure investments in the agricultural development and in the sustainable management of natural resources; and
• The « Community Development » component that carries out community development projects in close partnership with the Municipalities.

2.2 Context of the mission

The preparation of grant projects under the community development component of the program has reached a stage of identifying potential projects to be subject of ADELNORD financing.

In order to be able to finally select or deselect the actual priority projects in each cluster of villages, feasibility studies have to be carried out for setting the basis for deciding on the technical, financial and social feasibility of these projects.
Among the identified projects in the target area of Wadi Khaled, Mashta Hassan, Mashta Hammoud, Chadra, Ouweinat there are some focussing on assisting and equipping health care centres; in particular :

• In Wadi Khaled cluster of villages;

• In Mashta Hassan cluster of villages

• In Dannieh cluster of villages

2.3 Requested services

2.3.1 Objectives and responsibilities

The primary objective of the expert's mission is to identify the content of the proposed projects and to assess the technical feasibility of the health care centres projects cited above and proposed for co-financing in the ADELNORD community development component.

The requested tasks will be:

1. Analysis of the technical feasibility of the proposed projects, including cost estimates, project design and preliminary bill of quantities ;

2. Elaboration of technical specifications of proposed equipment, respecting EU procurement rules.

2.3.2 Tasks and Activities

The expert will work under the direct responsibility of the Community Development Manager of ESFD and will closely collaborate with the permanent experts of ESFD and the Technical Assistance to ADELNORD. Duties of the Expert shall include the following tasks:

• On basis of discussions with the ESFD and the Technical Assistance of ADELNORD, provide within two days after the start-up of the mission a timetable, agenda and methodology of study activities to be carried out during the mission ;

• Conduct field visits to the project region; discuss with the project staff the project ideas and the general layout of the proposed projects.

• Assess the regional health care services coverage as well as the actual needs;

• Assess the existing health care centers in the project clusters from the managerial aspect, their performance and service provision;

• Where the proposed projects consist in establishing a new health care centre, the expert will diagnose the place where the centre is to be hosted and report on its viability as a suitable place from the health and technical aspects;

• Identify together with the key stakeholders appropriate medical equipment needed;

• Identify accompanying measures - if deemed necessary - for a coherent project;

• Conduct technical feasibility studies for identified projects including justification and choice of equipment, design, performance and economic viability;

• Elaborate the technical specifications and cost estimates for the identified equipment.

The expert will ensure to the maximum possible extent an active participation of the beneficiaries during the definition of the projects. The elaboration of the technical options is to be based primarily on existing information and data, as well as on experience gathered on similar projects; supplementary data collection will be restricted to those to be obtained through interviews with key and resource persons, through existing data collected during the CD-component's diagnostic phase, through existing studies of the same region if applicable; complementary data collection such as socio-economic surveys or similar are not foreseen, the mission will base its findings on the data to be reasonably obtained within the limited time frame given.

2.3.3 Expected Results

The following results are expected from the mission:

• The concerned Municipalities have a clear vision of the envisaged health care centres projects;

• The management and the field staff of the Community Development component dispose of an adequate basis for evaluating the technical feasibility of the proposed health care centres projects.

2.3.4 Deliverables

• After two days from the start of the mission: Work Plan and activity schedule, as well as methodology to be followed during the mission;

• The expert will be required to produce one technical feasibility report per project comprising at least of the following elements:

- A presentation and evaluation of the conditions prevailing in the regional health care sectors of the cluster and in relation to the envisaged projects ;

- On the basis of the analysis of the prevailing conditions, the expert elaborates on the specific objective and the results of each envisaged project;

- On the basis of the current situation the expert elaborates the definition of each project (comprising of content of project, choice of technology and equipment, preliminary design, preliminary cost estimates, preliminary O&M costs estimates, implementation calendar, log-frame);

- Technical specifications of the envisaged equipment respecting EU procurement rules;

- A synoptic project fiche.

3. METHODOLOGY

A time table was set for this intervention:

- Starting with the field visit of each cluster of villages to gather information through direct observation (taking notes and photographs) and by discussing with health centers staff and municipal chiefs, Mukhtars and local stakeholders about the actual health conditions and needs. During each visit I was accompanied by the TA teams of the ESFD and GFA.
- Meeting with health officials from the major hospitals in the nearby towns Kobayat and Halba; to collect some feedback about their knowledge about the health conditions in Wadi Khaled region.
- Meeting with the Head of Al Makassed Health Care Bureau.
- Write a preliminary report about the general findings.
- Prepare a complete technical study based on the evidence gathered.

To facilitate the mission and to standardize the type of data assembled, a questionnaire (reference guide) was prepared and used during the site visits and meetings; the questions concentrated on:

1- Demographics,

2- Health conditions (epidemiology),

3- Healthcare services accessible in the area,

4- Costs of health services,

5- Health awareness (education),

6- Availability of skilled human resources,

7- Environmental constraints,

8- Availability of infrastructure and governmental support,

9- Needs, Improvement recommendations and expectations (as seen by the locals).

4. OVERVIEW-BACKGROUND INFORMATION

The Wadi Khaled region is located in Akkar in Northern Lebanon at its north-eastern tip.
It has a registered population of around 39638 inhabitants; its resident population during the summer reaches 31114 inhabitants. The region is culturally rich due to the confessional variety of the population, belonging to a Sunnite majority, Alawites (6000) and Shiites (1500) living in the village of Karha.
The total area of Wadi Khaled is around 40 Km² with hills overlooking the Syrian regions of Homs and the Tal Kalakh. It borders Syria to east and north naturally separated by the Nahr el Kabir (Big River), to the west it borders the village of Mashta Hammoud and to the South the villages of Jabal Akroum.

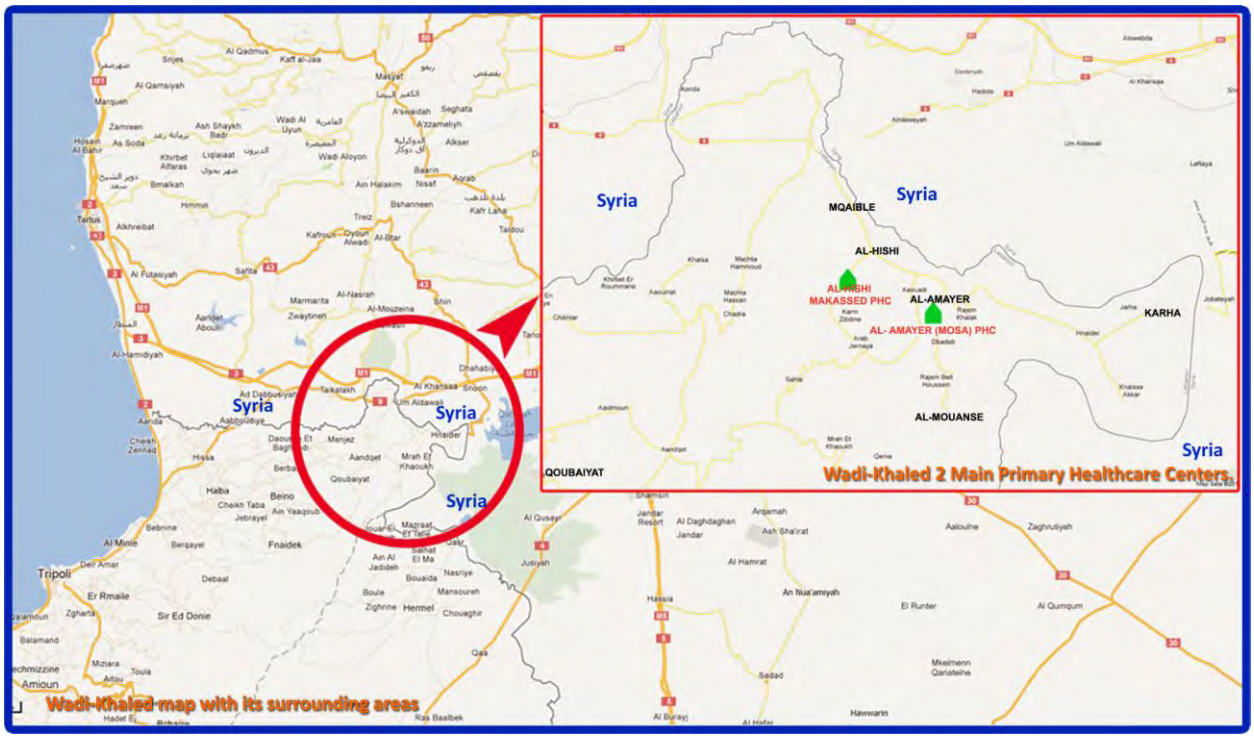

Part of the river "Nahr el Kabir" separating Wadi Khaled from Syria

The climate in Wadi Khaled is cold in the winter, hot in the summer and pleasant in spring and autumn, however the region is very humid all year long.

It is divided into 2 clusters: Eastern and Western with a total of 18 villages; led by the Mqaible municipality for the western cluster and by the Al-Mounseh municipality for the eastern cluster.

The Eastern Cluster with 9 villages: Al-Mounseh (Has a municipality), Al Amayer, Rajem Issa, Rajem Khalaf -Al Kalkha, Rajem Bayt Hussein, Karha, Hnaider -Al Amriye, Kanissa ,and Al Majdel-Al Msaed.

The Western Cluster with 9 towns and villages: Al Mqaible(Has a municipality), Khat el Petrol, Bani Sakher, Karm Zebdine, Al Fared, Al Hishi, Al Awadeh, Al Rama, and Jourmanaya.



The population of Wadi Khaled was naturalized Lebanese in 1994. It is mainly composed of Arab “Ashaer” (The Atik and Ghanem tribes) spread across the Lebanese-Syrian border. Most of them are impoverished and rely on either agriculture or smuggling to survive. Also, most citizens of Wadi Khaled consider Syria as their second country, mainly due to the porous geography with no true boundary, relatives living in Syria, cheaper living costs and most of all because Higher taxes in Lebanon and the lack of government assistance, infrastructure and meaningful development.
As an example it is easier, faster and cheaper for the Wadi Khaled inhabitants to the nearest Syrian town (Homs and Tal Kalakh) then to go to the closest Lebanese town (Halba 45Km away) for sourcing their basic needs (foodstuffs, building materials, medical care, medicine and fuel).

Locals Struggle Balance Gas Tanks on horseback

A fleet of Chinese Motorbikes, the preferred mode of transport in the area.

However today with the ongoing crisis in Syria these activities are stopping because of the dangers involved (Shooting, bombardments and land mines).It is affecting the supply of cheaper merchandise and commodities from Syria adding to the hardships of this deprived population. The influx of Syrian refugees is also adding to this Burden. Today they are desperately relying on any form of help that reaches them.

On the positive side, there is hope that the new generations will help to improve the situation in that area in the years to come. Today more and more are getting educated; many are working or seeking employment in the public sector mainly in education and in the armed forces. This integration into the Lebanese society will perhaps encourage the central government to put into action the many studies and strategies done for this area mainly by creating career opportunities through development and infrastructure and encourage these promising cadres to return to their towns and villages. Many NGO's and private benefactors have tried to alleviate the situation by satisfying some needs here and there through limited but useful grants and donations, but the main effort remains the government responsibility.

5. SITES VISITED

A- Wadi Khaled Western Cluster
- Al-Rami Dispensary. 15-02-2012
- Al-Hishi Makassed Primary Health Center. 15-02-2012
- Meeting with Mqaible Municipality and Mukhtars. 15-02-2012
- El-Hishi Welfare Dispensary. 15-02-2012

B- Wadi Khaled Eastern Cluster
- Al-Amayer Social Services Center (MOSA). 16-02-2012
- Karha Social Services Center. 16-02-2012
- Meeting with Al-Mounseh Municipality ,Mukhtars and Stakeholders. 16-02-2012

C- Area major Hospital
- Al-Yousef Hospital Halba. 22-02-2012
- Halba Governmental Hospital. 22-02-2012
- Rahal Hospital – Sheikh Mohamed (Halba) . 22-02-2012
- Saydet al Salam Hospital Qobaiyat. 22-02-2012

D- Al Makassed Hospital Beirut; Meeting with Mrs. Reem Rabah-Head of Makassed Health Bureau.
E- Al-Hariri Foundation Dispensary in Al-Bireh. 7-03-2012
F- Meeting with two Physicians from the region (Dr. Beri El-Assaad and Dr. Mostapha Al-Ali). 7-03-2012

6. EVIDENCE GATHERED FROM SITES AND MEETINGS

6.1. Wadi Khaled Western Cluster

6.1.1. Al Rama Dispensary
- Privately owned center.
- Center consists of a ground level floor with 5 rooms. A pharmacy, a dental clinic, a laboratory and 2 examination clinics.
- Services: General Medicine, Ob-Gyn, Dentistry, Laboratory and Pediatrics.
- Claims to be a welfare center and charges basic fees for services. 10000 L.L. for routine and Ob-Gyn examination and 10000 to 20000 L.L. for Laboratory tests.
- Usually employs unlicensed (in Lebanon) Syrian doctors and medical staff. Now being replaced by Local doctors due to the absence of the Syrian doctors because of ongoing crisis across the border.
- Distributes medications and drugs bought and or smuggled from Syria. Events in Syria are preventing regular supply of these medications; hence the stocks are being depleted and need to be replenished locally at higher prices.
- Medications are dispensed to patients without any prescription or doctor ordinance. The pharmacy is managed by a Syrian pharmacist.
- Facilities are much below standard especially concerning the basic hygiene requirements. The walls are cracked, moldy and there are traces of fungus growth.
- In some parts of the centers there is evidence of rodent infestation (presence of droppings on some of the medical equipment); this is probably due to the presence of garbage dumps all around the center.
- The majority of the equipment is old and in bad shape (signs of rust and heavy dust build-up).

- Dental chair is leaking and is practically unusable.
- Autoclaves are rusty.
- Lab is very basic with heavily abused equipment and dirty.
- Number of patients per day: 30 up to 50 more when new supplies of drugs are available.
- Needs:

    - Renovation of facility
    - Procurement of Panoramic X-ray
    - Portable Ultrasound unit
    - New Lab equipment
    - Refrigerator for Pharmacy

See Appendix-1 for photographs of center.

6.1.2. Wadi Khaled Primary Healthcare Center (a.k.a Al-Hishi Makassed PHC)

- Built in 2003 by local initiative with the help of USAID and the MOPH,
- Owned by MOPH, and managed in collaboration with Al-Makassed Welfare Organization (Beirut),
- Charges basic fees for services,
- Center consists of a three stories building (Basement, Ground Floor and First Floor),
- Center Managed by Mr. Khaled Moustafa (an ex- school principal),
- Building in relatively good shape and is well maintained despite minor problems,
- Overall hygiene conditions are passable and there can be room for improvement,
- Health services offered: General Medicine, Ob-Gyn and normal delivery, Pediatrics, Cardiac, ENT, Ophthalmic, psychiatry, Dentistry, Laboratory and Radiology.
- Visiting doctors are all from the surrounding areas (All Lebanese)
- Distributes medications and drugs supplied by the MOPH and the YMCA which are free and others bought by Al-Makassed are sold at cost price.
- Opens every day (7/7)
- They have collaborations with nearby hospitals (Al Salam-Kobayat, Al-Yousef –Halba and Halba Govt. Hospital) for acute cases. However not to be renewed this year.
- The center is equipped with adequate equipment in some departments. They are maintained by suppliers and biomedical technicians from AL-Makassed.
- The Lab is the best in the area. Can be improved with the addition of few modern machines to complete the testing services.
- They have a routine X-ray machine, a Dental chair with intra oral X-ray, an Ultrasound and EKG.
- The meeting room in the basement was designed to become an emergency room.
- Across the hallway they have a steam sterilizer (autoclave) installed next to a boiler in the mechanical room. The place is inappropriate for sterilizing instruments. There is also a foul smell (sewage) inside the area, due to bad drainage system (needs to be evaluated by a Mechanical engineer or expert plumber).
- They lack medical gases installations especially in patient rooms and procedural areas. They rely on cylinders with regulators (which require floor space in already small areas).
- Al-Makassed recently purchased for the center a fully equipped ambulance, some new equipment and accessories.
- They also have a mobile dispensary that goes to more remote areas to offer basic health services including vaccinations. This vehicle is in passable shape and can be up hauled with some modern equipment.

- Number of patients per day: 60 and up to 150 when new supplies of drugs are available.
- Needs (prioritized):

    - Procurement of Electrical Generator and UPS system,
    - Panoramic X-ray,
    - New trauma and resuscitation ER with all necessary equipment and furnishings.
    - A small CSSD (sterilization) with autoclave and washer.
    - 2 bench top autoclaves,
    - Additional new Lab equipment,
    - Fluoroscopy X-ray system,
    - Dialysis,
    - Portable Ultrasound unit with 4D capability,
    - Mammography,
    - Small water treatment plant (RO- De-Ionized water),
    - EMG-EEG (neurological analyzer)
    - Spirometry device,
    - And Audiometer.

See Appendix-1 for photographs of center.

6.1.3 Meeting at with Western Cluster Municipality Chief, Stakeholders and Mukhtars

- Meeting at Al Makassed PHC,
- Discussed major concerns and needs for the region:
    - Health Awareness.
    - Better health services needed… Most in favor of consolidating Al-Hishi (Makassed) PHC.
    - The major diseases and health problems in their towns: Diabetes,Cardiac, Digestive tract, Kidney disorders, Dermatological and trauma (mainly from motorcycle accidents and sometimes from gunshot wounds).
    - Absence of basic utilities and services: Water treatment and supply, power, sewage and garbage disposal…
    - They have 2 old power generators (1 at 120 KVA and 1 at 13 KVA), but since the troubles begun across the border, they cannot get cheaper fuel and now at local prices it's costing them 2000$ per month to run. They are both worn out and consume more fuel.
    - They took the initiative to write letters to politicians, NGOs, Governments demanding help for their region, but so far without any successful outcomes.
    - No potable water. Local water sources are heavily contaminated.
    - Water treatment (softening) of hard water (High $CaCO_3$ content).
    - Garbage (Trash) is disposed of at all side roads, on river banks and ravines.
    - Many of the sick and injured from the Local population are being transported to nearby hospitals using damaged and traitorous roads. Many get there in worst shape then what they started with.
    - Education (literacy) improved from 10% to 90 % since they became naturalized in 1994; mainly amongst the younger generations. They however lack career orientation for specializations that are useful for their livelihood and region.
    - Some are already enrolled or seeking employment as civil servants mainly in the military and security forces.

6.1.4 Al-Hishi Welfare Dispensary. 15-02-2012

- Privately owned center.
- Claims to be a welfare center and charges basic fees for services.
- Center consists of a ground level floor with 5 rooms, worn-out (Water seepage, mildew and scraped paint).
- A pharmacy, a dental clinic (installed following our visit), a laboratory and 2 examination clinics.
- Doctors come from nearby towns and from Syria; most bring their own diagnostic equipment.
- Center front is a Pharmacy/Store with groceries and drugs mostly from Syria.
- Not a serious Health Center but more a business.

6.2 Wadi Khaled Eastern Cluster

6.2.1 Al-Amayer Social Services Center

- Owned, funded and managed by the Ministry of Social Affairs (MOSA).
- Managed by a MOSA appointed public official.
- Centrally located in the eastern cluster.
- Center is part Healthcare and part vocational/Educational.
- Center consists of a ground level Building built in the 1960's. With a large yard surrounding it, recently transformed as a playground for children and patients (with DRC funding).
- Facilities are much below standard especially concerning the basic hygiene requirements. The walls are cracked, seeping water with heavy traces of mildew growth.
- Lack of a handicapped access ramp.
- A pharmacy, a dental clinic, a laboratory and 3 examination clinics.
- Health Services: General Medicine, Ob-Gyn, Dentistry, Cardiac and Pediatrics.
- Charges basic fees for services as set by the MOSA.
- Laboratory tests are sent to Al-Hishi PHC or Local Hospitals.
- Serviced by 6 local doctors contracted by MOSA.
- Distributes medications and drugs when available from MOSA. They are free when available.
- Medications when available are dispensed only to patients with prescription or doctor ordinance.
- The majority of the equipment is old but in passable condition.
- They have a pharmaceutical refrigerator, dental chair, ultrasound unit and ECG.
- Receive occasional donations from NGO's: UNDP, DRC, USAID, and UNICEF…
- Number of patients per day: up to 50 more when new supplies of drugs are available.
- Needs:

    - Renovation of facility and water proofing of walls and roof,
    - Inspection of facility by structural engineer for building stability (major cracks in columns and beams),
    - Procurement of new pharmacy casework,
    - Panoramic X-ray,
    - Routine X-ray,
    - Film processor,
    - Portable Ultrasound unit,
    - New basic Lab equipment,
    - Bench top autoclaves,

- New dental chair,
- Minor treatment room with Resuscitation equipment,
- Photocopier,
- General utility transport van,
- Fully equipped ambulance,
- And power generator.

The center has received a Cardiac Ultrasound. It charges a basic fee of 15,000.00 L.L. for a consultation and sonography test.

See Appendix-1 for photographs of center.

6.2.2 Karha Social Services Center (Satellite facility to Al-Amayer).

- Owned by MOSA under the authority of the Al-Amayer Center.
- Is a small Health Post (small Dispensary)
- Center consists of a ground level Building with 4 rooms: 2 clinics and a small pharmacy and a small waiting hall.
- Charges basic fees for services as set by the MSA
- Building in poor shape needs some renovation and new casework.
- Services: General Medicine, Ob-Gyn, Pediatrics, and Cardiac.
- Visiting doctors are contracted by MSA.
- Distributes medications and drugs when available from MSA. They are free when available.
- Number of patients per day: up to 20 more when new supplies of drugs are available.
- Needs:

  - Procurement of a 6 KVA Electrical Generator,
  - ECG,
  - Dental Clinic,
  - Portable Ultrasound unit,
  - Ambulance (to be shared with Al-Amayer),
  - New clinic furniture,
  - Small autoclave,
  - And Van (for transporting corpses).

See Appendix-1 for photographs of center.

6.2.3 Meeting with Eastern Cluster Municipality Chief, Stakeholders and Mukhtars.

- Meeting at Al-Mounseh Municipality premises,
- Discussed major concerns for the region as follows:
  - Health awareness.
  - Absence of basic utilities and services: Water treatment and supply, power, sewage and garbage disposal…
  - Better health services needed… Most in favor of consolidating El-Hishi (Makassed) PHC and Al-Amayer on which they rely for their routine healthcare needs. Some go to Al-Rama Dispensary when new batch of Syrian Medications arrive.
  - Procurement of an ambulance and vehicles to transport the corpses of the deceased.
  - Creation of vocational and career improvement centers.
  - Socio-Economic development.

6.3 Visit to area major health care facilities and meetings with health care providers

6.3.1 Al-Yousef Hospital Halba

- Privately owned.
- Managed by Dr. Saoud el Yousef.
- Best equipped hospital in the region. Fully equipped imaging dept.
- Offers a large variety of medical services.
- Most cases treated (Common to all Akkar): Trauma, General medicine & Pediatrics, Ob-Gyn, Dialysis, Cardiac, Chronic diseases, and Gun-shot wounds.

6.3.2 Halba Governmental Hospital

- Owned by the MPH.
- Managed by Mr. Hussein el Masri
- Built in 2001 and opened in 2006.
- Even though it was well equipped this hospital offers limited medical services. Building is run-down and needs renovation.
- Most machines including medical equipment are out of service due to no maintenance and lack of funds to fix them.
- Most cases treated: Trauma, General medicine & Pediatrics, Ob-Gyn, And Cardiac.

6.3.3 Rahal Hospital – Sheikh Mohamed (Halba)

- Privately owned.
- Managed by Rana El Ahdab, Health and Safety Officer.
- Fairly equipped hospital. Well equipped imaging dept.
- Offers a large variety of medical services.
- Most cases treated: Trauma, General medicine & Pediatrics, Ob-Gyn, Dialysis, Cardiac, Chronic diseases, And Gun-shot wounds.

6.3.4 Saydet al Salam Hospital – Qobaiyat

- Privately owned by the Antonins Maronite Order.
- Managed by Sister Marie-Edouard Daccache.
- Due to lack of funds the hospital is relying on old equipment (but in good shape). They buy new equipment only on needs basis.
- Fairly equipped hospital. Fairly equipped imaging dept.
- Offers a large variety of medical services.
- Most cases treated: Trauma, General medicine & Pediatrics, Ob-Gyn, Dialysis, Cardiac, Pulmonary, Chronic diseases, And Gastric diseases.

6.3.5 Al Hariri Foundation Dispensary – Al-Bireh

- Privately owned and managed by Hariri Foundation.
- Has a nursing team on duty.
- Provides primary health care services and some sub-specialties like Cardiology and orthopedics.

- Implements a Nationwide Health card system enabling patients to receive care at any Hariri Foundation facility, where the patient's records can be easily accessed for continuation of care.
- Fairly equipped center. But lacks X-ray imaging.
- Has a social counseling office.
- The center is well maintained and clean.
- Charges basic fees for services: 5,000.00 L.L. for routine exams, 8,000.00 L.L. for Specialty tests. Dental services fees range from 5,000.00 L.L. for routine procedures to 25,000.00L.L. For oral surgery. Drugs are sold at 25% to 50% of initial cost. Prices are set by the foundation.
- Wadi Kahled patients unable to get drugs from the local PHCs come to this center to obtain them.
- They care for 60 patients per day.

Most cases treated: Orthopedics, General medicine & Pediatrics, Ob-Gyn, Cardiac, ENT, Pulmonary, & Chronic diseases.

6.3.6 Meeting with Dr. Beri El-Assaad

- A practicing physician in Wadi Khaled.
- Has similar concerns to those identified by the Municipality chiefs, Stakeholders and Mukhtars.
- Thinks that the Al-Amayer MOSA social services center should be strengthened, because of its central position in Wadi Khaled region.
- Thinks that the central government should get more involved in the area and improve the infrastructure (Water, electricity, public works and sanitation)
- He proposes to create a local Ambulance and Rescue unit to serve the area and take care of the operation and maintenance of the vehicles. So they are exclusively used to transport patients and not to be used for smuggling.
- Need for an X-ray machine and Ultrasound unit.
- He believes that the area needs a better equipped clinical laboratory, to be run and managed by the MOSA, who in turn takes care of its operation and maintenance.
- He identifies the most occurring diseases and health conditions as follows:
    - Infectious diseases due to severe pollution of the water sources and bad sanitation,
    - Gastric and abdominal disorders,
    - Dermatological disorders,
    - Neurological problems mainly due to trauma,
    - Chronic diseases,
    - Respiratory diseases,
    - And Allergies related disorders.
- Disabled people are cared for by Arc-En-Ciel out of Halba.
- No special care for the Elderly, they are treated as normal adult patients.
- For him the priority is to address the pollution problem caused by waste water and garbage littering the area. They are the primary cause of serious health problems and the high incidence of the Rotavirus.

6.3.7 Meeting with Dr. Mostapha Al-Ali

- A practicing physician in Wadi Khaled.
- Has similar concerns to those identified by the Municipality chiefs, Stakeholders and Mukhtars.
- Thinks that the Al-Amayer MOSA social services center is inefficient today, could be strengthened, because of its central position in Wadi Khaled region; but prefers that the Al-Hishi Makassed PHC is better fit to serve the primary health needs of the area and should be improved.
- He thinks that improving the infrastructure (Water, electricity, public works and sanitation) can help alleviate some of the burdens of the local population.
- He strongly believes that women are the key to successful primary health since she is the household main caretaker. Educating them in preventive and sanitation measures will help improve health conditions in the area.
- Provide more training to local healthcare workers to better serve the region.
- He identifies the most occurring diseases and health conditions as follows:
    - Infectious diseases due to severe pollution of the water sources and bad sanitation,
    - Gastric and abdominal disorders,
    - Birthing,
    - Dermatological disorders,
    - Chronic diseases,
    - And Respiratory diseases.
- For him the priority is to address the pollution problems and increase health awareness especially among women.

7. HEALTH SITUATION AND INDICATORS

Wadi Khaled except for the presence of one acceptable Primary Healthcare Center, The Makssed PHC in Al Hishi, medical services are much below standard in terms of essential primary care. To better address the needs in terms of medical equipment needed to complement what is already available, we relied on site visits to evaluate the condition of the healthcare buildings and the medical equipment used. We also used the information obtained by the local healthcare providers and from feedback from the Akkar area hospitals treating patients from the valley. The following table shows the cause and effect of the most common medical conditions in this rural region.

CONDITION	CAUSE	EFFECT
Trauma	• Use of low quality Chinese motorbikes without any protections. • Use of badly maintained old cars with used up tires. • Dreadful road conditions without night lighting. • Total disregard to safety regulation, speed and absence of law enforcement. • Gunshot wounds during hunting or smuggling. • Work and home related accidents.	• Road accidents ranging from minor to major injuries leading to fatalities. • Adding burden on local healthcare facilities with scarce resources unable to cope with such cases. • Tough logistics in transporting casualties to nearby hospitals in Qobaiyat -25 km and Halba-40 km away.
Respiratory	• Indoors smoking by adults and teenagers or exposure to heavy amounts of secondhand smoke and pollution • Exposure to certain gases or fumes with inadequate ventilation. • High humidity climate. • Rudimentary heating (Sobia) and cooking Methods using diesel fuel, wood and nowadays used rubber tires. • Lack of health, hygiene and preventive methods education. • Exposure to the elements without proper insulation or clothing.	• High incidence of respiratory diseases mainly with children. • Bronchitis (viral and bacterial origins), Bronchiolitis (viral origin, most common in children during winter and early spring), and Pneumonia (bacterial origin, can be fatal) • Chronic Obstructive diseases: Chronic Bronchitis, Asthma and Emphysema. • Require prompt medical care and after care management.
Chronic Diseases	• Eating habits including unhealthy diet with excessive energy food intake like fats carbohydrates and sugars. • Physical inactivity • Heavy tobacco use. • Living conditions. • Psychosocial (Stress factors) and genetic factors.	• High Frequency of: Diabetes, Cardio-Vascular problems, Respiratory and Cancer.

CONDITION	CAUSE	EFFECT
Gastric – Intestinal/Digestive	• Bad hygiene and sanitation (Hand sanitation and baby bottle sterilization). • Waste and sewage pollutants contaminating water source (underground).Mainly due to unregulated digging of water wells and septic sewage tanks. Also the proliferation of garbage and waste dumps on river banks and on road sides. • Bad food stuff and preparation.(Food poisoning) • Humid and wet climate. • Contact with infected people.	High levels of harmful microorganisms like E-coli and Coliforms in water. Main problems encountered are: • Gastroenteritis and Dysentery mainly in children. • Sometimes there are outbreaks of Typhoid. • Food poisoning by salmonella and other microorganisms.
Renal Disorders	• Chronic diseases mainly diabetes and hypertension. • Urinary tract obstruction. • Untreated Calcareous (Hard) water quality to some extent. • Smoking and eating habits especially with obese people. • Traumatic injury.	Renal diseases ranging from kidney stones to total renal failure.
Congenital	• First-Cousins marriages, highly frequent in this tribal society. • Living and dietary habits. Substance and smoke abuse, and essential nutrients deficiencies (like folic acid in pregnant women). • Infection during pregnancy.	• Causes can include infant mortality, birth defects, learning difficulties, sensory and motor functions problems and metabolic disorders. • Cases of epilepsy and convulsions.
High Birthing rate	• Early pre-arranged marriages • Akkar has the highest birthrate in the country, approximately 10 % annual increase. • Absence of family planning, sexual education and social orientation. • Dominance of Arab tribal culture (Ashaer) that influences social behavior and life style.	• Population increase in poverty area. • More children diseases. • Additional family charges, feeding, clothing… • Burden on healthcare facilities.
Miscellaneous	• Lack of sanitation and hygiene. • Living conditions & Overcrowding. • Sharing of beds, covers and clothing. • Psychosocial (Stress factors) and genetic factors.	• Lice infection. • Snake Bites. • Dermatologic disorders • Neurological problems • Psychiatric cases.

There are other factors affecting the poor healthcare delivery in that area, mainly:

- Absence of government initiatives. Even though both the MPH and the MOSA have started and funded projects with the help of foreign donation and grants but never followed through for sustained outcomes. The best example would be to compare the Al-Hishi (Makassed Managed) PHC (Owned by the MPH) and the Al-Amayer (MOSA owned and managed) PHC. The first is the only descent center offering a good bundle of services and essential drugs for the needy population despite the many gaps. The building is well maintained and is very clean. Well as the Al-Amayer PHC, the building that was built in the 1960's is in bad shape; there are water leaks, cracks in walls and structure (beams and columns), it is poorly equipped, essential drugs supplies are not regular, the MOSA sends what it has in its warehouses, and most of the times the drugs sent do not respond to the needs of the population. This is a typical example of government neglect.
- Lacks of decent facilities, most buildings are not well finished or maintained. Total absence of hygiene (Except for the Al-Hishi PHC).
- Except for the Al-Hishi PHC, all the other PHCs and dispensaries lack essential medical equipment for performing even basic laboratory tests, etc.
- Even more important; there are just not enough trained and qualified doctors and medical staff to adequately serve this rural population. Doctors from nearby towns mainly Halba and Qobaiyat are reluctant to travel to, let alone live in impoverished remote areas.
- Absence of any financial incentives to convince medical staff to work in rural areas. Some Syrian doctors and medical staff (unlicensed to perform in Lebanon) used to practice in some PHCs before the start of the crisis in Syria.
- The result of non-functioning PHCs has been that, in many cases, diseases are not diagnosed in their early stages nor treated. The rural population has to often travel through tough road conditions to urban area hospitals to seek proper medical care.
- Shy efforts in implementing health awareness and education leading to better family planning, hygiene/ sanitation, better nutrition, management of chronic diseases, and prevention of communicable diseases.
- Lack of local community involvement. (Community involvement is a process in which individuals and/or families assume responsibility for their own health and develop the capacity to contribute the acquired skills to the community development as a whole).

8. PEST ANALYSIS

POLITICAL	ECONOMIC
• Population became naturalized Lebansese citizens in 1994. • Many Consider Syria to be their second homeland. • Strife in Syria is affecting the Wadi Khaled area. • Worldwide interest in the area following influx of Syrian refugees. • Area typical neglected by the central government. • Absence of infrastructure and development projects. • Politicians only interested in the area during election periods. • NGOs and welfare organizations are very active in the area.	• Poverty stricken area. • Population relied on neighboring Syrian towns for sourcing their basic needs at much cheaper rates. • Cheaper medications from Syria were very common before the crisis. Now they have to buy much more expensive drugs from the Lebanese market. • Also illegal cross-border trade was a major source of revenue for the area. Today it is almost halted. • Crisis in Syria and the arrival of refugees have added to their burden. • Ability to pay for basic needs and healthcare services has greatly diminished. • Ability to pay for transportation costs because of high fuel prices is also greatly affected. Rely on unsafe motorcycle commuting. • Relying on help from foreign governments, local government, world organizations and NGOs to fulfill essential needs.
SOCIO CULTURAL	**TECHNOLOGICAL**
• Typical Arab Ashaer (tribal) community. • Predominately Sunnite and conservative. • Rely on agriculture and smuggling for earning revenue. • Populations especially the youth are getting better educated and are slowly integrating in Lebanese society. • Younger generations are migrating and immigrating seeking better fortune in urban areas or other countries. • Some resistance to women education and empowerment. • Pre arranged marriages and First cousins marriages are frequent. • High birthrates. • Inadequate health education and family planning. • Bad living conditions. • Bad living habits mainly sanitation, nutrition and smoking.	• Except for household appliances, few computers and cellular phones, technology is very basic. • Most cars are old and most rely on basic Chinese made motorcycles for transportation. • Electrical power is severely rationed in this area. People rely on generators if they can afford the fuel. • The best PHC in the area the Al-Hishi Makassed hospital is also basically equipped compared to other PHCs in the country, but is fairly better than the rest of Wadi Khaled.

9. SWOT ANALYSIS

STRENGHTS	WEAKNESSES
• Identification of 2 prospect sites for the assistance grant. • The Al-Hishi PHC has an acceptable infrastructure and can quickly make use of the needed equipment to be supplied by the grant. • Al-Amayer needs some overhauling but is also a viable candidate for the assistance grant. Once completed it can also make quick use of the equipment that will be supplied under the grant. • With the supply of well equipped ambulances a greater number of people can be reached for health care. • Al-Hishi PHC owns a mobile dispensary and is getting a brand new Ambulance from Al Makassed Foundation. • Both are strategically located and if they are adequately equipped they can better serve the primary healthcare needs of this TA.	• Both centers lack basic emergency services. • Al-Hishi PHC requires calibration of its electrical network, unstable electrical current can damage expensive medical equipment. It also lacks proper HVAC installations especially in critical areas where humidity control is needed. • Al-Amayer shows signs of water damage and cracks in the walls and in some parts of the structure. Need overhauling before new equipment can be installed. This can be time consuming. The facility also lacks a ramp for disabled people accessibility which needs to be constructed. • Al-Amayer also relies principally on funding and supply of drugs and medical supplies from the MOSA. The frequency of these supplies is not regular and most of the time they receive medications that do not respond to the real needs of the population.
OPORTUNITIES	**THREATS**
• Have 2 well equipped PHCs. • Serve the community of the 2 clusters with better primary care. • Pilot project that can bring on other contributions if successful. • Project involves community contribution a step forward in community involvement. • New equipment involves new training for health workers. • New technologies could attract or encourage more skilled people to work at the PHCs. Also raises motivation and trust amongst the local population. • Collaboration between the 2 PHCs. • Better health education capability. • Better women development and education. • Local younger generation taking advantage of their naturalization and integrating into broad Lebanese society, by seeking public jobs. A move that will pay its dividends in the coming years.	• Financial sustainability questionable without government and NGO support. • Local population ability and willingness to pay basic fees for services. • Bypassing of the PHC system. • Crisis in Syria still escalating more refugees are arriving adding to the burden. • Migration of educated and skilled local youth. • Ability to recruit and retain the services of skilled health and allied health professionals. • Cultural resistance to change. • Sporadic government interest and involvement, due to unstable political situation.

10. PRIMARY HEALTHCARE FACILITY -A GENERIC MODEL:

The concept of Primary health care (PHC) was put forward at Alma-Ata international conference on primary health care in 1978. It was described as possibly the only alternative most likely to meet the health needs of the majority of the world's population. It also became the core of the “Health for All” concept of the WHO.

Primary health care provides basic health care services and stresses prevention rather than cure. These services should be available, equitable, accessible, affordable and acceptable to the whole population.

Some PHCs due to local health needs provide essential ambulatory curative care In addition to health promotion and disease prevention services. These extra services include emergency care, small procedures-surgeries and mother and child services (as ante- and post-natal care not involving surgeries like C-section). It may for this purpose have a few beds for observation or for awaiting transfer/transportation to a higher level hospital. It should also serves as a facility where patients can be counseled on family planning, nutritional advice and health education.

The PHC’s purpose is to become a place where ill people can bring all their medical problems, whether they are clinical, dietary or mental. The PHC should function like hub that performs a sort of triage, treating basic cases or else referring patients to the right specialist or to hospital. It is usually the first contact patients and their communities have with the health system.
In addition to essential care the PHC can offer or fulfill any of these following components:

- Education about common health problems and what can be done to prevent and control them,
- Maternal and child health care, including family planning,
- Promotion of proper nutrition,
- Immunization against major infectious diseases,
- Adequate supply of safe water,
- Basic sanitation,
- Prevention and control of locally endemic diseases,
- The proper treatment for common diseases and injuries.
- Follow-up is another important function of PHCs, after the initial treatment a patient can return for more check-ups and advice. Patient’s records should be updated regularly and kept safe for easy retrieval. Today’s information technology advances allow for greater data manipulation and safe storage. This collected data can serve as indicators of the health situation of the TA,
- Invest in women education particularly in health and hygiene. This measure of empowering local women can have a very positive impact on the community health service in a number of ways:
    - They are the household caretakers and have influence in the decision making,
    - Training women to become both care givers and health educators,
    - Improving their own health also improves that of their families,
    - Raises their self-esteem by placing them in positions of responsibility.

The issue of sustainability is principal, to ensure that the center will be able to function even after benefactors funding has stopped. The caretakers must elaborate strategies that will be in form of partnerships with the local communities, welfare organizations, NGOs, foreign donations or help packages and when possible governmental assistance (by concerned ministries). Charging basic fees for services must be carefully planned and implemented to avoid alienation of the poor.

Many factors affect the quality and efficiency of primary health care services. The main ones are:

- Shortage of funds needed to buy equipment, supplies and make improvements in existing facilities,
- Shortage of essential medical equipment and instruments,
- Essential drugs and medical supplies are not supplied on a continuous basis,
- Shortage of skilled professionals and workers and inadequate recruitment strategies,
- Poor skills and knowledge of local PHC workers leading to inappropriate diagnosis and treatment of illnesses, contributing to higher morbidity and mortality levels in patients. Local staff at many centers utilize medical procedures and medical technology inappropriately to deal with basic health problems; this due to lack of manpower training and development,
- Poor job descriptions and authorities delegation,
- Lack of motivation and incentives,
- Migration and immigration of educated youth and professionals to urban areas or abroad, seeking better fortune and career opportunities,
- Absence of communication channels between providers and individuals/community leads to mistrust,
- Bypassing-Unsatisfied patients will prefer to go to a specialist or larger hospital for treatment (even at higher costs) if they deem that the local PHC is poorly managed and equipped,
- Lack of continuous commitment from individuals, communities and governments.

Typical Configurations of a PHC:

There are 2 interesting models for a PHC that would best fulfill the needs of primary care, the first being a basic one with essential diagnostic services and minor emergencies and the second a larger PHC with specialized care.

The most basic configuration of a PHC is as follows:

- A director's office with meeting room and private WC,
- An assistance small office with a back room for document copying and filling,
- An accountant and collection officer office,
- A main reception and information desk at the entrance,
- A waiting hall with male and female public toilets preferably accessible to disabled people, otherwise provision for on Handicapped WC must be made,
- A ramp (As per ADA guidelines) should also be constructed to facilitate access to the facility,
- A combined emergencies and minor procedure room with essential life support equipment,
- There should be at least two multipurpose consultation and exam room, adequately equipped,
- One Obstetrics and gynecology consultation and exam room, adequately equipped,
- One dental clinic with intra-oral x-ray and film developing apparatus,
- One area for blood and sample taking for laboratory,
- Basic laboratory with biochemistry, hematology, coagulation, and bacteriology testing,
- A pharmacy with secure storage cabinets and cold storage equipment,
- One washing, disinfecting room and a flash sterilization room totally segregated,
- A clean utility, a dirty utility, a linen store and a pantry,
- A staff area with lounge, WC and pantry,
- At least one janitor room for housekeeping purposes,
- A patient records room with a computer with large storage and ample filling space,
- An equipment store and a general purpose store for supplies,

- A mobile x-ray unit with protective wear and film processing,
- A portable ultrasound unit with universal, Ob-Gyn, and Vascular apabilities,
- General diagnostic equipment (Exam light, Otoscope, ophthalmoscope, Sphygmomanometer, stethoscope and thermometer), a scale and an ECG,
- And finally medical gases supply (by cylinders).

Commonly it is run by paramedical staff, with doctors on scheduled visits. The team includes at least a registered nurse, a midwife, a medical assistant, and two or three auxiliary staff. The typical catchment area would be a population of up 10,000 people, depending on the geographic factors.

A more advanced (specialized) PHC would have in addition to the above:

- A routine x-ray room with wall bucky,
- A panoramic x-ray,
- A screening mammography unit,
- A diagnostic eye clinic,
- An ENT clinic,
- A more advanced lab with additional immunology testing,
- A cardiology clinic with Holter monitoring,
- A pulmonology clinic with Spirometry,
- A mental health clinic,
- A physical therapy unit,
- An advanced ultrasound unit with universal, Ob-Gyn, and Vascular and cardiac capabilities,
- A trauma-resuscitation room ,
- A minor surgery room,
- A delivery suite excluding surgery (C-Section),
- A nursery,
- An observation ward for at least 4 male and 4 female patients,
- All the ancillary facilities.

Commonly it is run by one senior duty doctor assisted by resident and paramedical staff, with other doctors on call and scheduled visits. The team includes at least 3 registered nurses, a midwife, 4 medical assistants, and three auxiliary staff. The typical catchment area would be a population of up 20,000 people, depending on the geographic factors.

Typical building layout:

Depending on local building regulations, urbanism laws and the characteristics of the site chosen for constructing a PHC; the architect and civil engineer will design a building that accommodates the project concept needs (specified in a space program based on a medical program and facilities guidelines). The size of the land will also influence the shape of the building whether it will be a one floor or multiple floors facility.

There are lots of models to go by but the most practical are:

- The one story most accessible to people with disabilities and requires no lifts to be integrated. However it requires a larger land area.

- The two stories or more model, gives flexibility in both the number of services that can be accommodated and segregates care, administrative and utilities areas. Requires at least one lift (preferably a patient lift) to provide accessibility to the upper floors. Works best for smaller land areas.
- Both models can be either an island type internal topology or a segregated internal topology. Both should be designed around patient flow concept.
- All PHC facilities should incorporate accessible pathways and WCs for people with disabilities (according to ADA guidelines).

Refer to appendix -3 for generic room layouts and their preferred dimensions,

Typical infrastructure and site requirements:

The patient, visitors and staff flow need to be well thought during the design phase. Cross circulation hinders the care effort. There should be specific areas for waiting and only patients and concerned staff will use the care areas, there should be a separate entrance for medical staff into the facility (typically from the ER side).

Minimum space requirements as described in well elaborated healthcare facilities design guidelines like: the AIA-FGI, the AusHFG, the UK-HTM, and VHA-WBDG; need to be implemented in order to assure smooth flow of patients and staff and also ideal working conditions for staff and comfortable space for patients.

For medical equipment to function properly and for health staff to perform their tasks effectively a suitable infrastructure must be provided. Manufacturers of medical equipment can provide a list of MEP requirements (where they apply) needed for the proper operation of their equipment. Based on these requirements each site that will receive this equipment will have to be readied according to these MEP requirements. Typically and engineer or technician from the manufacturer or his local dealer will validate the site before the installation.
For electrical installations 2 international codes are useful: the NFPA-NEC and the IEC 60364. For HVAC the most reliable is ASHRAE and NHS-HTM 2025.

The basic infrastructures of the facilities include:

- Clean and potable water supply ,
- Treated water supply for medical equipment use,
- Uninterrupted power supply for sensitive medical equipment and conservation equipment,
- Stable power (current and voltage) supply to avoid damage to expensive and sensitive medical equipment,
- Proper HVAC design for climate control, that respect the minimum requirements of ASHRAE's healthcare facilities guidelines,
- Special care should be given to humidity control that is very harmful to electronics and also can lead to growth mildew, fungus and other microorganisms in the facility affecting the health of both the patients and the staff. Another issue that should be addressed is the respect of

pressure gradients in the flow of air especially in critical areas(like surgery and delivery rooms) to avoid cross contaminations in the facility,

- The use of finishing materials that don't favor microorganisms growth and are easy to clean and maintain, like ceramic tiles (groove less and laser cut), vinyl flooring, antibacterial and low VOC wall paints,
- Have adequate numbers of electrical outlets distributed in the facility and proper lighting design especially in work areas,
- Have a good signage system (bilingual Arabic, French or English) to direct patients and visitors to their right destination,
- Good drainage and waste collection areas. Designate areas for the collection of medical waste, general storage for supplies and equipment in addition to a storing area/cabinet for hazardous materials (shall be clearly labeled),
- Handling and disposal of waste including bio-wastes,
- Fire-safety system and equipment,
- IT infrastructure with Ethernet cabling and outlets (CAT-6) are amply distributed across the facility, for easy technology integration and communication via internet,
- Segregated departments and areas: Administrative, public, emergency care, inpatient care, outpatient care, utilities and storage,
- Additional infrastructure facilities may be added for special tasks as and when needed.

11. PROJECTS FEASIBILITY

There is no doubt that this neglected area needs to have at least a couple of descent and up to standards Primary Healthcare Centers, to serve the routine health needs of the population. For this purpose these centers have to be readied and equipped for such tasks. The amount available to fund this mission through the EU-ADELNORD program is small compared to the actual needs. But it can start to improve the present situation and possibly serve as a pilot project for other funds and donations. The importance of such development missions is to help create projects or consolidate existing one to become sustainable and self sufficient. However given the evidence this will be hard to achieve especially that these institutions are welfare type, charging no or basic fees for services and medications. It is most likely that they will rely on Ministries funding, NGOs and Charitable organizations (Like Al-Makassed) donations to sustain their operations.

As mentioned previously the funds allocated for this mission have to be used for agricultural type development projects and Healthcare improvement. The amount available for each cluster is € **200,000.00** that's $ **266,000.00** (at €1=$1.33). If we split the amount then we can appropriate **$ 133,000.00 for** healthcare projects in each cluster. For this money to have a positive impact on the situation we chose the following centers:

1.The Al-Hishi Makassed PHC is our first choice to receive this money to complement its already existing portfolio of medical equipment. Table MEN-01 describes by order of priorities the pressing needs for this healthcare center. The amount allocated will have a better impact in such a facility where we can eliminate some of the gaps, like planning and installing a modern emergency department.

The Al-Hishi Makassed PHC is a relatively new building built in 2003 and its owned by the Ministry of Public health who gave its management to the Makassed Welfare Organization. Despite being well managed by both and energetic director and by the Makassed organization, the center has a monthly loss of approximately $14,000.00, yet it continues to provide valuable health services to the community and today to the Syrian refugees fleeing the strife in their country (2000 cases treated since March 2011).

Normally at least 50% of the local inhabitants come to benefit from this PHC's health services. On an ordinary day (they open 7/7) they would serve 60 patients per day and up to 150 on special occasions.

Most services are free once the patient registers at the center with an initial fee of L.L.18,000.00. Medications are procured from the YMCA and the IMC and are charged a basic fee of L.L. 2,000.00. The Makassed also supplies them with medication not available from the NGOs; these are sold at cost prices.

The Center maintains a computerized patient records system that is updated regularly.

It is relatively well equipped with: A basic laboratory, dental clinic, routine X-ray machine, Film developing, Ob-Gyn clinic and services including normal delivery, General medicine, Pediatrics, Cardiology, Gastroenterology, Ophthalmology, ENT and recently Psychiatry. The originally designated Emergency room area was never equipped and operated and now is used as a meeting room.

The center employs local doctors and staff. Most doctors graduated from Russian and other Eastern European (Ex-Soviet Bloc) universities, but they are competent given their exposure and hands-on experience.

The center has 8 patient rooms but lack any medical gases infrastructure. It is mandatory to have medical gases services for any inpatient care. Relying on cylinders is not cost efficient on the long run and poses logistical problems. They also take up space in already small rooms.

During our conversation with the center's director Mr. Khaled Al-Mostapha he expressed wishes to have a surgical operations department especially for Cesarean Section. This is not feasible at this stage because with any surgical facility we need to design a special patient a staff flow, with clean restricted areas, sterilization facilities, recovery and intensive care in case of complications all requiring at least a 120 m² area and a budget of approximately $ 200,000.00. This PHC is too small to accommodate such facilities.

He also asked for a Dialysis center. By MPH standards a Dialysis center proper has to have a minimum of 8 care stations with all auxiliary facilities. This would require an area at least 230 m² and a budget of $ 225,000.00. This type of care requires a specialized medical and paramedical staff, not readily available in this area.

We believe we should concentrate on essential life saving treatment and minor procedures by building a decent well equipped emergency department with a trauma-resuscitation and minor procedure rooms with their auxiliary facilities (Clean and dirty utility, flash sterilization). Specialized care should be referred to close by hospitals able to cope with the demand.

The center in collaboration with Al Makassed and Social groups holds regular health awareness sessions to educate the community.

2. Our second choice despite the terrible condition of parts of the building is the Al-Amayer Ministry of Social Affairs Development Services center. The main reason for our choice is that one of the conditions of granting the funds would be to have an actual facility to equip. Other reasons include its strategic location central to most villages in the eastern cluster, and the nice enclave in which the center stands. You will see from the photographs taken during the site visits the awful condition the building is in, despite efforts from both the director and his staff to do the best with what little they have.

Surprisingly some of the rooms especially the ones used as clinics are slightly in better shape than the remainder of the building.

The building was built and inaugurated in 1966. Since then this building was neglected until recently when an attempt at halting water leaks through the roof has not worked. The waterproofing project was funded ($ 16,000.00) and contracted to a local engineer by the MOSA. At the time of our visit and following 2 days of stormy weather it was evident that the waterproofing has failed.

This center is owned and managed by MOSA. The appointed official is Mr. Ahmed Khalaf. The center serves as healthcare, social and educational-vocational center.

The Center offers few medical consultation services: General, pediatric, Ob-Gyn, Cardiac and Chronic Diseases management and dental practice. It is served by.

This center employs local doctors (6) doctors and staff contracted by MOSA. Again most these doctors graduated from Russian and other Eastern European (Ex-Soviet Bloc) universities, but they are competent given their exposure and hands-on experience.

The center charges basic fees for its services as set by MOSA. A sign with prices is posted.

The Pharmacy is less than basic, as the MOSA only sends medications that are available at its central warehouse, not fulfilling the real needs in medication for the population.. Some of these drugs are not used and are thrown out after a while. The MPH stopped sending drugs since MOSA assumed management of its centers Patients are either sent to other facilities to get their prescribed drugs.

This center also manages a small satellite dispensary in the remote village of Karha that is very basically equipped with 2 clinics and a very small pharmacy.

Both centers serve a population of about 20000 inhabitants.

The Center’s operations costs are paid for by the MOSA depending on availability of funds.

The center has received donations and equipment from UNICEF, DRC and UNDP. The new projects included the creation of a children playground, the supply of medical equipment most recent was a Cardiac Ultrasound system.

The Center collaborates with Al-Hishi Makassed PHC for laboratory tests. The Makassed center sends its mobile dispensary daily to the Al-Amayer center to collect samples.

For this center we propose to create a small emergency-small procedures room, a new basic lab, new pharmacy casework, renovate the building, and create a handicapped access ramp and supply an ambulance.

If MOSA can fund the renovation of the building then we can use the money to supply more medical equipment as listed in Table MEN-02.

12. START-UP PHASE , LIST OF PRIORITIZED NEEDS

The following tables list the prioritized needs for each PHC, with their estimated costs in US dollars:

TABLE- MEN01: PRIORITIZED NEEDS FOR AL HISHI MAKASSED PHC					
Priority	**Item Reference**	**Description of Need**	**Quantity**	**Unit Price USD**	**Total Price USD**
1	--	Equipment and furniture for a trauma and resuscitation room. (See List ME-01)	1	$49,625.00	**$49,625.00**
2	--	Equipment and furniture for a Minor treatment room with plaster sink. (See List ME-02)	1	$26,930.00	**$26,930.00**
3	--	Ramp for the Supply of medical gases from cylinders with valves and regulators. (N2O, Oxygen, Medical Compressed air 4 bar). For Emergency Department.	1	$7,500.00	**$7,500.00**
4	--	New rooms civil works	1	$15,000.00	**$15,000.00**
5	--	Air Handling unit for humidity control for ER department.	1	$15,000.00	**$15,000.00**
6	ME0650	Benchtop autoclave 30 L	2	$6,500.00	**$13,000.00**
7	PE0100	Power Generator 40 KVA	1	$15,000.00	**$15,000.00**
8	PE0200	UPS 40 KVA	1	$25,000.00	**$25,000.00**
9	--	Calibration and renovation of electrical cables(wiring)	1	$6,000.00	**$6,000.00**
10	ME0645	Steam sterilizer 200 L	1	$30,000.00	**$30,000.00**
11	ME0635	Table top washer disinfector 50 L	1	$8,500.00	**$8,500.00**
12	ME0655	Ultrasonic washer 20 L	1	$2,500.00	**$2,500.00**
13	LB0106	ELISA washer & Reader	1	$10,000.00	**$10,000.00**
14	OE1700	Water purification system (RO) for sterilizer.	1	$7,500.00	**$7,500.00**
15	LB0102	Semi Automatic coagulation analyzer	1	$6,000.00	**$6,000.00**
16	LB8080	Biosafety cabinet Class II small	1	$8,000.00	**$8,000.00**
17	ME0066	Holter 4 parameters	1	$10,000.00	**$10,000.00**
18	ME0067	ECG 12 Channels	1	$4,000.00	**$4,000.00**
19	ME1288	Tympanometer	1	$5,000.00	**$5,000.00**
20	ME0068	Spot Check monitor (NIBP, SPO2, TEMP)	1	$3,500.00	**$3,500.00**
21	ME1213	Audiometer	1	$4,500.00	**$4,500.00**
22	ME0196	Fluoroscopy X-ray – C-Arm	1	$95,000.00	**$95,000.00**
23	ME0051	Trauma stretcher	1	$6,500.00	**$6,500.00**
24	LB0800	Routine Microscope	1	$2,000.00	**$2,000.00**
25	LB0030	Incubator	1	$1,500.00	**$1,500.00**
26	ME0192	Mobile X-ray unit	1	$21,000.00	**$21,000.00**
27	ME0180	Portable Ultrasound unit	1	$32,000.00	**$32,000.00**
28	ME0191	Panoramic X-ray	1	$22,000.00	**$22,000.00**
29	ME1277	Spirometer	1	$3,500.00	**$3,500.00**

AL HISHI MAKASSED PHC (Cont.)					
Priority	**Item Reference**	**Description of Need**	**Quantity**	**Unit Price USD**	**Total Price USD**
30	ME3535	Immediate Emergency Response Care Pack for mobile dispensary. (**See List ME-06)**	1	$1,200.00	**$1,200.00**
31	ME0066	Defibrillator and resuscitation equipment for mobile dispensary	1	$8,000.00	**$8,000.00**
32	ME2020	Dialysis Machine with therapy chair	4	$20,000.00	**$80,000.00**
33	OE1701	Small Water Treatment plant (RO) for Dialysis	1	$12,000.00	**$12,000.00**
				Total in US Dollars	**$557,255.00**

TABLE- MEN02: PRIORITIZED NEEDS FOR AL AMAYER PHC					
Priority	**Item Reference**	**Description of Need**	**Quantity**	**Unit Price USD**	**Total Price USD**
1	--	Renovation of building. Fixing of cracks. New paint job for the whole center with Anti-Bacterial paint. Waterproofing of building roof.	1	$25,000.00	**$25,000.00**
2	--	Procurement of new pharmacy casework.	1	$7,000.00	**$7,000.00**
3	--	Basic Clinical Laboratory equipment. **(See List ME-03)**	1	$62,000.00	**$62,000.00**
4	--	Equipment and furniture for a Minor treatment room with plaster sink. **(See List ME-02)**	1	$26,930.00	**$26,930.00**
		With Medical Gases Cylinders with regulators. Lump Sum	1	$1,500.00	**$1,500.00**
5	ME9988	Ambulance fully equipped.	1	$50,000.00	**$50,000.00**
6	ME0065	Crash Cart with Defibrillator and all accessories	1	$9,000.00	**$9,000.00**
7	--	Immediate Emergency Response Care Pack for mobile dispensary. (**See List ME-06)**	1	$1,200.00	**$1,200.00**
8	ME0190	Routine X-ray	1	$52,000.00	**$52,000.00**
9	ME0199	Film processor	1	$5,000.00	**$5,000.00**
10	ME0191	Panoramic X-ray	1	$22,000.00	**$22,000.00**
11	PE0100	Power Generator 40 KVA	1	$15,000.00	**$15,000.00**
12	PE0200	UPS 40 KVA	1	$25,000.00	**$25,000.00**
13	OE8877	Small General Utility transport van	1	$20,000.00	**$20,000.00**
14	--	Essential furniture for examinations clinic. (**See List ME-04)**	2	$3,150.00	**$6,300.00**
15	--	Essential furniture for Ob-Gyn examination clinic. (**See List ME-05)**	1	$3,500.00	**$3,500.00**
16	ME0180	Portable Ultrasound unit	1	$32,000.00	**$32,000.00**
17	ME7676	Dental unit complete with Intra-Oral Xray	1	$12,000.00	**$12,000.00**

TABLE- MEN02: PRIORITIZED NEEDS FOR AL AMAYER PHC					
Priority	**Item Reference**	**Description of Need**	**Quantity**	**Unit Price USD**	**Total Price USD**
17	OE8081	Photocopier	1	$6,000.00	**$6,000.00**
18	OE8082	Personal Computer with Display, UPS and Printer	1	$1,000.00	**$1,000.00**
				Total in US Dollars	**$382,430.00**

List ME-01-Trauma & Resuscitation room				
Item Reference	**Description**	**Quantity**	**Unit Price $**	**Total Price $**
ME0011	Oxygen Flow meter, 0-15L/Min	1	$90.00	**$90.00**
ME0010	Air Flow meter	1	$90.00	**$90.00**
ME1004	Operating Light Small, Ceiling Mounted	1	$5000.00	**$5,000.00**
ME0060	Patient Monitor	1	$5000.00	**$5,000.00**
MF0100	Double Step Stool	1	$75.00	**$75.00**
MF0080	I.V Stand Mobile	2	$70.00	**$140.00**
MF0010	Step-On 12 to 15L waste bin with lid	2	$20.00	**$40.00**
ME0051	Trauma Stretcher	1	$6500.00	**$6,500.00**
ME0070	Patient Stretcher	2	$900.00	**$1,800.00**
MF0020	Diagnostic Set	1	$565.00	**$565.00**
MF0011	SS Treatment and dressing cart	1	$240.00	**$240.00**
ME0021	Trolley, Soiled, Linen, Single with Lid	1	$170.00	**$170.00**
ME0021	X-Ray Viewer Single	1	$130.00	**$130.00**
ME0013	Suction pump electric 2 jars	1	$1,500.00	**$1,500.00**
ME2000	Kick bucket	1	$140.00	**$140.00**
MF0027	Infusion Pump	2	$1,500.00	**$3,000.00**
ME0100	Syringe Pump	2	$1,200.00	**$2,400.00**
ME0101	Crash Cart with Defibrillator and all accessories	1	$9000.00	**$9,000.00**
ME0046	ECG 12 Channels	1	$3500.00	**$3,500.00**
ME9990	Bowl Stand, Double, SS	1	$245.00	**$245.00**
ME2022	Portable (Transport) ventilator	1	$10,000.00	**$10,000.00**
			TOTAL	**$49,625.00**

List ME-02-Minor Treatment and Procedure Room				
Item Reference	**Description**	**Quantity**	**Unit Price $**	**Total Price $**
ME0011	Oxygen Flow meter, 0-15L/Min	1	$90.00	**$90.00**
ME0010	Air Flow meter	1	$90.00	**$90.00**
ME1004	Operating Light Small, Ceiling Mounted	1	$5000.00	**$5,000.00**
ME0060	Patient Monitor	1	$5000.00	**$5,000.00**
MF0100	Double Step Stool	1	$75.00	**$75.00**
MF0080	I.V Stand Mobile	1	$70.00	**$70.00**
MF0010	Step-On 12 to 15L waste bin with lid	1	$20.00	**$20.00**
ME0051	Patient Stretcher	1	$2500.00	**$2,500.00**
ME0070	Diagnostic Set	1	$565.00	**$565.00**
MF0020	SS Treatment and dressing cart	1	$240.00	**$240.00**
MF0011	Trolley, Soiled, Linen, Single with Lid	1	$170.00	**$170.00**
ME0021	X-Ray Viewer Single	1	$130.00	**$130.00**
ME0013	Suction pump electric 2 jars	1	$1,500.00	**$1,500.00**
MF0021	Kick bucket	1	$140.00	**$140.00**
ME2000	Electro-Surgery Unit	1	$6,000.00	**$6,000.00**
MF0027	Mayo table	1	$190.00	**$190.00**
ME0100	Infusion Pump	1	$1,500.00	**$1,500.00**
ME0101	Syringe Pump	1	$1,200.00	**$1,200.00**
ME0046	Cast Cutter (Plaster Saw)	1	$1,400.00	**$1,400.00**
OE5654	Vacuum, Cleaner wet/dry	1	$330.00	**$330.00**
MF0022	Bowl Stand, Double, SS	1	$245.00	**$245.00**
MF0028	Plaster cart	1	$475.00	**$475.00**
			TOTAL	**$26,930.00**

List ME-03- Basic Clinical Laboratory equipment				
Item Reference	**Description**	**Quantity**	**Unit Price $**	**Total Price $**
LB0100	Semi automated Biochemistry analyzer -Open system	1	$7,000.00	**$7,000.00**
LB0101	Fully Automated Hematology Analyzer 3 parts differential	1	$10,000.00	**$10,000.00**
LB0010	Centrifuge Bench top	2	$2,200.00	**$4,400.00**
LB0800	Routine Microscope	1	$2,000.00	**$2,000.00**
LB0102	Semi automated Coagulation analyzer	1	$6,000.00	**$6,000.00**
LB0105	Spectrophotometer	1	$3,500.00	**$3500.00**
LB0030	Incubator	1	$1,500.00	**$1,500.00**
LB0600	Pipettes set (5)	2	$800.00	**$1,600.00**
ME0650	Benchtop autoclave 30 L	1	$5,000.00	**$5,000.00**
LB0020	Hot plate-Stirrer	1	$350.00	**$350.00**
LB0021	Water bath 10 L	1	$800.00	**$800.00**
LB0040	Tube roller-Mixer	1	$600.00	**$600.00**
LB0041	Vortex Mixer	1	$250.00	**$250.00**
LB0042	Bunsen Burner	1	$75.00	**$75.00**
LB0343	Timer	1	$75.00	**$75.00**
LB0108	Manual differential counter	1	$350.00	**$350.00**
LA0001	Start-up glassware and durable accessories	1	$750.00	**$750.00**
LA0002	Start-up Consumables accessories(Syringes, Slides, Petri dishes, sample cups, Blood collection tubes, needles, swabs)- Lump Sum	1	$750.00	**$750.00**
LB8080	Biosafety cabinet Class II small	1	$8,000.00	**$8,000.00**
LF0001	Laboratory Casework and Sanitary works-Lump sum	1	$9,000.00	**$9,000.00**
			TOTAL	**$62,000.00**

List ME-04- Essential furniture for examination clinic				
Item Reference	**Description**	**Quantity**	**Unit Price $**	**Total Price $**
ME1005	Exam light, wall mounted	1	$500.00	**$500.00**
MF0100	Double Step Stool	1	$75.00	**$75.00**
MF0010	Step-On 12 to 15L waste bin with lid	1	$20.00	**$20.00**
MF0900	Fixed Height, 2 sections exam couch	1	$800.00	**$800.00**
ME0070	Diagnostic Set	1	$565.00	**$565.00**
ME0073	Sphygmomanometer	1	$50.00	**$50.00**
MF0020	SS Treatment and dressing cart	1	$240.00	**$240.00**
MF0011	Trolley, Soiled, Linen, Single with Lid	1	$170.00	**$170.00**
ME0021	X-Ray Viewer Single	1	$130.00	**$130.00**
ME0700	Patient scale with rod	1	$250.00	**$250.00**
ME0701	Pediatric scale	1	$350.00	**$350.0**
			TOTAL	**$3,150.00**

List ME-05- Essential furniture for Ob-Gyn examination clinic				
Item Reference	**Description**	**Quantity**	**Unit Price $**	**Total Price $**
ME1005	Exam light, wall mounted	**1**	$500.00	**$500.00**
MF0100	Double Step Stool	**1**	$75.00	**$75.00**
MF0010	Step-On 12 to 15L waste bin with lid	**1**	$20.00	**$20.00**
MF0901	Manual Ob-Gyn Examination table	**1**	$1500.00	**$1,500.00**
ME0070	Diagnostic Set	**1**	$565.00	**$565.00**
ME0073	Sphygmomanometer	**1**	$50.00	**$50.00**
MF0020	SS Treatment and dressing cart	**1**	$240.00	**$240.00**
MF0011	Trolley, Soiled, Linen, Single with Lid	**1**	$170.00	**$170.00**
ME0021	X-Ray Viewer Single	**1**	$130.00	**$130.00**
ME0700	Patient scale with rod	**1**	$250.00	**$250.00**
			TOTAL	**$3,500.00**

List ME-06 - Immediate Emergency Response Care Pack (ITEM ME3535)	
Description	**Quantity**
CPR and Airway Module	
CPR Faceshield	1
Pocket Style CPR Mask	1
Berman Oral Airway Set	1
Disposable Bag Valve Mask Adult	2
Disposable Bag Valve Mask Pediatric	1
Manual Suction Unit	1
Medical Instruments/Tools	
2.7 L Medical oxygen cylinder including valve and regulator - filled	1
Manual Blood Pressure Cuff and monitor (adult)	1
Stethoscope Dual-head	1
Penlight Otoscope	1
Aluminum Penlight (reusable)	1
Flash light	1
Digital Hypo/Hyper-thermometer (85 - 110 degrees)	1
Large EMT Shears	2
Small EMT Shears	2
Lister Bandage Scissors	1
Splinter Forceps w/ magnifier	1
Ring Cutter	1
Kelly Forceps	1
Eye Magnet Loop	1

List ME-06 - Immediate Emergency Response Care Pack (cont.)	
Description	**Quantity**
Brass Window Punch	1
Nursing Apron/Organizer Pack	1
Infectious Control	
Nitrile Exam Gloves	100
Latex Exam Gloves	100
Antimicrobial Wipes	100
Mask/Faceshield Combos	5
Spill Clean-up Kit	1
Infectious Control Bags	5
Minor Wound Management	
Strip Bandages	100
Knuckle Bandages	50
Fingertip Bandages	50
X-Large Bandages	25
Cotton-tipped Applicators packet (2/pack)	5
Butterfly Wound Closure Strips	10
Sterile Wound Closure Strips, cards	2
Moleskin 1 sheet of pieces	1
Antiseptic Wipes	100
Triple Antibiotic Ointment Packs (1 g)	25
Hydrocortisone Cream packs (1 g)	10
Iodine Wipes	50
Sting Relief Pads	10
Tincture of Benzoin Swabsticks	2
Bandage Materials	
Non-sterile 5 x 5 cm Gauze Pads	200
Sterile 5 x 5 cm Gauze Pads pack (2/pack)	25
Bloodstopper-style Compression Bandage	2
25 x 75 cm Multi-Trauma Dressings	2
Feminine Napkins	4
5 cm Conforming Gauze Rolls (non-sterile)	12
Sterile 10 cm Krinkle Gauze Rolls	4
Triangular Bandages with safety pins	12
Safety Pins	10
8 cm Elastic Bandages with Clips or Velcro	2
2.5 cm x 10 m Silk Style Cloth Tape	2

List ME-06 - Immediate Emergency Response Care Pack (cont.)	
Description	**Quantity**
Splinting	
90 cm Padded Moldable Aluminum Splint	1
Padded Moldable Finger Splints	2
Cardboard Arm Splints	2
Cardboard Leg Splints	2
Adjustable Neck Collar - Adult	1
Adjustable Neck Collar - Pediatric	1
Burn/Irrigation	
Antbacterial gel 10 x 20 cm Burn Dressing	2
Antbacterial gel 10 x 10 cm Burn Dressing	2
20cc Irrigation Syringe	1
60cc Irrigation Syringe	1
Sterile Water pouches	6
Eye Care	
4 x 8 cm Sterile Eye Pads	4
0.25 L Eye Wash	1
0.5 L Eye Wash	2
Over-the-Counter Medications	
Glucose Servings	3
Ammonia Inhalants	3
Aspirin bottle (81 mg dosage)	1
Comfort and Care Items	
Emergency Foil Blankets	4
Reusable washable Blanket	1
Chemical Cold Packs (Kold Pak)	10
Chemical Dry Heat Packs	10
Emergency Whistles	2
Instructional and Organizational Materials	
First Aid Manual	1
Kit Contents sheet	1
Patient Information Field Notes Pad (with Pencil)	1
Other informational handouts for shelters and large events packet	1
Rolling Duffel bag:	
90 cm rolling sturdy duffel fabric bag with 2 outside pockets, carry handles, retractable hand-truck frame system and removable shoulder strap.	1
TOTAL (SET)	**$1,200.00**

13. RECOMMENDATIONS

Steps in the process of enhancing the capabilities of the PHCs:

1- To furbish or refurbish the existing PHCs (land, building, equipment, and supplies) already set up by the government.
2- The furnishing will be simple, comfortable, and durable. Available on the Lebanese market with after sales support.
3- Provide stable electrical power for sensitive equipment by means of UPS (uninterrupted electric power). And also power generators powerful enough to sustain the needs of each center.
4- Train paramedics and nursing staff to handle essential primary care.
5- Train staff and technicians on the proper use of new equipment.
6- Train and empower the staff at the PHCs to spread awareness on some of these issues, build trust within the community, and to take a holistic approach to health care.
7- Educate patients and their relatives on health issues, sanitation, hygiene and diseases management and prevention. With the help of NGOs and Benefactors.
8- Encourage community involvement, by conveying the message that the PHCs are here to serve them and to help them reduce the impact of their illnesses and injuries.
9- Focus on women and youth associations.
10- Organize cultural events and educational (self-help) programs.
11- Take advantage of supported and experience from international agencies like EU, USAID, UNDP, World Bank, IDB and WHO and the various NGOs.
12- Have long-term vested interest in seeing this project succeed. This will encourage more development programs.
13- The objectives and outcomes of the program should be sustainable and yield long term improvements in rural healthcare.
14- Encourage decentralization by empowering the municipalities and officials in assessing their needs and developing their capacities for better service delivery at the local level.
15- Establish new municipalities with more authority in Wadi Khaled.
16- Improve the infrastructure namely roads, waste management and disposal and most important sewage treatment.
17- Create more local economic development to keep people from migration and to attract people to come live and work in the area, especially professionals (Doctors, scientists, engineers, technicians…)
18- Introduce information technologies (IT).
Experience shows that the ability to acquire and use information is fundamental to the successful implementation of primary health care. There are two facets to information technology in primary healthcare: One is concerned with diagnosis and medical care and the other with the education and enlightenment of the rural population especially among the adults.

For care, appropriate application of information technology in primary health care will extend traditional diagnosis and patient management beyond the PHC walls. With a computer and an IP camera and a descent internet connection (starting with an investment as low as 1000 $ for a basic teleconferencing solution), health professionals can seek help and second opinions for colleagues in larger institutions on clinical cases (for this an HD Pan-Tilt-Zoom IP camera is needed costing an average 2500$), or look up solutions or get information from the web. They can also get informed and educated on new trends and technologies. Also most modern equipments come with a digital interface and management software that can be connected to a computer and the data either saved or shared. It can also serve for the education and development of staff.

For community Education IT technology is not a problem for the younger generations as they are exposed to it in schools and universities, but can be a challenge for most adult inhabitants who are not highly educated and most only speak Arabic. So educating and training these people on the use of computers (A wide range of Arabic software is available) is important. To this end, IT can be a bridge to help them to cross gradually to the modern era of computer and internet technologies; as they are trained and gain confidence. IT will enhance their awareness on prevention, alternative medicines, life improvement methods, sanitation, management of chronic diseases, maternal and child health including family planning, the importance of safe water, and information about appropriate treatment of common diseases, injuries and immunization against major infectious diseases; and also for fun. IT would be an important mean to break the vicious cycle of underdevelopment, and the fear of change.

14. CONCLUSION

Health is a fundamental human right and should be available to all people regardless of gender, color, social class, ethnicity and age. Healthcare should be delivered through medical technology that is accessible, affordable, feasible and culturally acceptable to the community. A skilled workforce of well trained physicians, nurses, allied health professionals and support staff; in adequate numbers must be at hand at the local PHCs to be able to serve the health needs of the locals.
The health services should be tailored to life patterns of the population, their real needs and help to manage the most occurring diseases. They should also be scalable to adapt to future changes.
The community must get more involved in the planning and implementation of their health care system. Developing communication channels between the population and the health professionals about the community's needs to help find the best and cost effective solutions to the many problems.
From that collaborative effort a check list of problems and prioritized needs can be drawn; which can be fulfilled one by one as soon as resources and funds are available. This collaboration can be facilitated by the creation of steering committees and by the support of local government and NGOs. Follow-up and accountability sessions are needed to monitor the progress of improvement projects.

International studies have shown that It easier and more affordable to access primary care, which can significantly reduce the pressure on public hospital system and significantly improve the health of the population. The money saved from avoiding unnecessary hospitalizations is invested on preventive health, new health technologies, IT technologies, staff development and health education. They also recognized that primary health cannot be improved by just concentrating on the health sector; indeed other sectors are equally important in promoting the health and self-reliance of communities. These sectors include: agriculture, education, communications, public works, rural development, industry and community organizations Intersectoral collaboration is a critical success factor in the delivery of good healthcare. Government and local authorities have a fundamental responsibility for the health of their citizens. They need to elaborate working strategies based on successful pilot projects in other regions or countries. They can also seek the help of experienced NGOs and Public Health schools that have conducted many studies and have access to a vast database of information and statistics. There are four major universities (AUB, LU, USJ and UOB) in Lebanon that have public health faculties and I am sure they would be keen in landing a hand to the concerned ministries to help their underprivileged countrymen. Further study need to investigate the capacity of the poor population to pay for services and how it will impact their quality of life. In any case if fees are charged the money generated should be re-injected into the local system (not collected by government) to ensure self reliance and progress.

Sustainable primary health care be achieved gradually by the implementation of adequate health and social; policies, strategies and measures.

Appendix-1-Site visits photographs.

Al-Rama Dispensary:


Photo-4: Al-Rama Dispensary Laboratory.
Very Old and Basic microscope with manual cell counter
on a rudimentary workbench.
15.02.2012


Photo-5: Al-Rama Dispensary Laboratory.
Blood samples processing table. Showing signs of mildew (wall also)
Very non-hygienic conditions.
15.02.2012


Photo-6: Al-Rama Dispensary Laboratory.
Wall above sink, showing heavy mildew build-up and cracks.
15.02.2012


15.02.2012
Photo-7: Al-Rama Dispensary Laboratory.
Lab Refrigerator in abominable condition.


Photo-8: Al-Rama Dispensary Laboratory.
Completely damaged casework.
15.02.2012


Photo-9: Al-Rama Dispensary Laboratory.
Inside of the Autoclave chamber used for sterilizing lab glassware;
totally rusted and hazardous (Contaminating instead of sterilizing).
15.02.2012


Photo-10: Al-Rama Dispensary General Clinic.
Showing uncovered exam couch, rudted and dirty infant scale.
Also some Litter on the floor.
15.02.2012


Ripped upholstery
Litter
Litter
Photo-12: Al-Rama Dispensary General Clinic.
Showing the doctor's desk, with ripped upholstery and litter on the floor.
15.02.2012

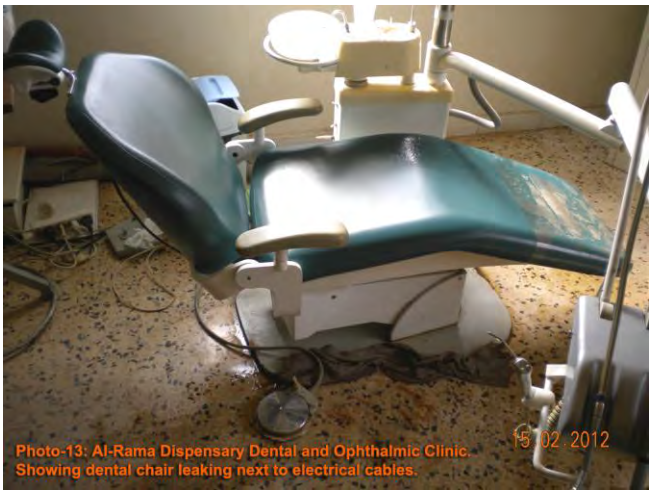


Photo-13: Al-Rama Dispensary Dental and Ophthalmic Clinic.
Showing dental chair leaking next to electrical cables.
15.02.2012

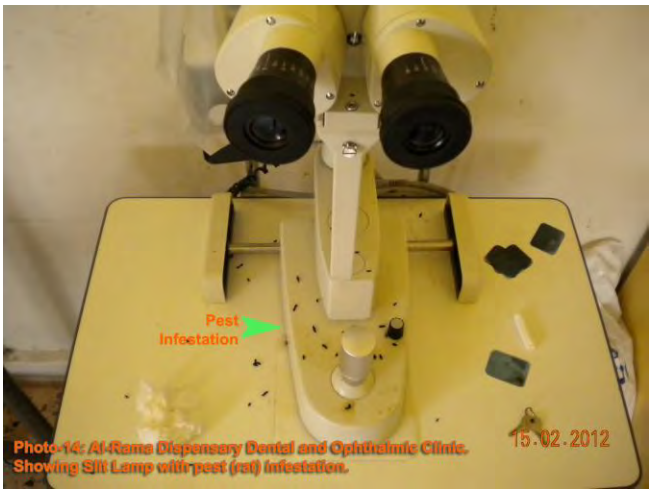


Photo-14: Al-Rama Dispensary Dental and Ophthalmic Clinic.
Showing Slit Lamp with pest (rat) infestation.

Photo-15: Al-Rama Dispensary Dental and Ophthalmic Clinic.
Showing Refractometer with pest (rat) infestation.

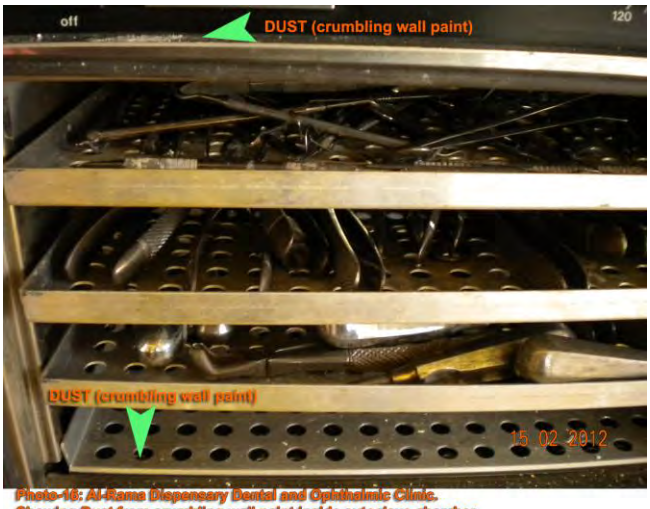


Photo-16: Al-Rama Dispensary Dental and Ophthalmic Clinic.
Showing Dust from crumbling wall paint inside autoclave chamber.

Al-Hishi Makassed PHC:

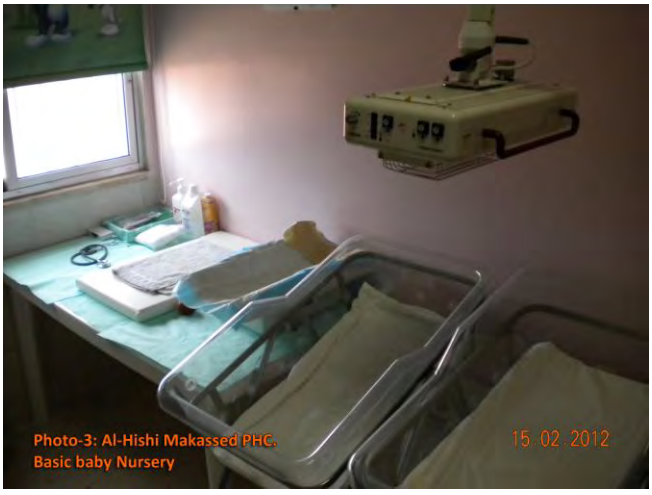



Photo-4: Al Hishi Makassed PHC
Normal Delivery table with infant incubator.
15.02.2012


Photo-5: Al Hishi Makassed PHC.
Fetal Monitoring.
15.02.2012


Photo-6: Al Hishi Makassed PHC.
Emergency room turned into meeting room.
15.02.2012


15.02.2012
Photo-7: Al Hishi Makassed PHC.
Routine X-ray machine with wall bucky


ELite 3
Photo-8: Al Hishi Makassed PHC.
Automated Hematology analyzer with blood tube roller.
15.02.2012


Bactériologie
Photo-9: Al Hishi Makassed PHC.
Bacteriology workspace without safety cabinet (ClassII)
15.02.2012


Reflotron Plus
Photo-10: Al Hishi Makassed PHC.
Point-of-care small clinical chemistry analyzer
15.02.2012


15.02.2012
Photo-11: Al Hishi Makassed PHC.
Dental Chair. Old but still working.


Photo-12: Al Hishi Makassed PHC.
Patient records room.
15.02.2012

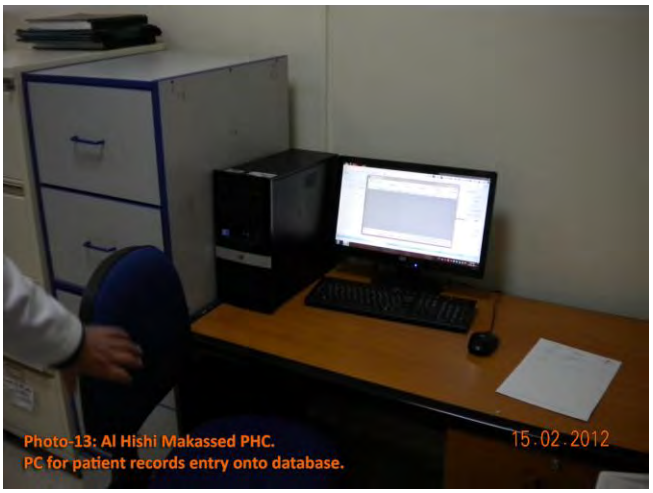


Photo-13: Al Hishi Makassed PHC.
PC for patient records entry onto database.

Photo-14: Al Hishi Makassed PHC.
Clinic examination and treatment space with medical gases cylinders.

Photo-15: Al Hishi Makassed PHC.
Pediatric clinic.

Photo-16: Al Hishi Makassed PHC.
Ultrasound examination room

Photo-17: Al Hishi Makassed PHC.
Electrical power generators outside.

Photo-18: Al Hishi Makassed PHC.
Mobile dispensary.

Photo-19: Al Hishi Makassed PHC. Part of the Pharmacy.

Photo-20: Al Hishi Makassed PHC. Interior of the mobile dispensary

Al-Amayer MOSA Center:

Photo-1: Al Amayer (MOSA) PHC
Exterior view of the main entrance. There is no access for handicapped patients.

Photo-2: Al Amayer (MOSA) PHC
Exterior facade showing water seeping and cracks in walls shell.

Photo-3: Al Amayer (MOSA) PHC
Official sign at the entrance gate in Arabic reading:
" Lebanese Republic-MOSA- Development Services Center-Wadi Khaled"
Above it a crooked sign for a Cardiologist... And some graffiti.

Photo-4: Al Amayer (MOSA) PHC.
Extensive water damage above entrance to room "6", heavy build-up of mildew.

Photo-5: Al Amayer (MOSA) PHC.
Inside of room "6" - Water seeping from roof and damaging adjacent walls.

Photo-6: Al Amayer (MOSA) PHC.
Water damage in another room water is seeping through the roof and exposing hollow blocks structure. To the left there is a crack in the wall.

Photo-7: Al Amayer (MOSA) PHC.
Patient records room. Using Traditional paper work.

Photo-8: Al Amayer (MOSA) PHC.
Patient records room. Storage of patients files.

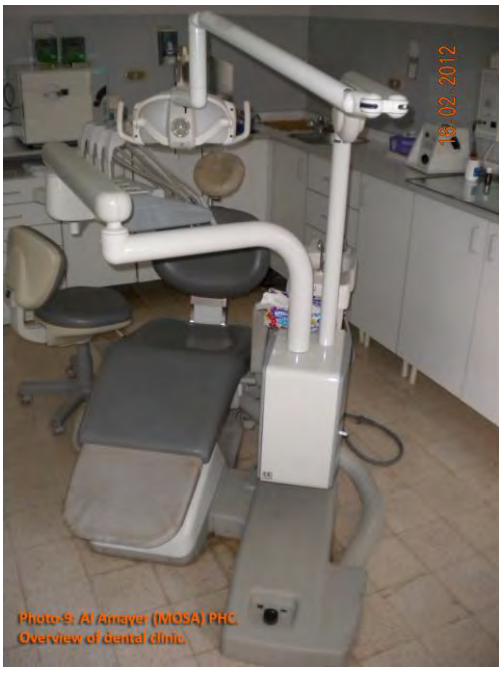


Photo-9: Al Amayer (MOSA) PHC.
Overview of dental clinic.

الجدول رقم (١)

التصنيف	الرقم	نوع الخدمة	التعرفة ل.ل
أ-الخدمات الصحية			
	١	معاينة من جميع الاختصاصات	٧,٠٠٠
	٢	تخطيط قلب	١٥,٠٠٠
	٣	عملية صغيرة	٧,٠٠٠
	٤	صورة صوتية (ايكو غرافي)	١٥,٠٠٠
	٥	تركيب او نزع لولب	١٥,٠٠٠
	٦	تضميد – غيار ضماد-تقطيب او ازالة تقطيب	٥,٠٠٠
	٨	تنظيف اسنان	١٠,٠٠٠
	٩	رصة عادية بدون سحب عصب	١٠,٠٠٠
	١٠	رصة عادية مع سحب عصب	١٥,٠٠٠
	١١	خلع سن	٧,٠٠٠
	١٢	معاينة اسنان ومتابعة	مجانا**
	١٣	فحص السكري والدهون على انواعه	٣,٠٠٠
ب-الخدمات التربوية			
	١	حضانة نهارية للاطفال ما دون السن المدرسية العمر ٣ سنوات كحد ادنى (شهري)	٢٥,٠٠٠
	٢	لغات اجنبية (للدورة)	٤٠,٠٠٠
	٣	استعمال الحاسوب(للدورة)	٤٠,٠٠٠
	٤	محو امية	مجانا**
	٥	مخيمات صيفية	مجانا**
ج-الخدمات الاجتماعية			
	١	كوافير (للدورة)	٤٠,٠٠٠
	٢	تجميل نسائي (للدورة)	٤٠,٠٠٠
	٣	خياطة وتفصيل (للدورة)	٤٠,٠٠٠
	٤	تطريز (للدورة)	٤٠,٠٠٠
	٥	حرف و اشغال يدوية (للدورة)	٤٠,٠٠٠
	٦	صيانة قبة (للدورة)	٤٠,٠٠٠
	٧	تدبير منزلي (للدورة)	٣٠,٠٠٠

16.02.2012

Photo-10: Al Amayer (MOSA) PHC.
Posted paper announcing services offered at the center and their cost.

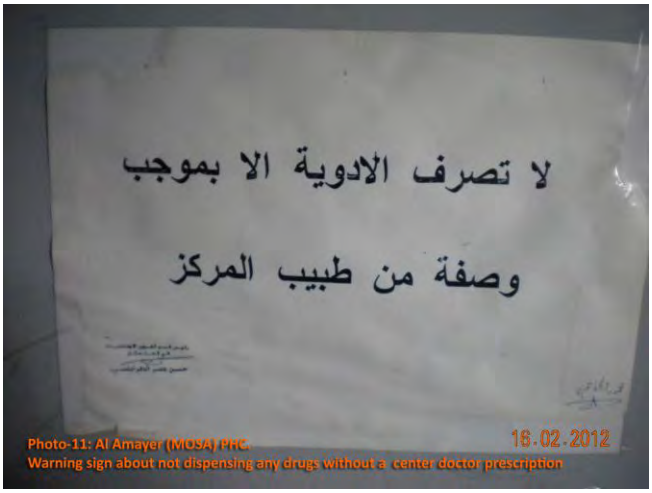


Photo-11: Al Amayer (MOSA) PHC. 16.02.2012
Warning sign about not dispensing any drugs without a center doctor prescription

Photo-12: Al Amayer (MOSA) PHC.
Pharmacy cabinet exterior and interior with few medication boxes.

Photo-13: Al Amayer (MOSA) PHC.
General Clinic exam area.

Photo-14: Al Amayer (MOSA) PHC.
Ultrasound unit with exam couch.

Photo-15: Al Amayer (MOSA) PHC.
Diagnostic Ultrasound Unit used mainly for Ob-Gyn applications.
System is old (10 years).

Photo-16: Al Amayer (MOSA) PHC.
Showing some cracks in structure (column and beam)

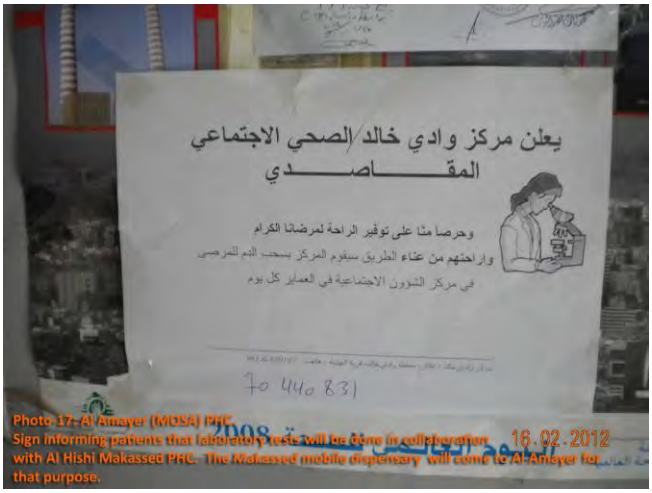
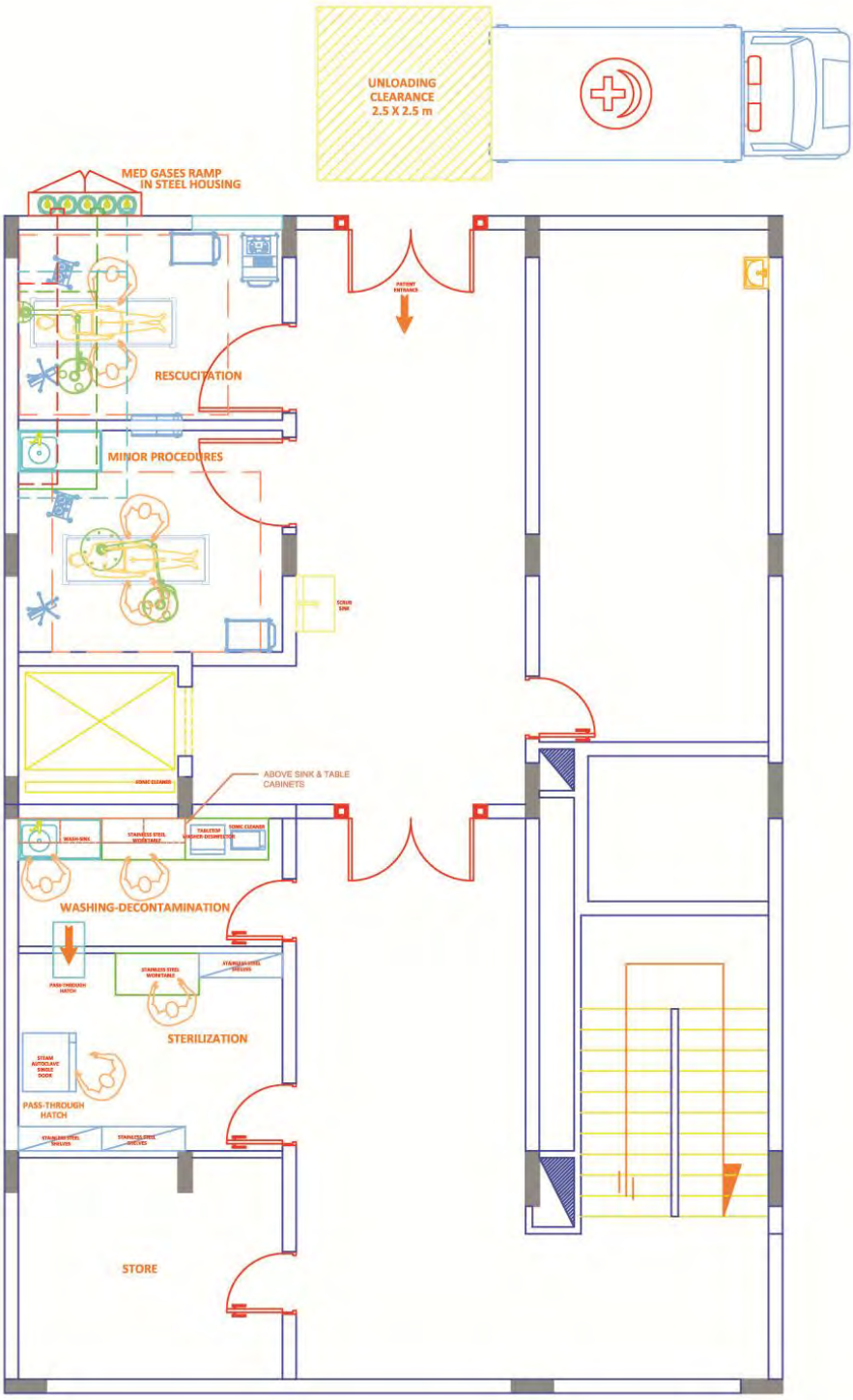


Photo-17: Al Amayer (MOSA) PHC.
Sign informing patients that laboratory tests will be done in collaboration with Al Hishi Makassed PHC. The Makassed mobile dispensary will come to Al Amayer for that purpose.

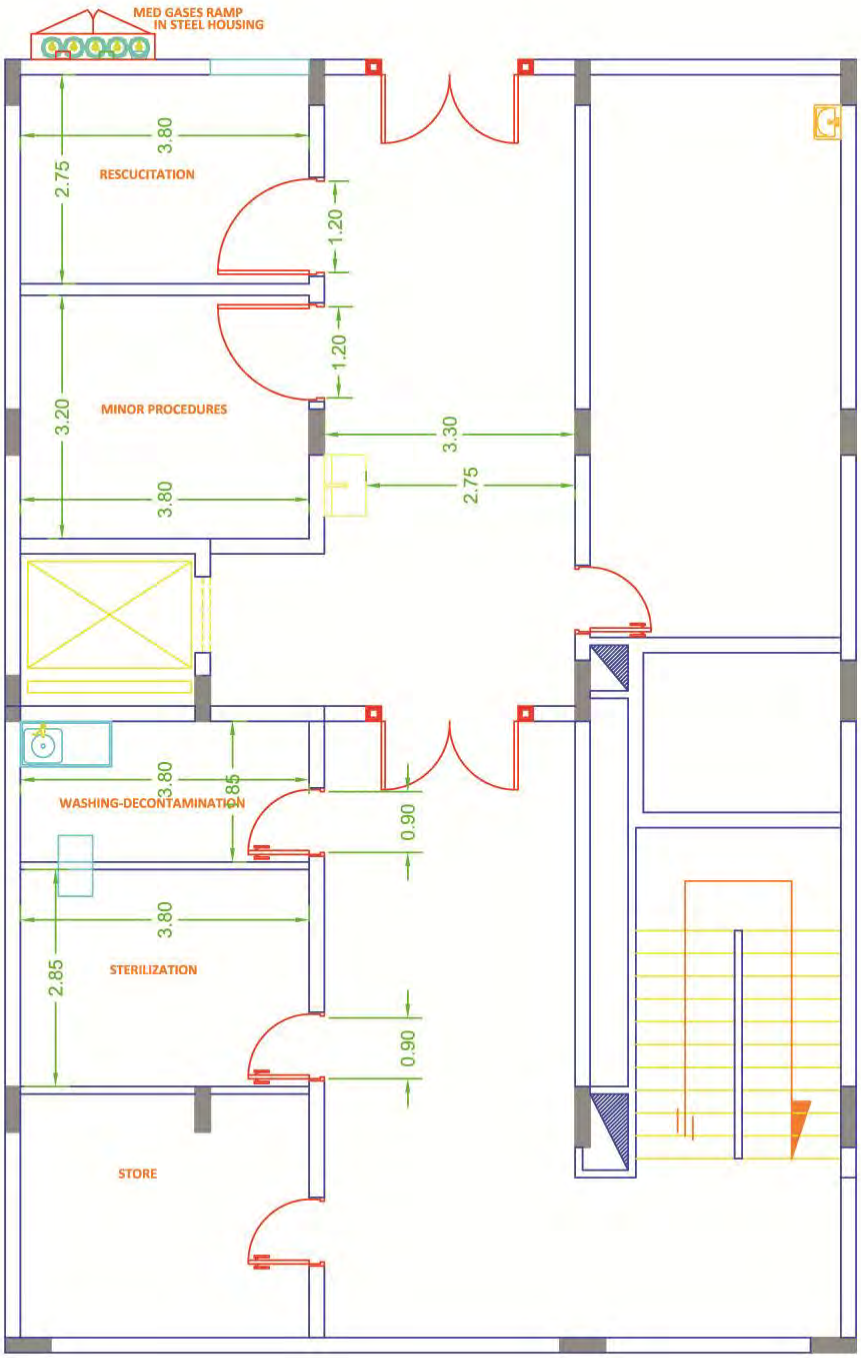
Karha (MOSA) Social Services Center:


Photo-4: Karha Dispensary
Patient records log book.
16.02.2012

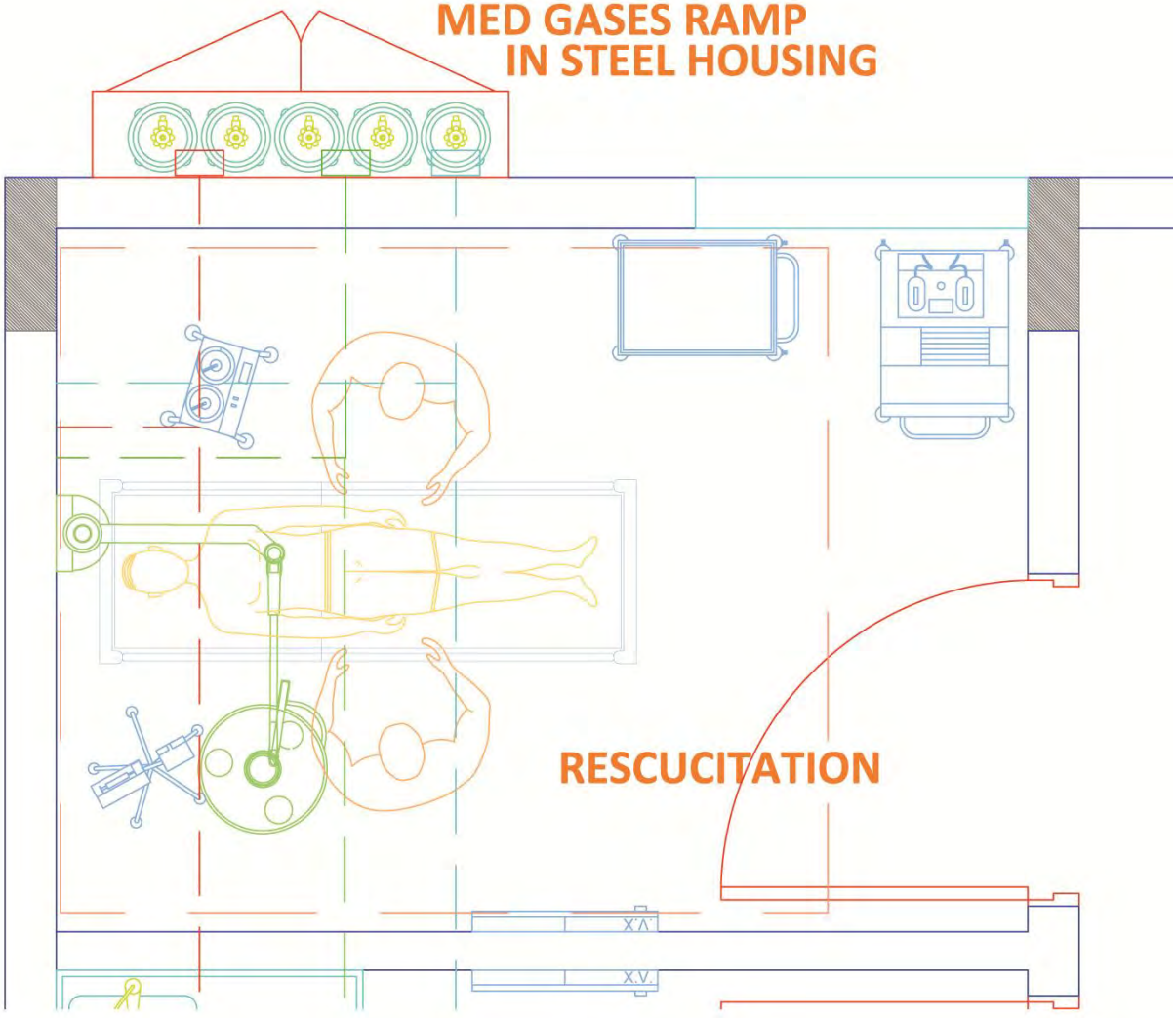
Appendix-2-Proposed Layout Plans for the new Emergency department at Al-Hishi Makassed PHC.

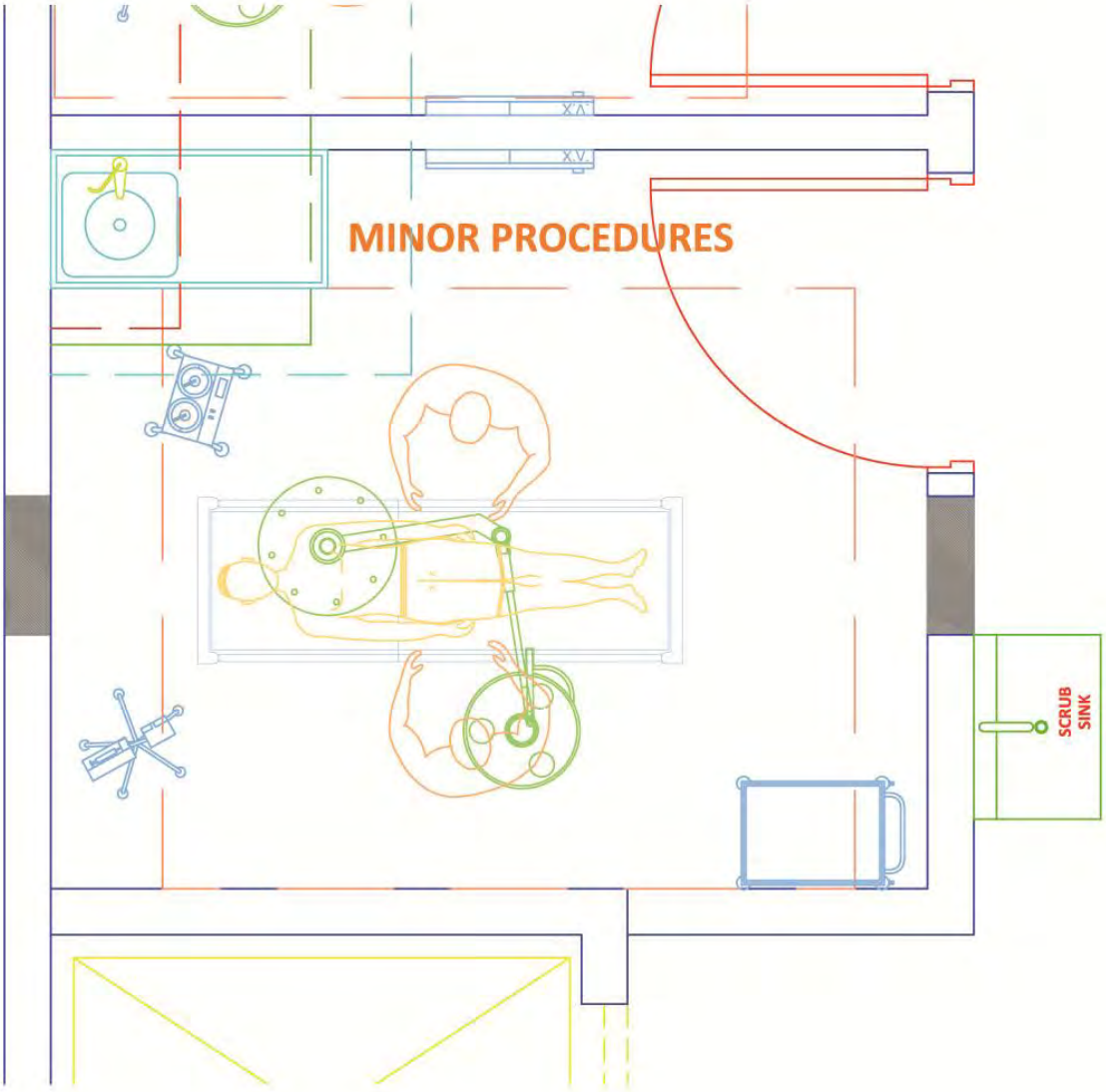


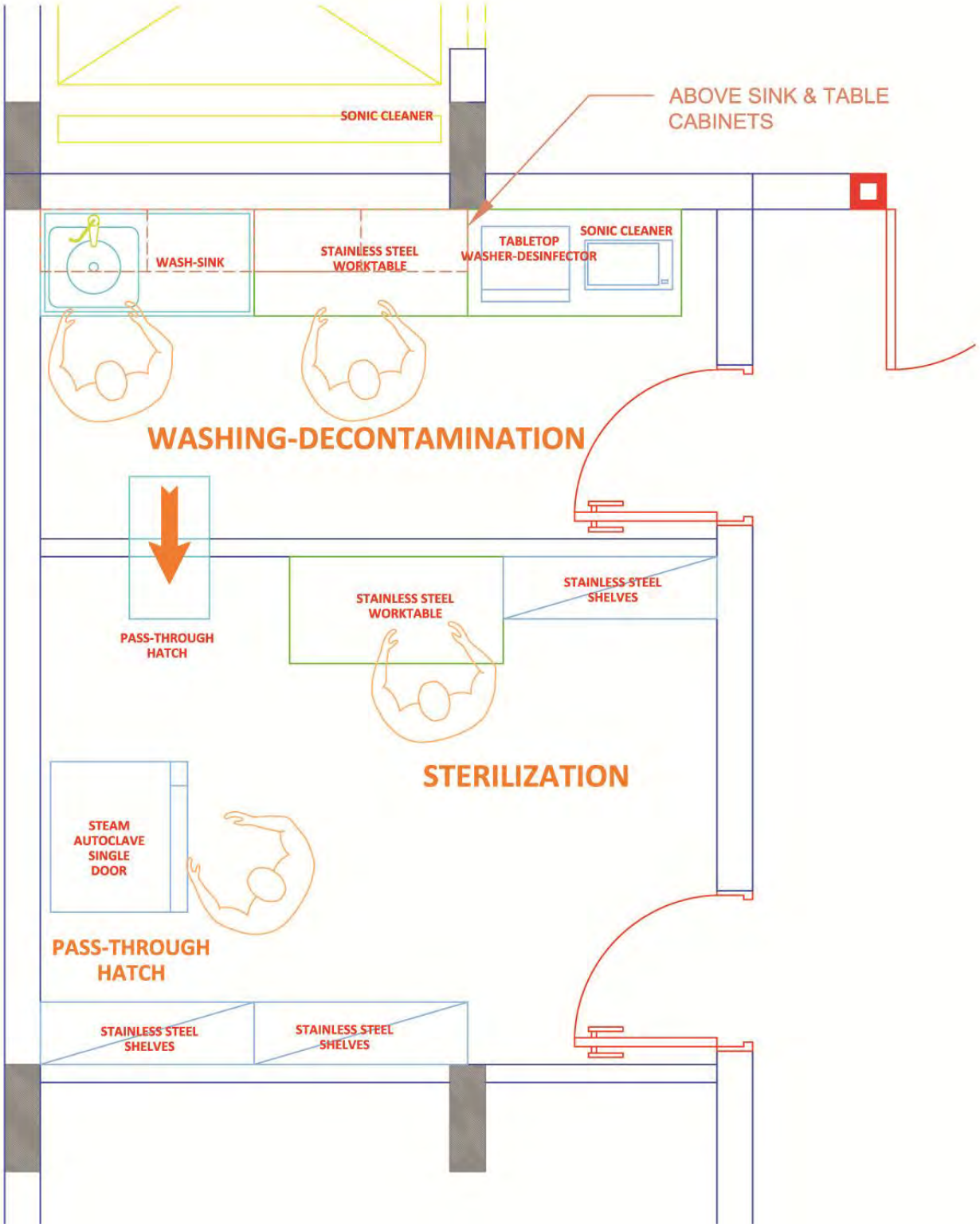
EMERGENCY ROOM LAYOUT



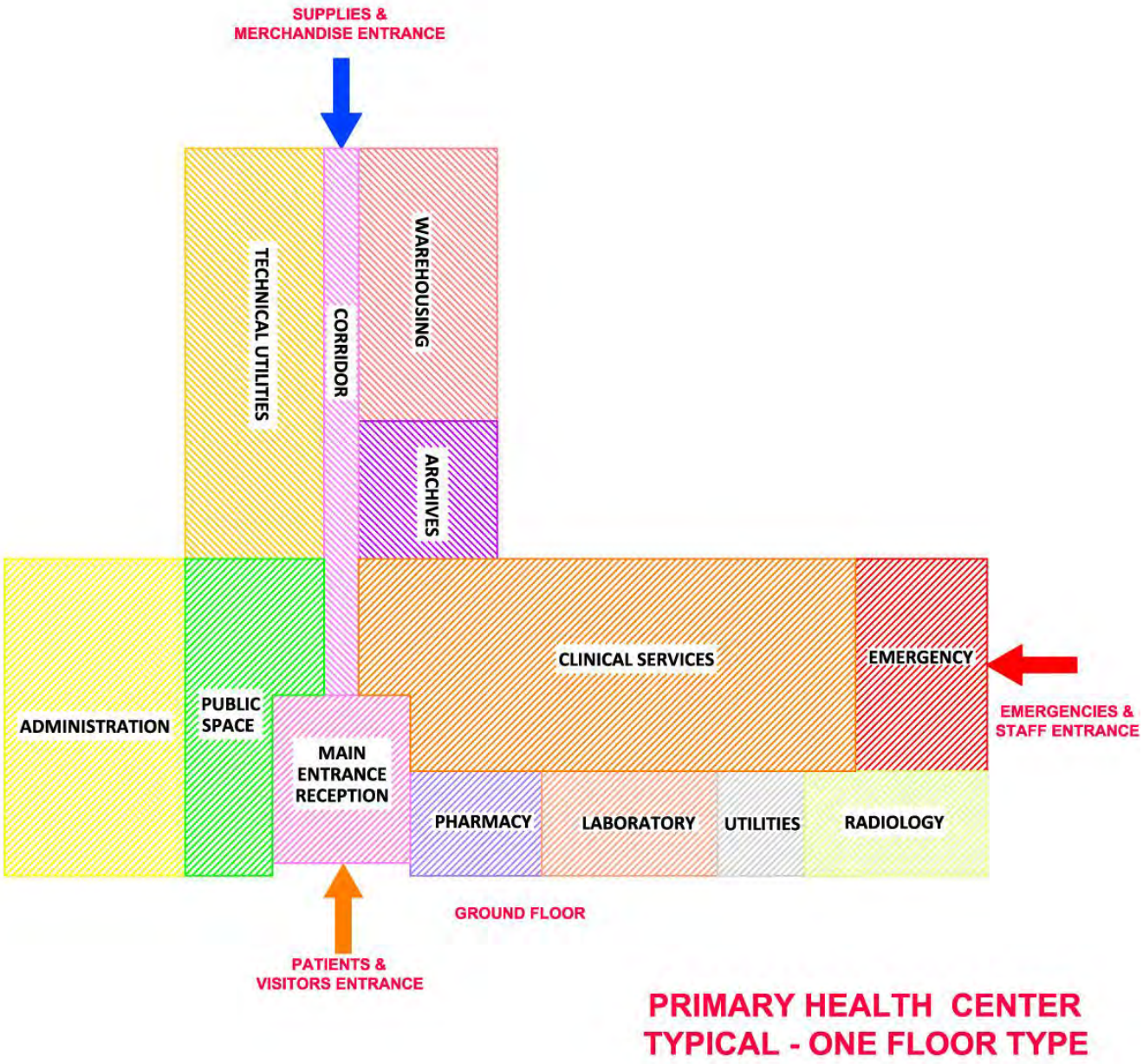
EMERGENCY ROOM DIMENSIONS

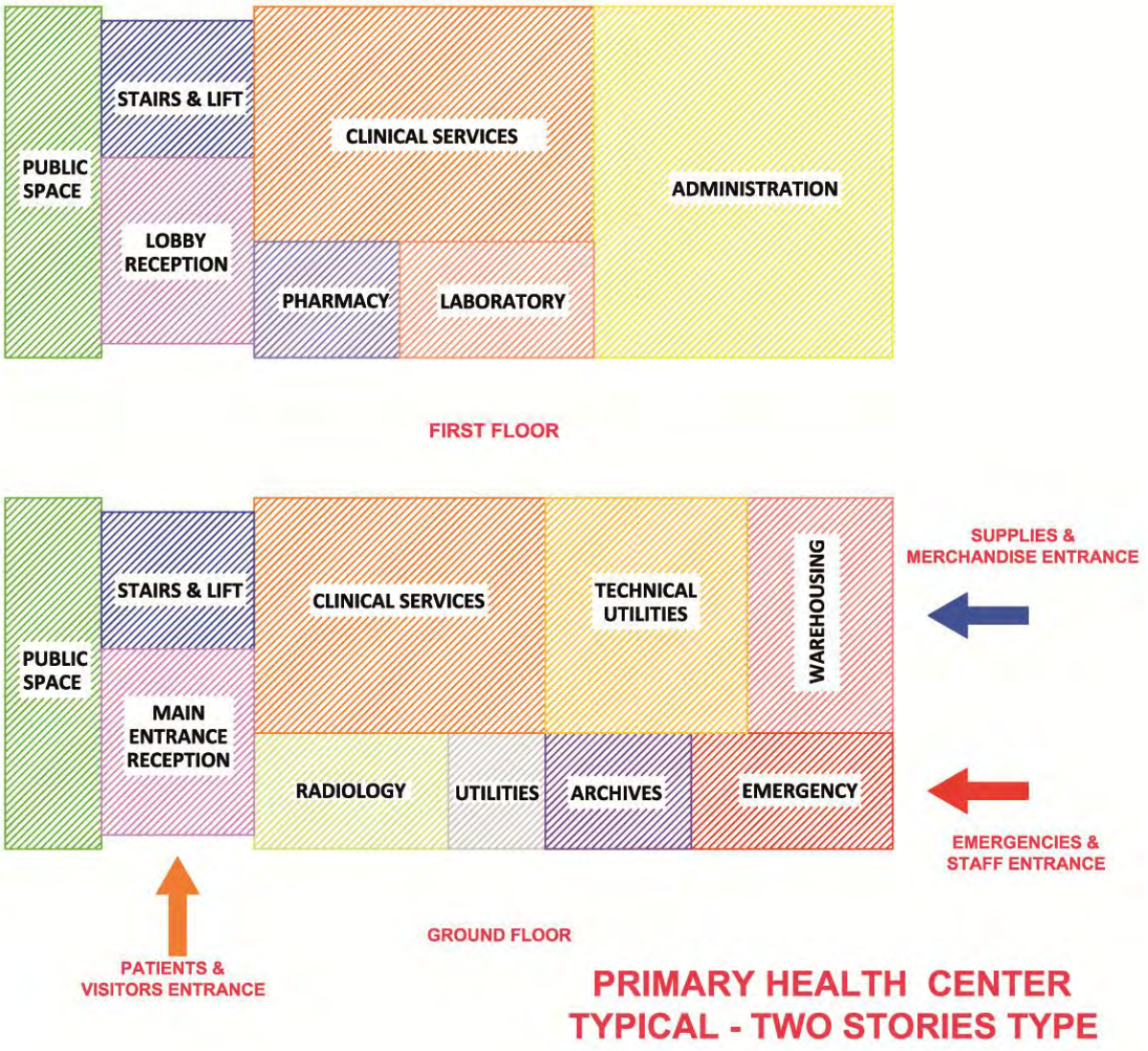

MED GASES RAMP
IN STEEL HOUSING
RESCUCITATION

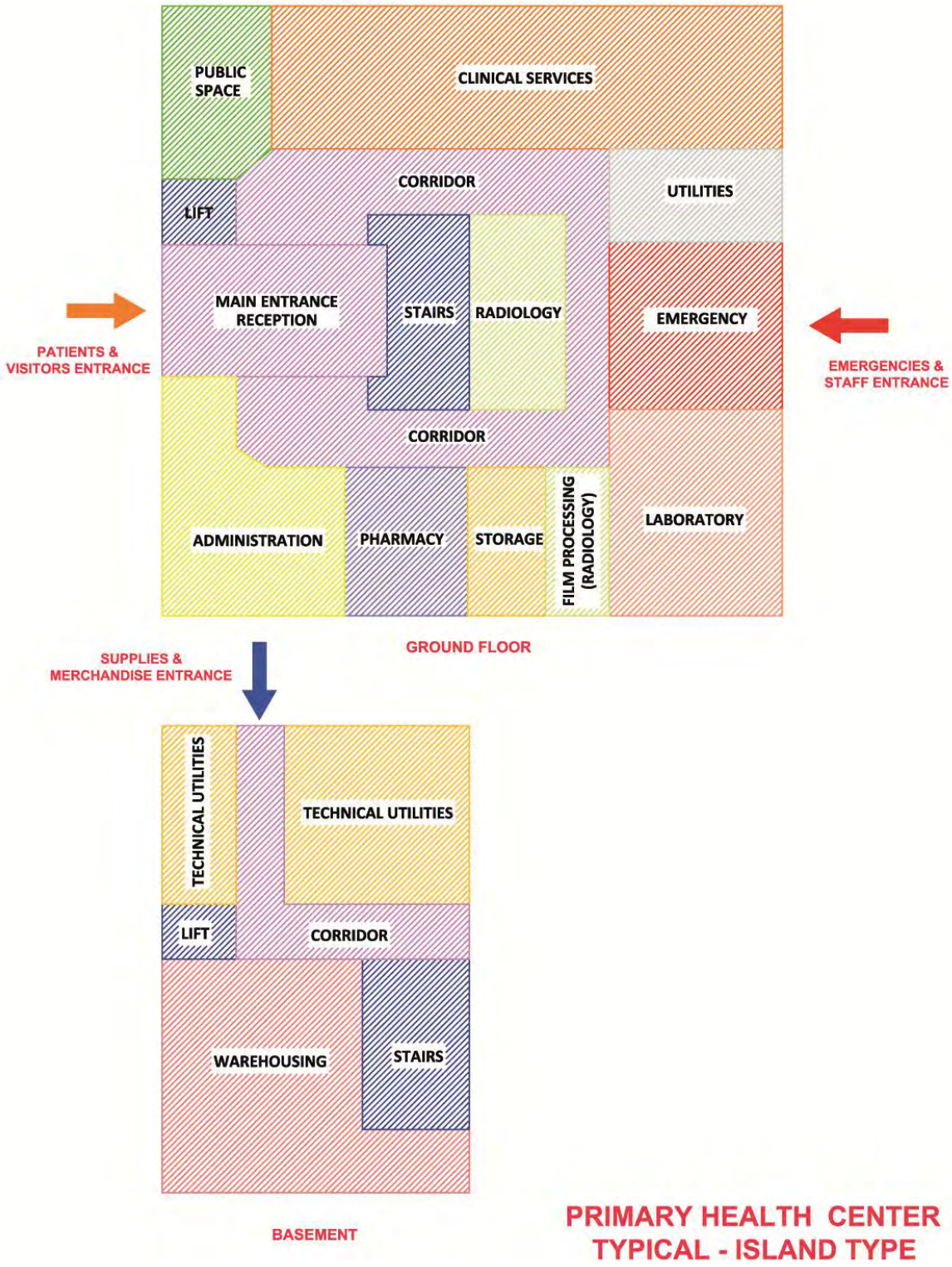

MINOR PROCEDURES
SCRUB SINK

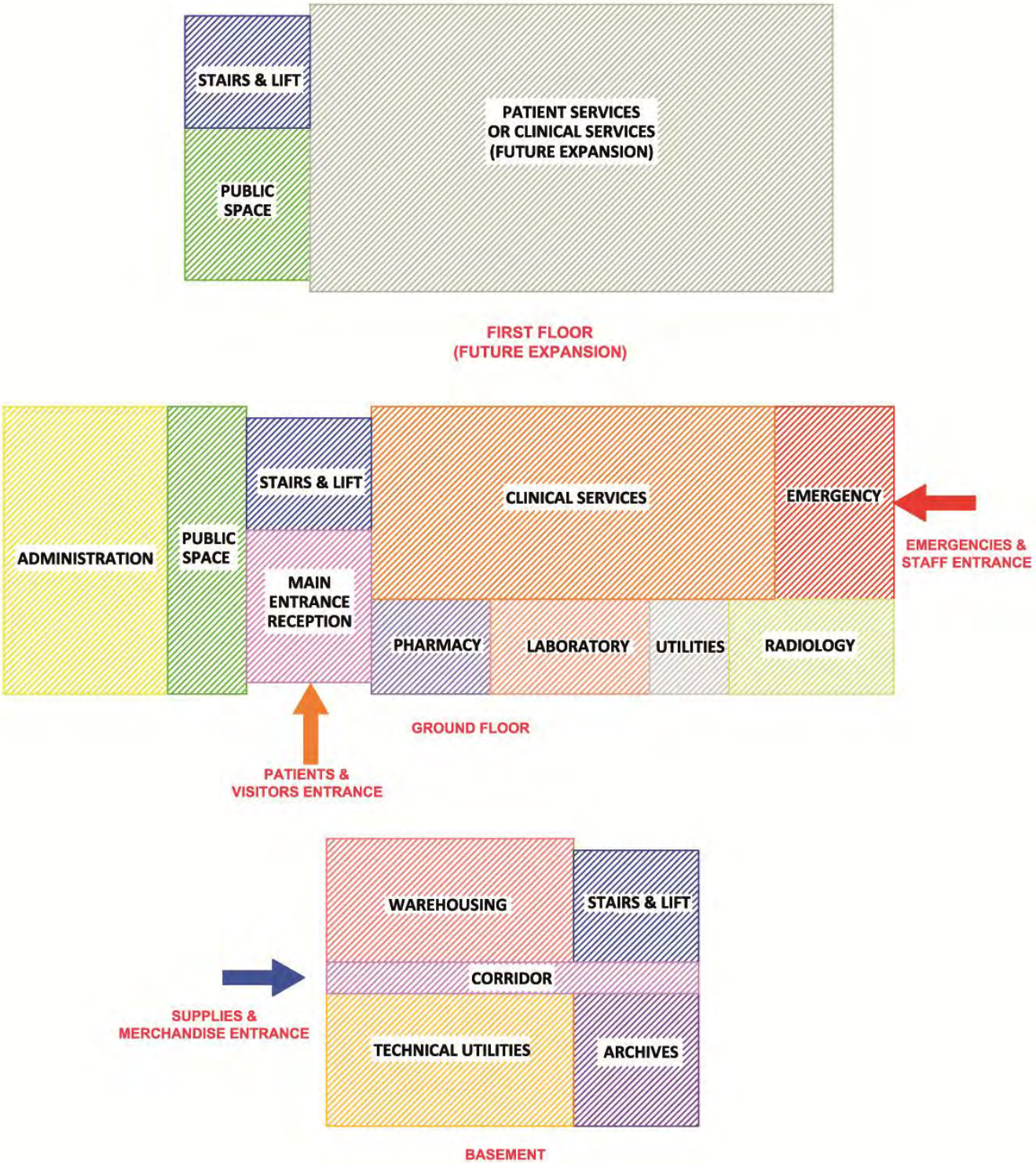

SONIC CLEANER
ABOVE SINK & TABLE CABINETS
WASH-SINK
STAINLESS STEEL WORKTABLE
TABLETOP WASHER-DESINFECTOR
SONIC CLEANER
WASHING-DECONTAMINATION
PASS-THROUGH HATCH
STAINLESS STEEL WORKTABLE
STAINLESS STEEL SHELVES
STERILIZATION
STEAM AUTOCLAVE SINGLE DOOR
PASS-THROUGH HATCH
STAINLESS STEEL SHELVES
STAINLESS STEEL SHELVES

APPENDIX-3 GENERIC ROOM LAYOUTS FOR PHC

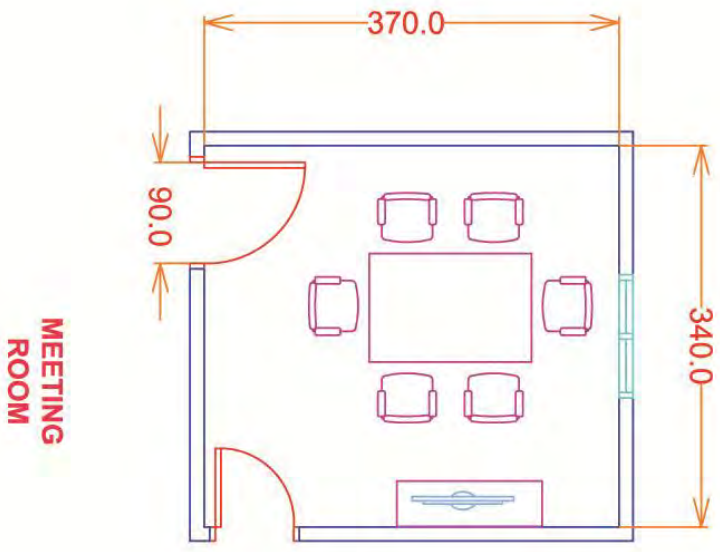


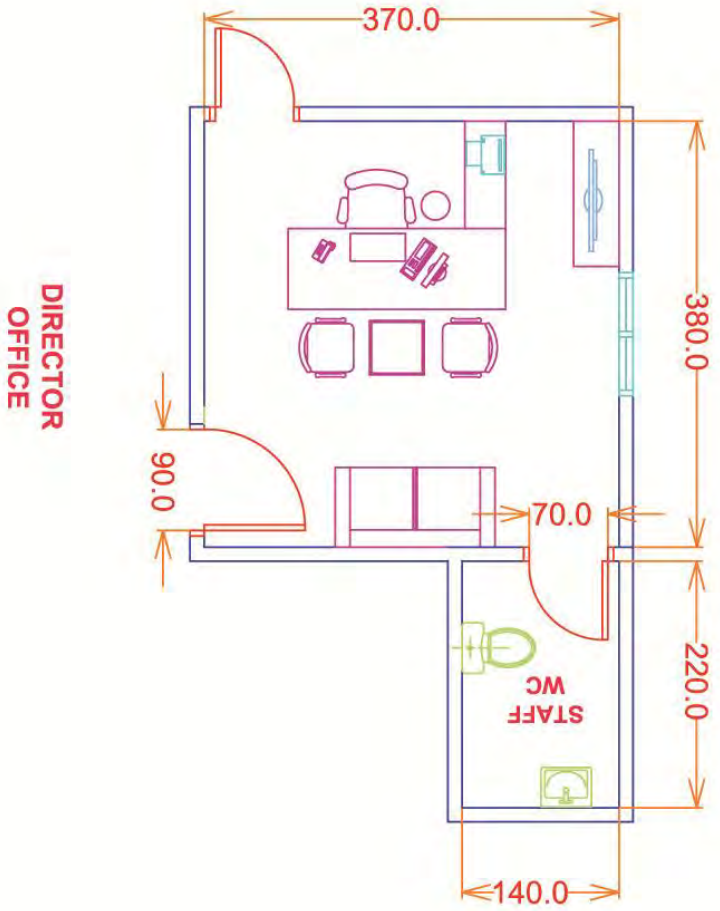

PUBLIC SPACE
STAIRS & LIFT
LOBBY RECEPTION
CLINICAL SERVICES
PHARMACY
LABORATORY
ADMINISTRATION
FIRST FLOOR
PUBLIC SPACE
STAIRS & LIFT
MAIN ENTRANCE RECEPTION
CLINICAL SERVICES
TECHNICAL UTILITIES
WAREHOUSING
RADIOLOGY
UTILITIES
ARCHIVES
EMERGENCY
SUPPLIES & MERCHANDISE ENTRANCE
EMERGENCIES & STAFF ENTRANCE
PATIENTS & VISITORS ENTRANCE
GROUND FLOOR
PRIMARY HEALTH CENTER
TYPICAL - TWO STORIES TYPE


PUBLIC SPACE
CLINICAL SERVICES
CORRIDOR
UTILITIES
LIFT
MAIN ENTRANCE RECEPTION
STAIRS
RADIOLOGY
EMERGENCY
PATIENTS & VISITORS ENTRANCE
EMERGENCIES & STAFF ENTRANCE
CORRIDOR
ADMINISTRATION
PHARMACY
STORAGE
FILM PROCESSING (RADIOLOGY)
LABORATORY
GROUND FLOOR
SUPPLIES & MERCHANDISE ENTRANCE
TECHNICAL UTILITIES
TECHNICAL UTILITIES
LIFT
CORRIDOR
WAREHOUSING
STAIRS
BASEMENT
PRIMARY HEALTH CENTER
TYPICAL - ISLAND TYPE

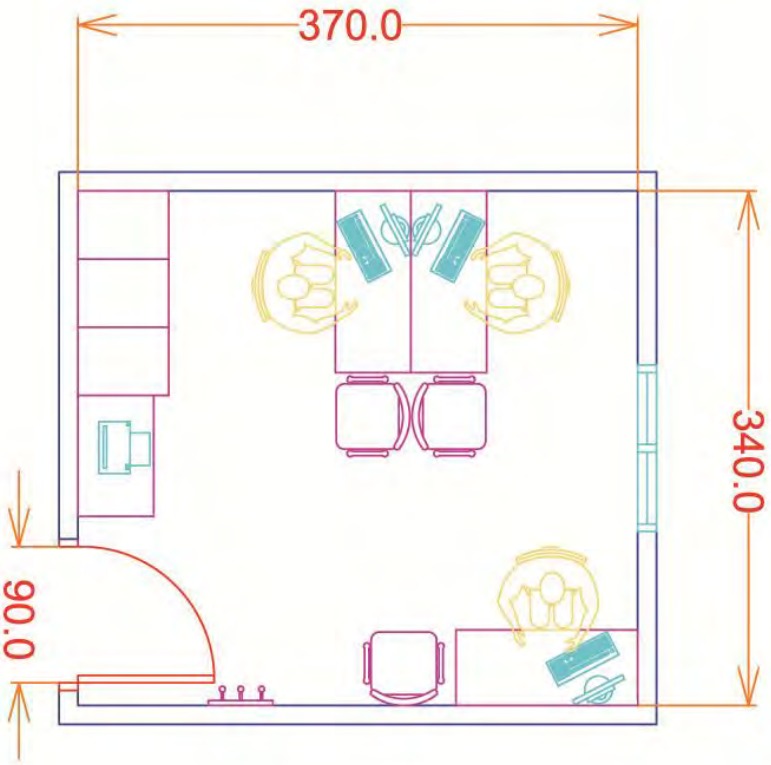


PRIMARY HEALTH CENTER
TYPICAL - SEGREGATED TYPE

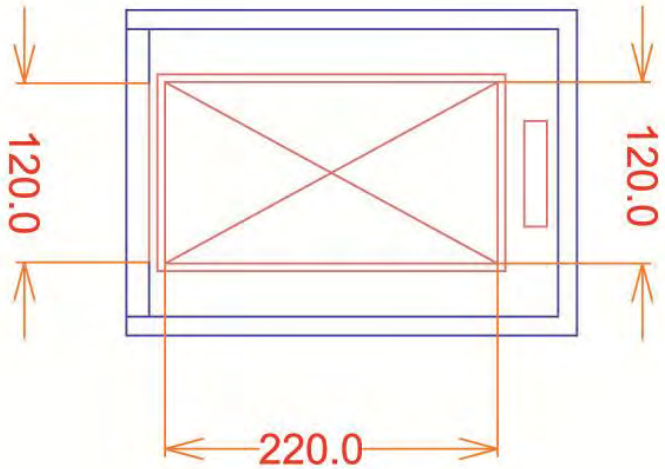

370.0
90.0
340.0
MEETING ROOM

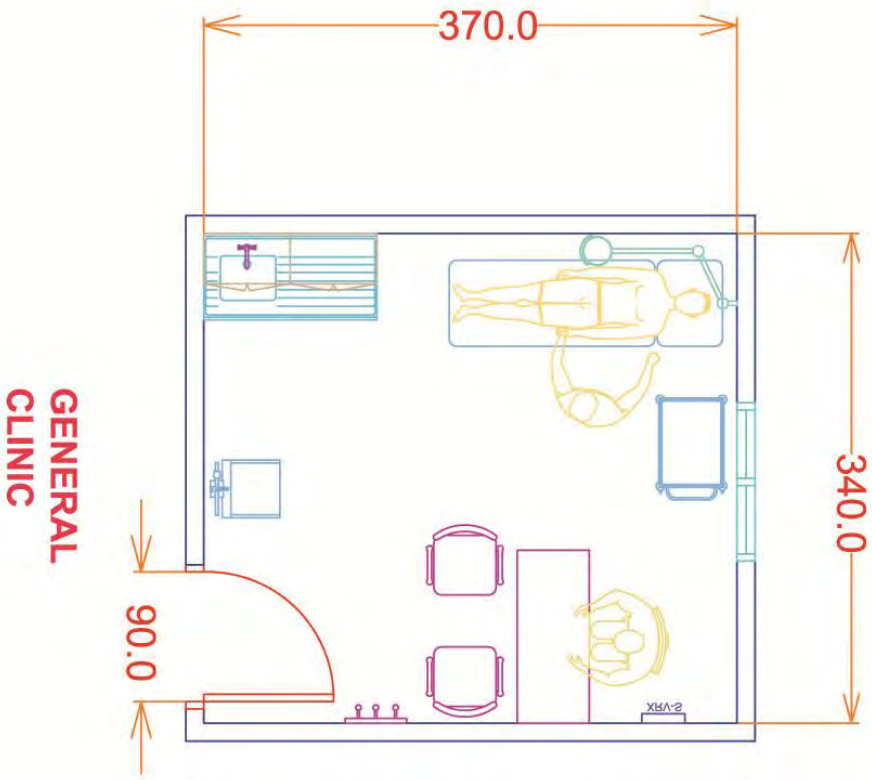

370.0
380.0
90.0
70.0
220.0
STAFF WC
140.0
DIRECTOR OFFICE

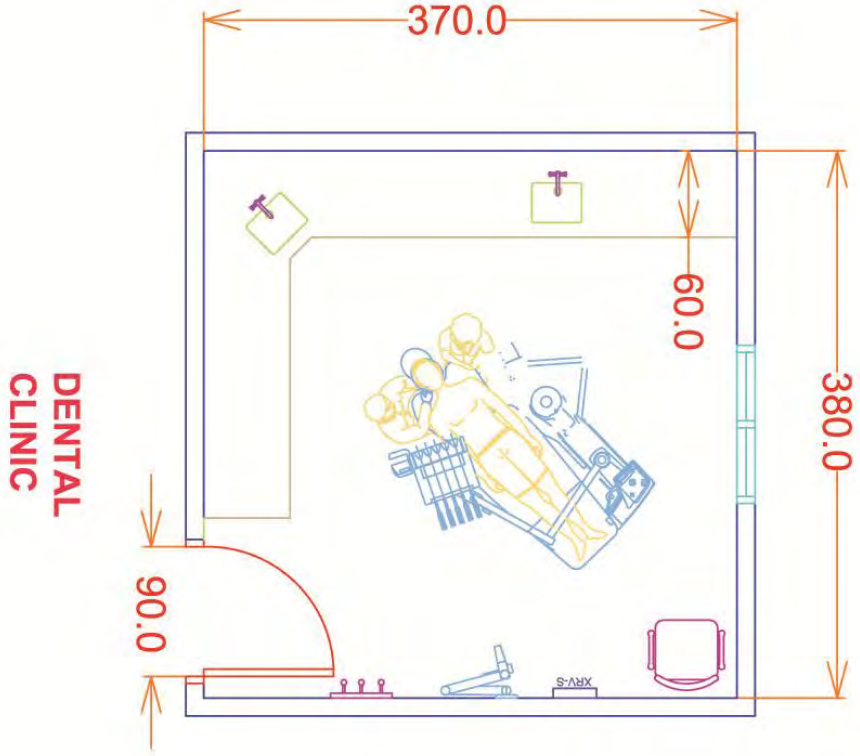
OFFICE



TYPICAL PATIENT LIFT




370.0
340.0
90.0
GENERAL CLINIC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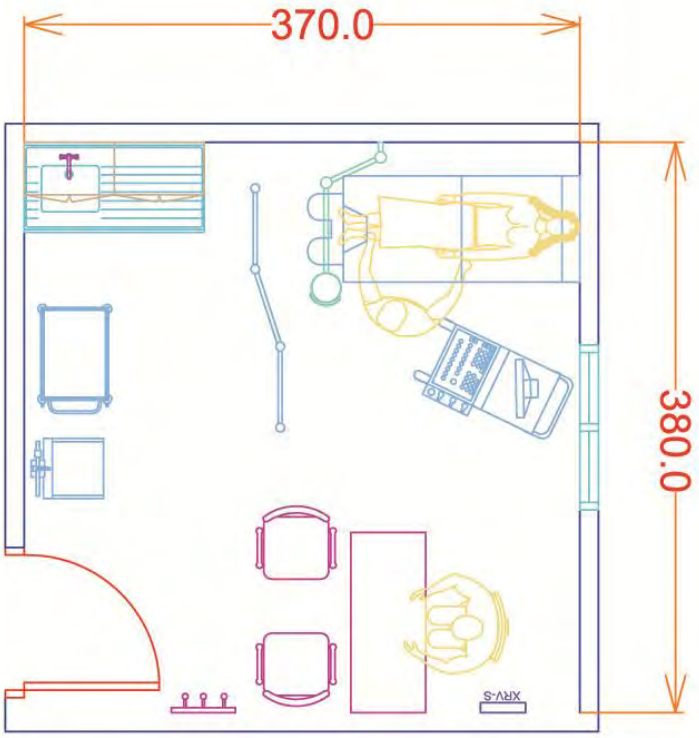
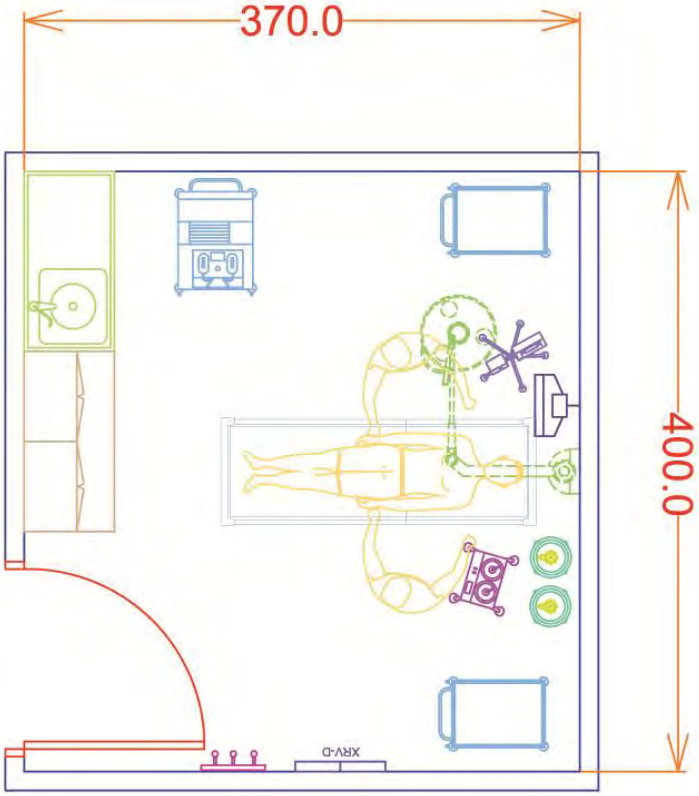
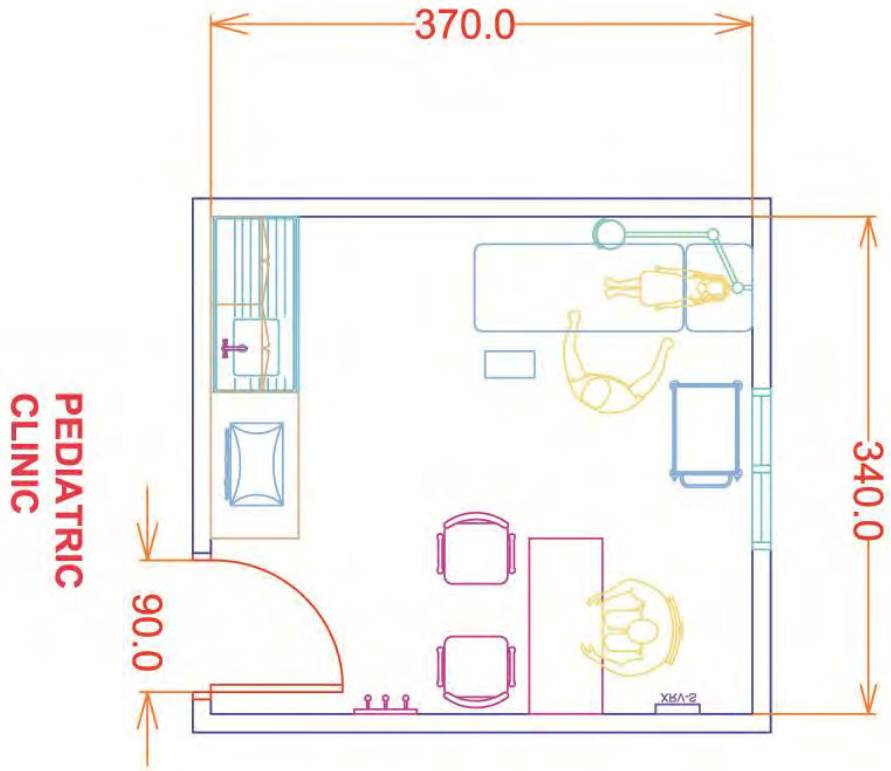
60.0
380.0
90.0
DENTAL CLINIC

OBSTETRICS-GYN CLINIC



EMERGENCY ROOM

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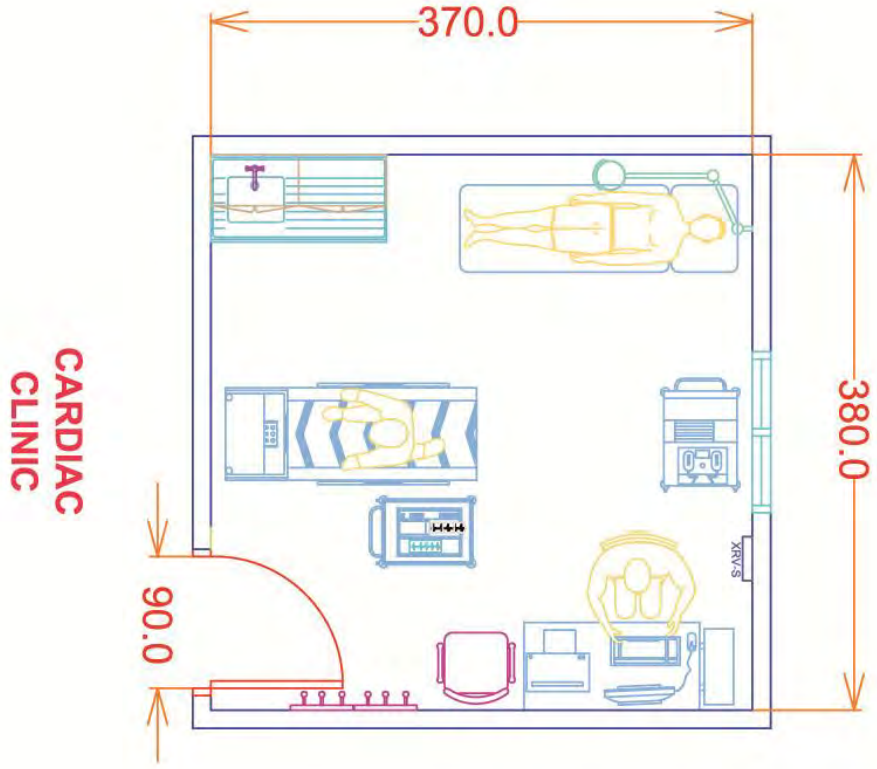
340.0
90.0
PEDIATRIC
CLINIC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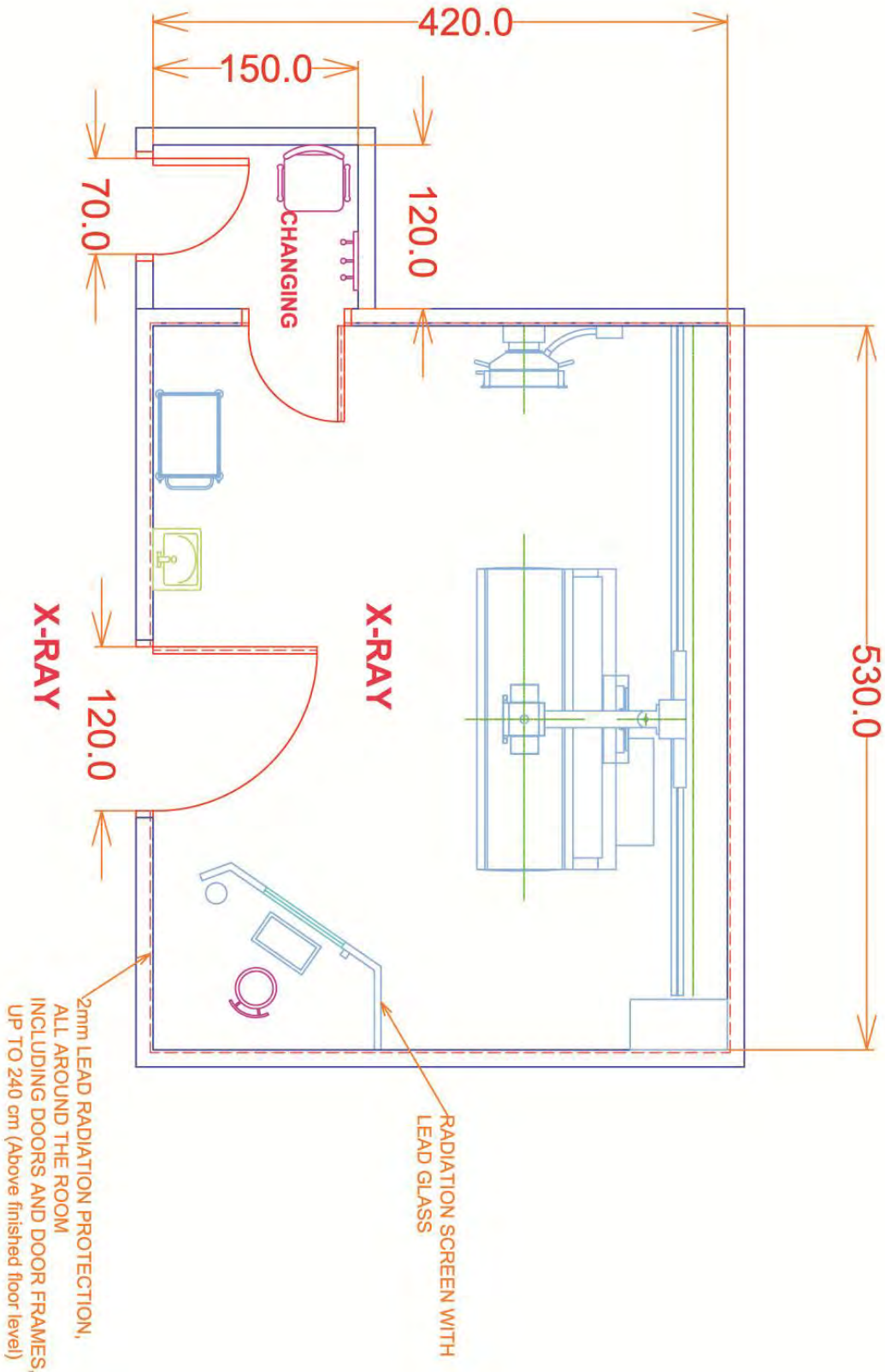
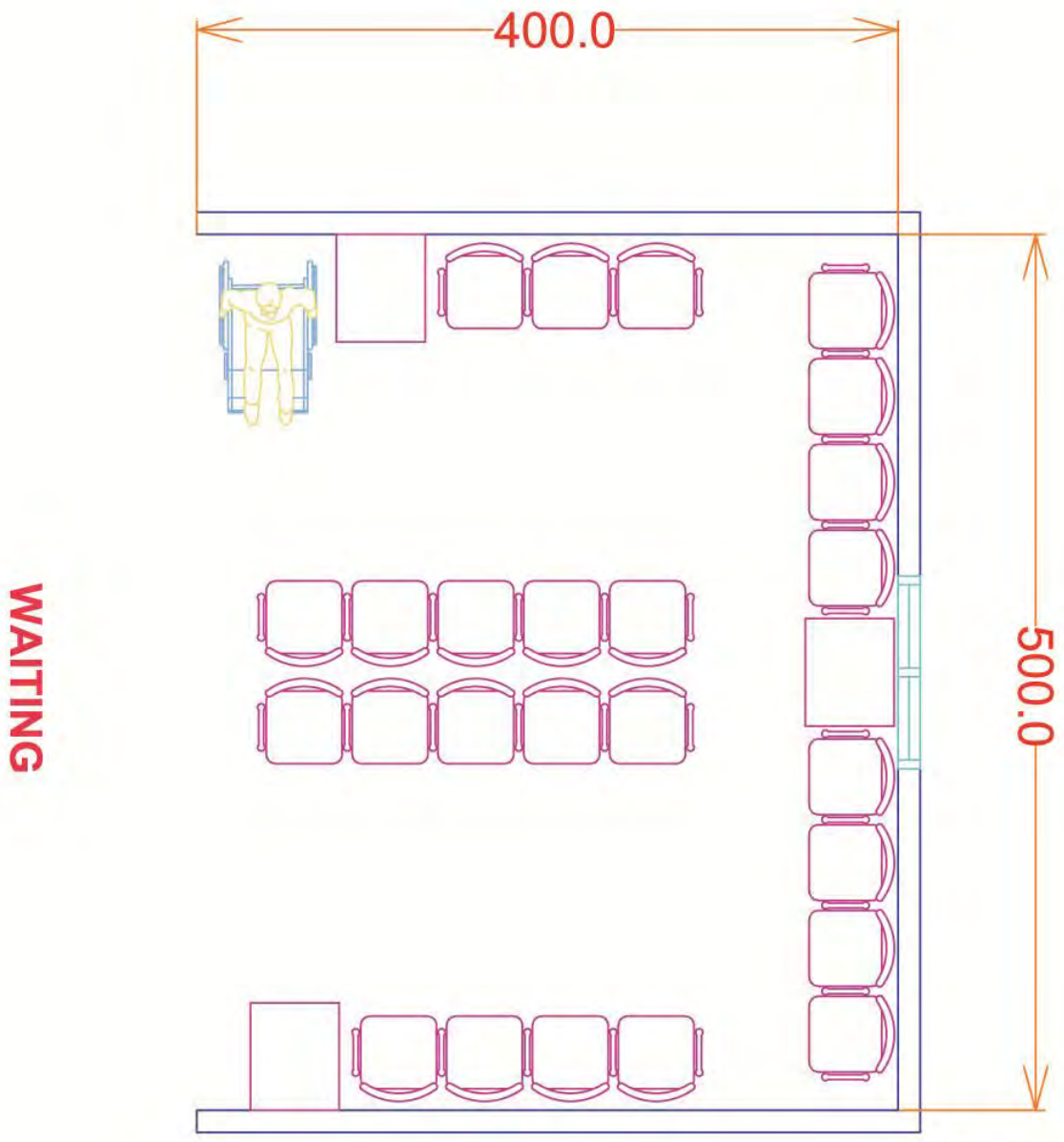
380.0
90.0
CARDIAC
CLINIC


420.0
150.0
70.0
120.0
CHANGING
X-RAY
X-RAY
120.0
530.0
2mm LEAD RADIATION PROTECTION,
ALL AROUND THE ROOM
INCLUDING DOORS AND DOOR FRAMES,
UP TO 240 cm (Above finished floor level)
RADIATION SCREEN WITH
LEAD GLASS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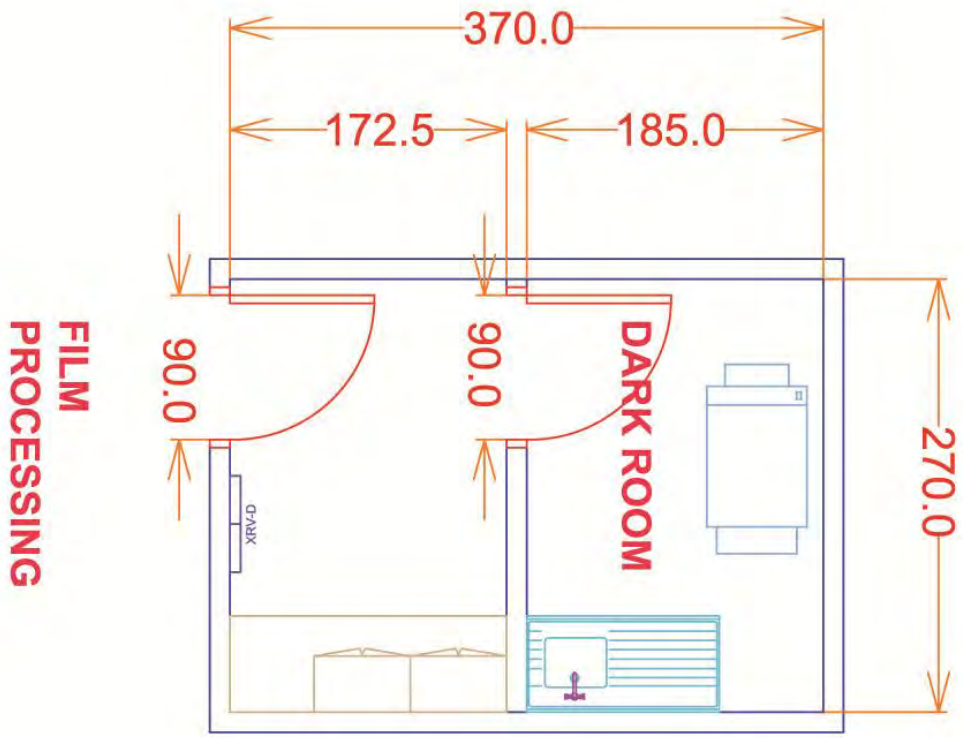
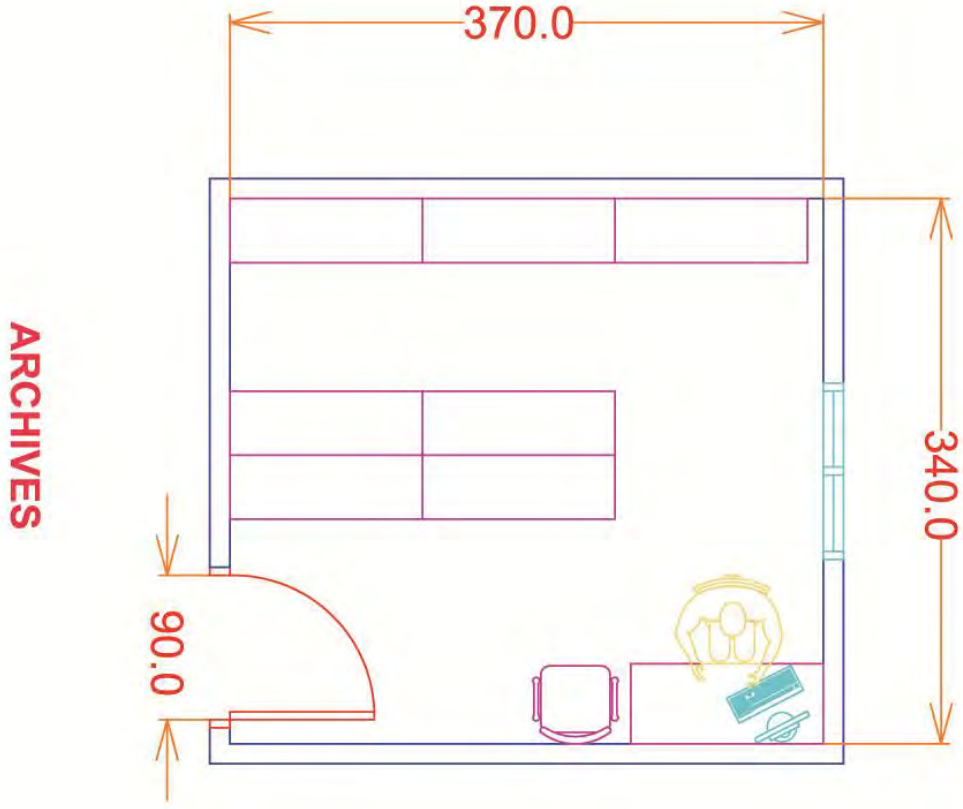
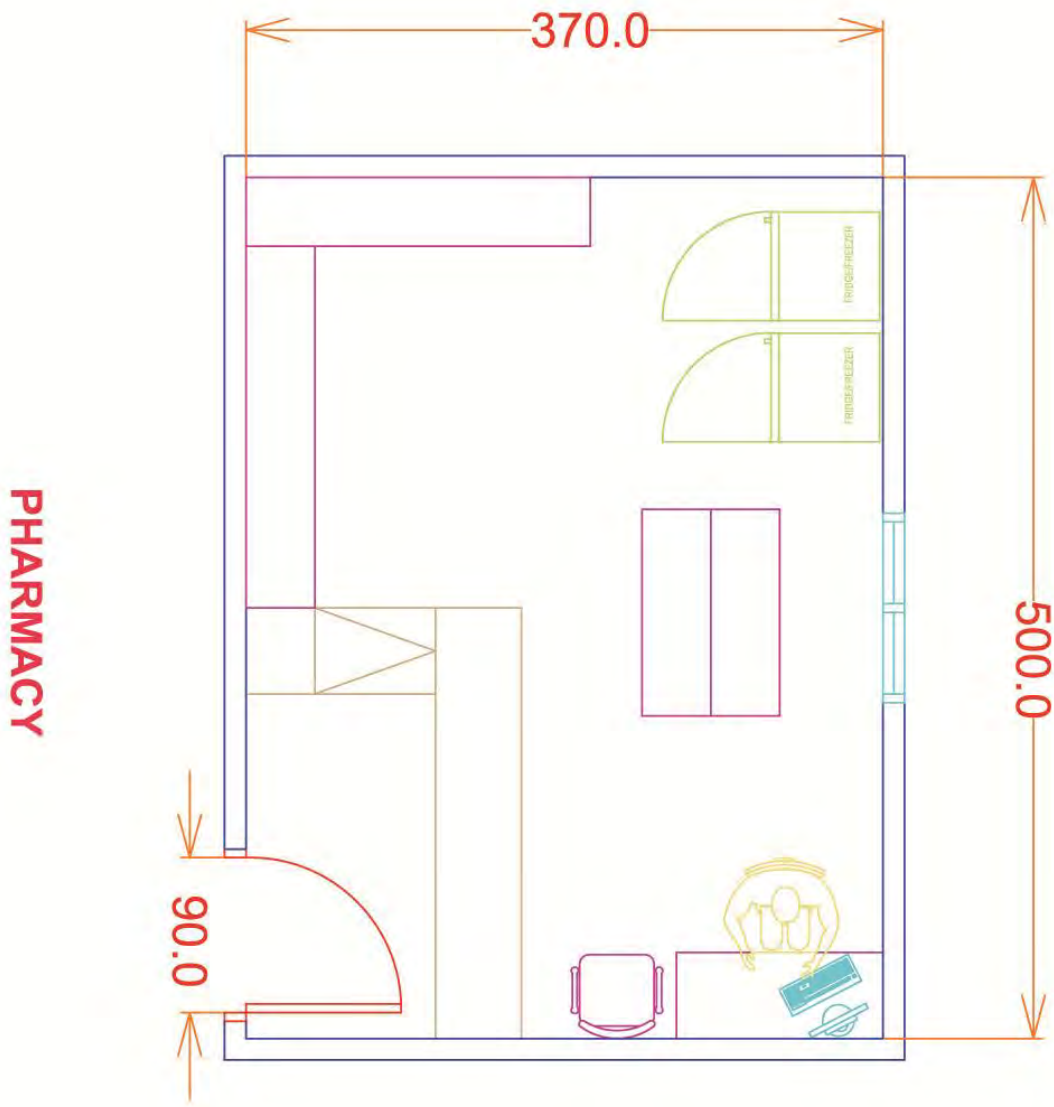
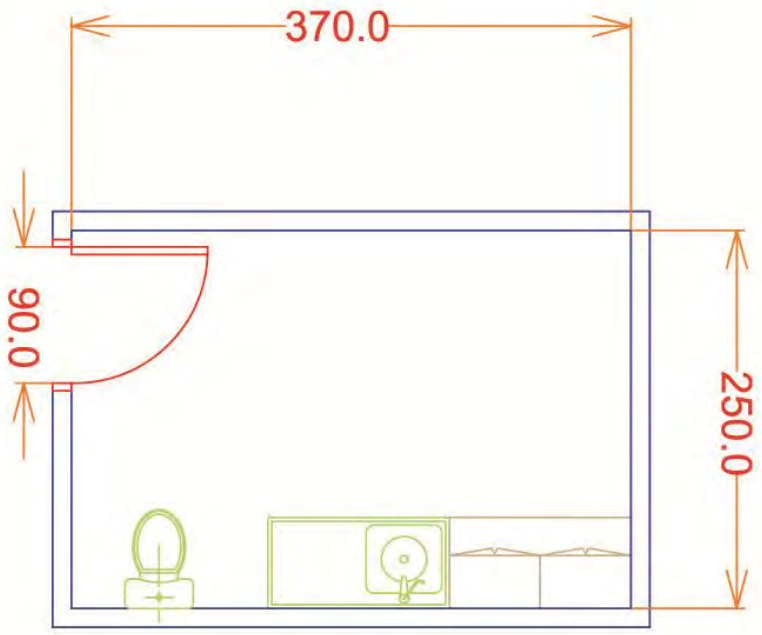
500.0
WAITING


370.0
172.5
185.0
90.0
90.0
270.0
FILM PROCESSING
DARK ROOM
XRV-D

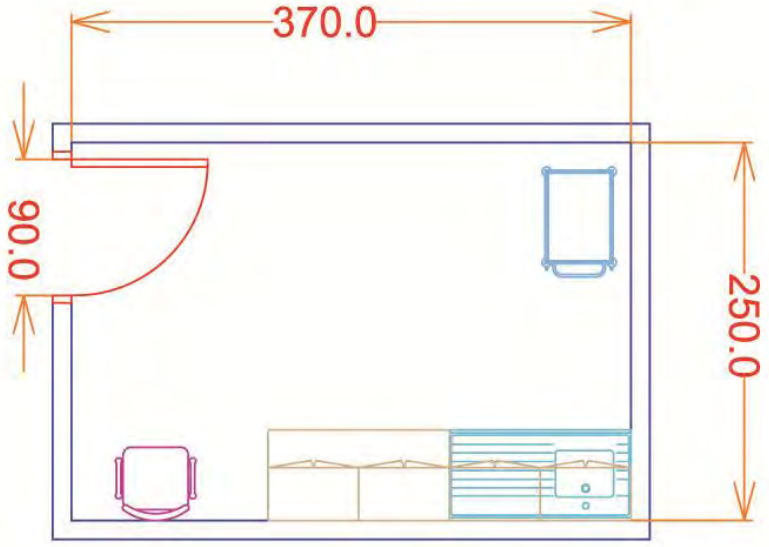

370.0
340.0
90.0
ARCHIVES

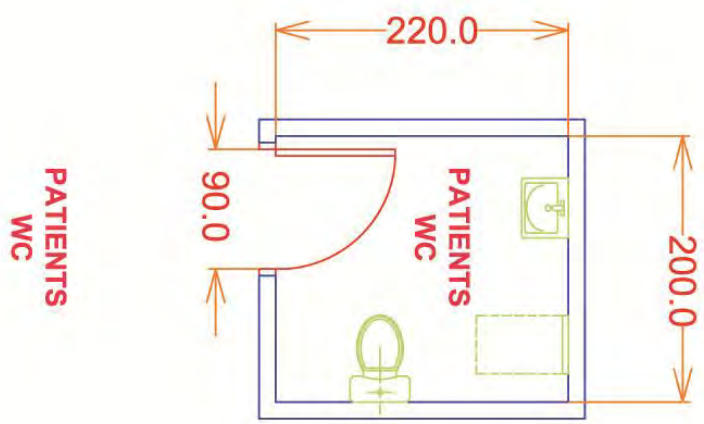

370.0
500.0
90.0
PHARMACY

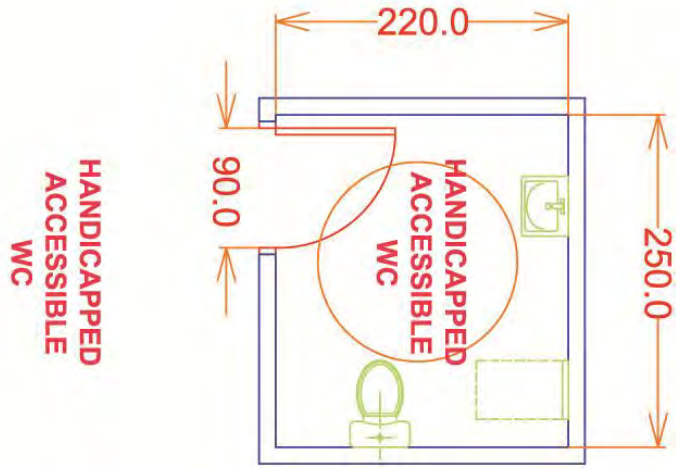
DIRTY UTILITY

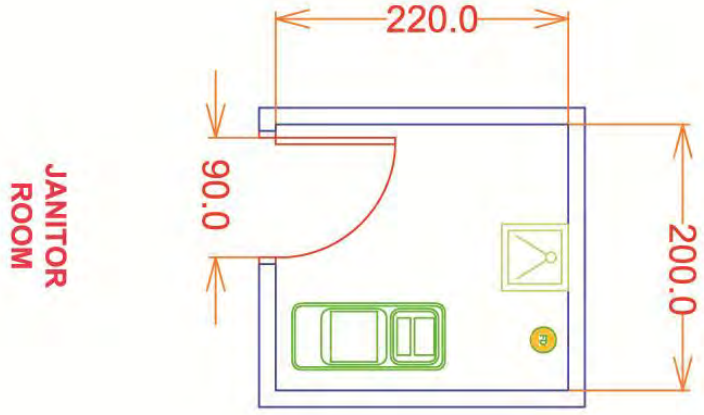


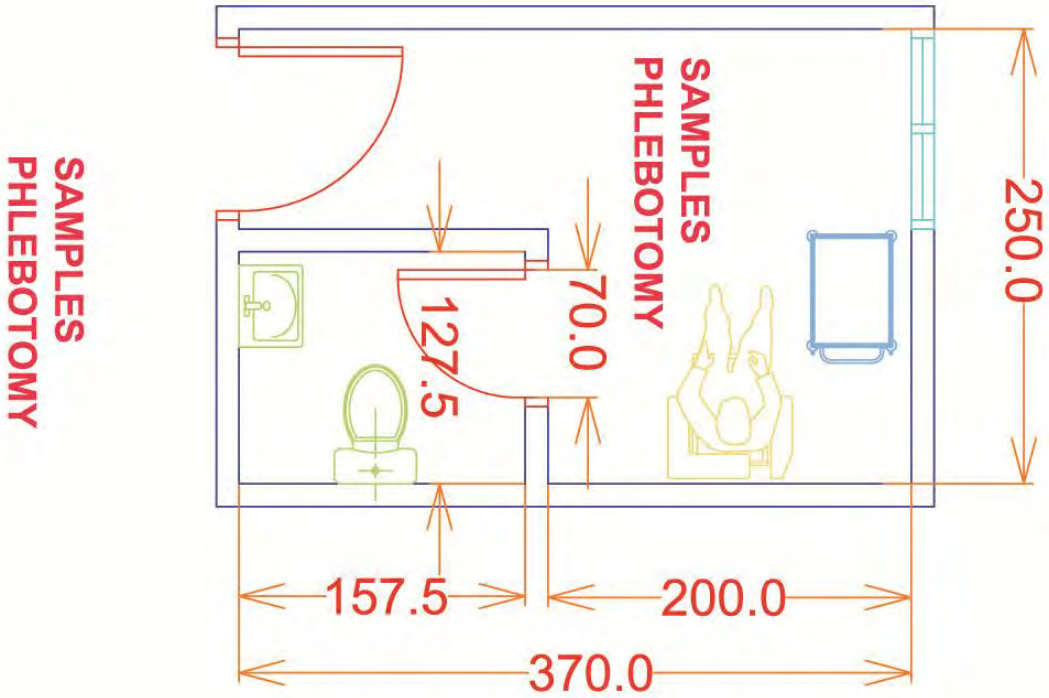
CLEAN UTILITY

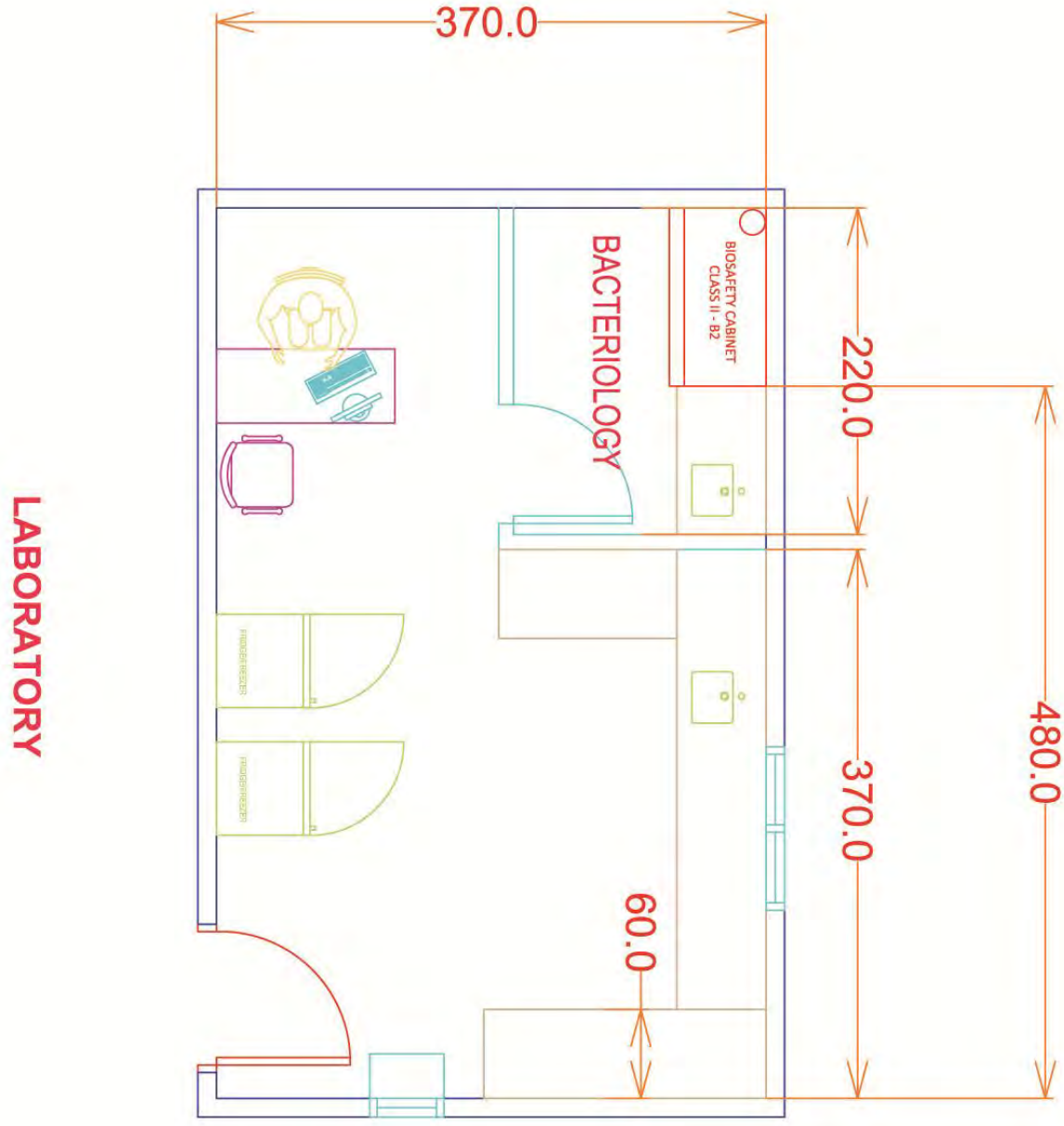


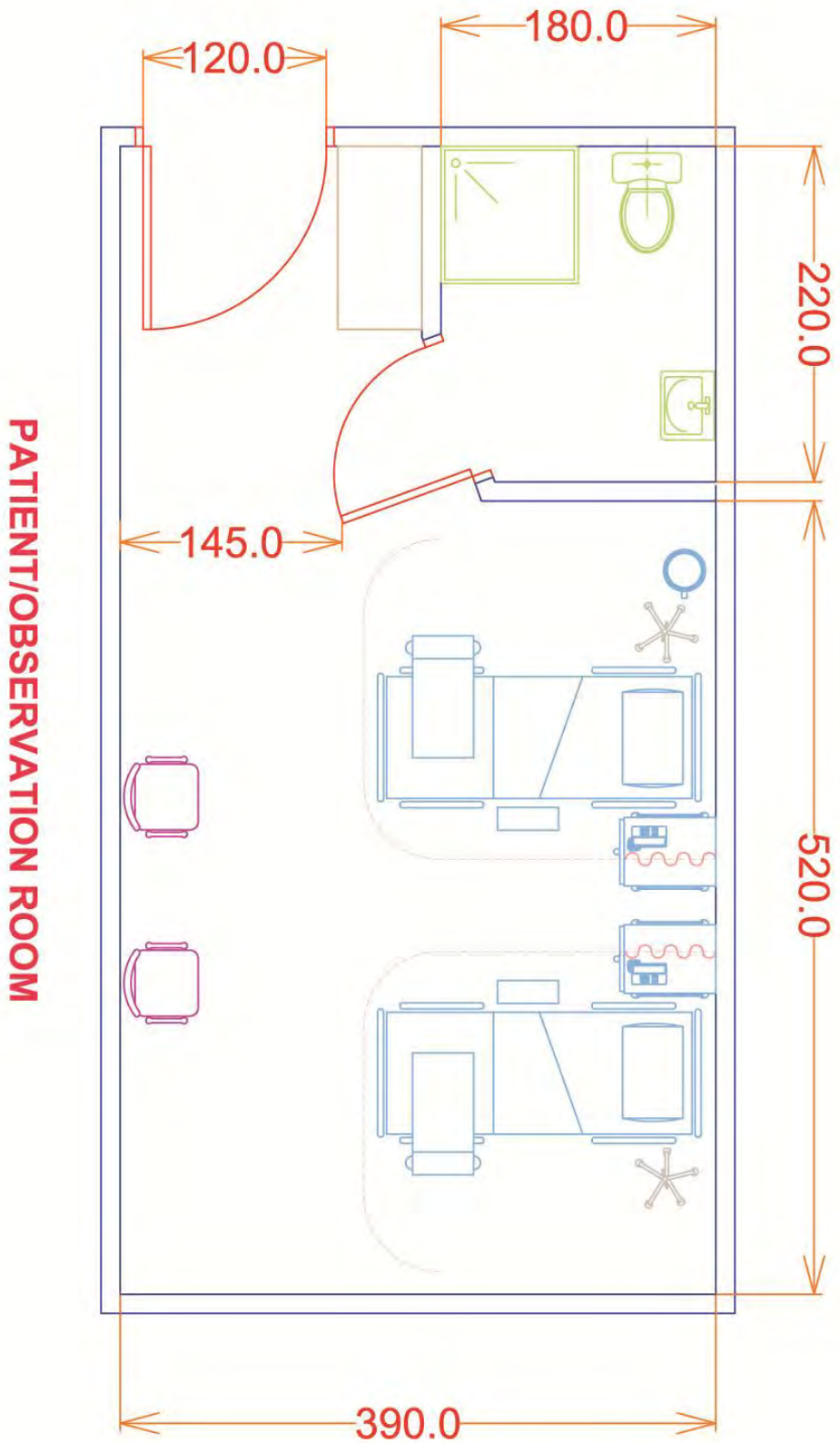

PATIENTS
WC
220.0
90.0
200.0

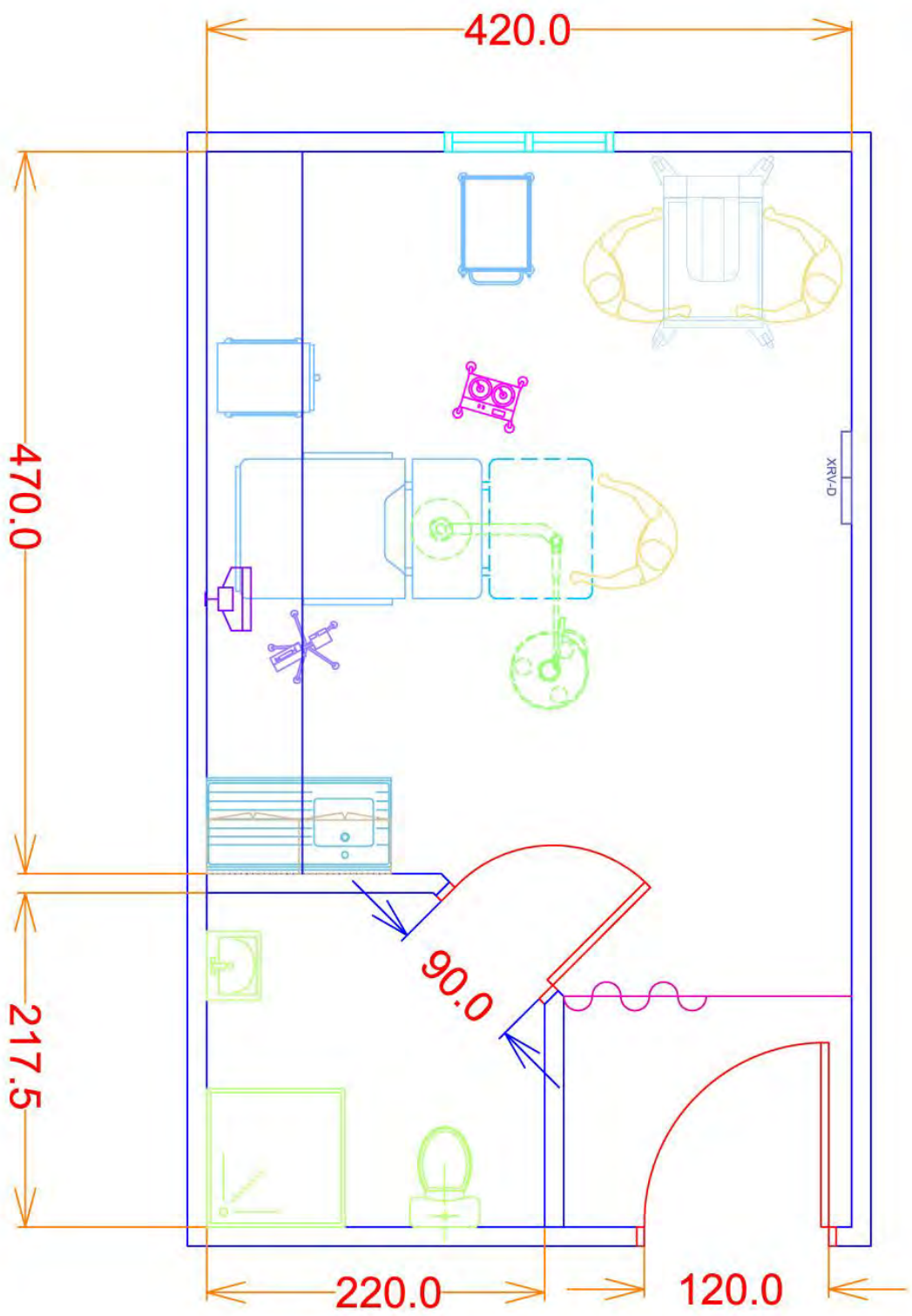

HANDICAPPED
ACCESSIBLE
WC
220.0
90.0
250.0


JANITOR
ROOM
220.0
90.0
200.0

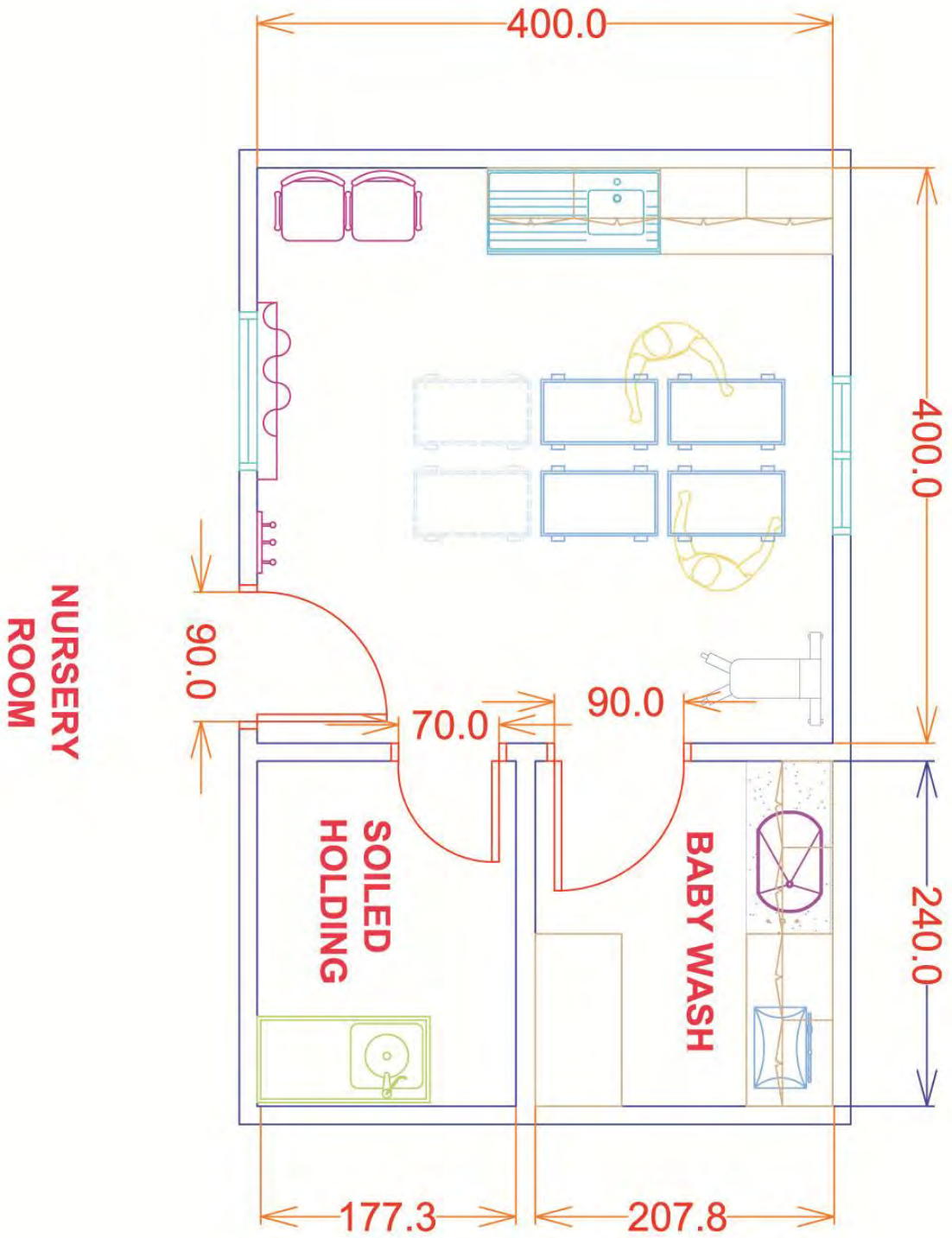

SAMPLES
PHLEBOTOMY
SAMPLES
PHLEBOTOMY
250.0
70.0
127.5
157.5
200.0
370.0


370.0
BACTERIOLOGY
BIOSAFETY CABINET
CLASS II - B2
220.0
480.0
370.0
60.0
LABORATORY


PATIENT/OBSERVATION ROOM
120.0
180.0
220.0
145.0
520.0
390.0



LABOR & DELIVERY ROOM


400.0
400.0
NURSERY ROOM
90.0
70.0
90.0
SOILED HOLDING
BABY WASH
240.0
177.3
207.8

APPENDIX-4: TECHNICAL SPECIFICATIONS FOR SELECTED MEDICAL EQUIPMENT.

General Guidelines:

The Wadi Khaled PHCs identified in this study to receive the ADELNORD grant, shall be provided with state of the art equipment. Therefore, the present specifications and layout drawings shall be interpreted as guidelines for type and quality of the equipment required. The specification texts are brief and therefore covering a wide range of equipment types and ancillaries. In some cases, specific figures and limits have been given. Such information should be considered as guidelines.

The equipment and supplies offered shall be brand new, premium quality and from reputable manufacturers whose experience in the healthcare field has exceeded a "Ten Years" period. It shall be of EC origin and make and should meet European Union directive standards should be CE marked. The Client may reject any equipment which has not been field proven, has no installed base and no recognized references. Bidders that have no local references yet, should submit a reference list of projects completed in the Middle East and Levant region (preferably). This list must be recent and certified by the original manufacturer.

Reconditioned or refurbished equipments are not acceptable. The supplier warrants that the offered goods are new, unused, of the most recent or current models and those incorporate all recent improvements in design and materials. The supplier also warrants that all goods shall have no defect, arising from design, material and workmanship of from any act or omission of the supplier. The above mentioned statement shall be proven by original certificates from manufacturers.

The supplier must be well established locally with proven after sales service record for more than 10 years and warrants that he will keep in stock spare parts for the purchased equipment for at least 7 years.

All "Life Support Medical Equipment" (i.e. surgical equipment, anesthesia machines, ventilators, infusion equipment, patient monitors, electrical beds, electro-surgery systems and defibrillators…) and "Medical Imaging & Diagnostic Equipment" (i.e. radiology, endoscopy, ultrasound…) shall fully comply with their respective ANSI/AAMI /IEC/ EN 60601 series of directives and ANSI/AAMI /IEC/ EN 62304 (or equivalent regulation used in country of origin) and shall be CE marked (a certificate from original manufacturer must be provided).

Medical furniture (i.e. SS furniture, desks, cabinets, tables, chairs…) shall be brand new, durable quality and from reputable manufacturers local or foreign. All Manufacturers should be ISO 9001:2008 classified.

The bidder shall provide each item in the specifications as complete, fully functional units with all ancillaries and accessories necessary for normal and safe use. The bidders are due to inform adequately on all relevant specifications and performances of the offered equipment, even though such information has not been required in detail in the present specifications. Such detailed specifications should be the original manufacturer's specifications and supported by the manufacturer's original technical data sheets. Transcription of the specifications in the tender documents will not be accepted. The bidder may be required to provide additional clarification and supporting documentation about his specifications.

The bidder shall in detail describe procedures for maintenance and the current updating of major equipment and systems.

The bidder shall specify in detail the training component included in his offer, which shall cover all necessary training and education of relevant staff for safe and competent handling of major equipment and systems.

The Medical Equipment Supplier shall adhere to the specifications and other documents within the tender which consist of 1:100 scale layouts for equipment, room by room listings, department listing and general bill of quantities.

Tender documents shall complement each other for information purposes and the contractor shall not discard any of the enclosed documents.

All dimensions contained within the specifications are approximate and shall not be taken literally except in the event of Supplier's equipment surpassing the specified dimensions; then an exercise from his part shall be carried out to ensure proper space clearances within any particular room for his proposed equipment. Power ratings as shown in documents are indicative, except voltage and frequency ratings.

Any brand name mentioned in the specifications shall be used for analogy purposes rather than selection. Similar product shall be acceptable.

Supplier has to ensure proper coordination with all other Contractors, particularly those pertaining to civil, electrical, medical gas and electromechanical works. Supplier has to verify all his equipment dimensions according to available architectural drawings and present his shop drawings with all the necessary required pre-installation civil, electric, medical gas and electromechanical works.

The Supplier should be responsible to connecting his equipment to the closest services outlets as available in the Hospital. Any works required by these connections should be included in the price of the equipment. Upon termination and acceptance of any of his works, the supplier should be responsible for restoring and properly finishing the Site (paint, plaster, tiling, etc...).

In case old or surplus equipment belonging to the Hospital are present on the Site, the supplier should be responsible, where required, for uninstalling this equipment, packing them appropriately against humidity, temperature and shock, and storing them in a storage place provided by the Hospital. This task should be coordinated with the Hospital administration.

The successful bidder should submit shop drawings for all items with samples of material for Consultant approval.

TECHNICAL SPECIFICATIONS:

ME2022	PORTABLE (TRANSPORT) VENTILATOR

Transport ventilator designed to replace manual ventilation in an emergency or transport situation inside and outside the hospital; to have the following features and specifications:

- Small and lightweight,
- Easily mounted,
- Microprocessor controlled,
- Volume ventilator,
- Modes of Operation: Control Mode, Assist/Control Mode, Pressure support and flow triggering are a must. SIMV Mode,
- No Ventilation Mode for battery charging during storage,
- Airway pressure meter should be integrated,
- Controls:
    - PEEP: 0 to 20 cm H2O
    - Volume: 50 to 2800 ml.
    - Pressure Limit: Adjustable from +10 to +100 cmH2O
    - Flow: Adjustable from 20 to 110 lpm (nominal).
    - Rate: Breaths Per Min - Adjustable from 1 to 50 in one breath increments.
    - Sensitivity: Adjustable from -10 to +10 cm H2O (nominal).
    - FiO2.
- Built-in Air compressor to deliver room air, which can be enriched with oxygen through a hose connection and a built-in blender,
- Battery : Sealed rechargeable type with a capacity at least 2 hours. Battery charge level indicator

should be available.

- Safeguards and Alarms:
    - Low Battery: Audible and visual alarm.
    - Power Switchover: AC to DC switchover with pulsing audible alarm.
    - Ventilator Malfunction: Constant audible alarm with flashing alarm lights.
    - Alarms for: Apnea, High-low respiratory rate, High-Low minute volume, High pressure, PEEP drop, if the breathing circuit is disconnected, and flow resistance is encountered.
- The ventilator should be delivered with:
    - Three Patient tubing circuit (Re-useable).
    - Side rail bracket.
    - Three-section patient circuit support Arm.
    - Rigid cover for the control panel.
- Power supply: 220-240V, 50-60 Hz.

ME0065	CRASH CART WITH DEFIBRILLATOR AND ACCESSORIES

Trolley resuscitation, emergency, with shelf support bracket arm extension, shelf for defibrillator, 4 drawer units, drip stand with hook.

- Accessories for Crash Cart suitable for adults, paediatrics and infants
- ECG electrodes single use (50 packs)
- ECG cables.
- External Defibrillation electrodes (Adult and pediatric)
- Internal defibrillation paddles
- Stethoscope “Adult & Pediatric”
- Laryngoscope “Adult & Pediatric”
- Sphygmomanometer complete aneroid type
- Disposable tongue depressor
- Penlight
- Resuscitation bag + accessories in container (1 Adult, 1 Pediatric, 1 Infant)
- Complete sets of NASO& ORO-pharyngeal instruments
- Foot, electric or ventury operated suction system and tubing
- O2 cylinder manifold with reducing valves with Regulator & Humidifier, Small
- O2 demand valve, patient tubing & 3 size facemasks
- Scissors
- Paddle GEL
- ECG electrode GEL
- Backboard for cardiac use (solid)
- At least 4 electrical outlets for ancillary equipment.

Defibrillator Features:

- Lightweight, easy to operate defibrillator with ECG monitor and min 2 channels recorder, for internal and external defibrillation semi-automatic and manual mode, alarms audible and visual.
- Built in rechargeable batteries suitable for 2 hours of continous operation or 50 chocs at 360 joules and charger.
- Synchronized and non-synchronized operation
- Delivered energy maximum at 360 joules, limited to 50 joules for internal defibrillation
- Charging time less than 6 seconds
- Display of selected stored and delivered energy

- Non invasive (fixed, override or on demand) pacer modes possibilities
- ECG acquisition via Paddles and patient cable with adjustable alarm limits and min 6 leads selection.
- Display (CRT, LCD or EL) has: ECG Alarm messages, sensitivity, lead, alarm limits heart rate, and defibrillated energy, large screen.
- Defibrillation modes
- External defibrillation via paddles
- External defibrillation via adhesive pads
- Semi automated defibrillation with voice controls
- Delivery to include the standard set of accessories for the complete proper function of the unit including pacing electrodes.
- Option SPO_2 monitoring
- Power supply: 220-240V, 50-60 Hz.

Accessories:
- Percussion Hammer Buck
- Percussion Hammer Babinsky
- Ophthalmoscope / Otoscope, Desk Top
- Tourniquet Strap
- Nasal Speculum Adult
- Nasal Speculum Pediatric
- Measuring Tap, 2m
- Steel Rule, 30cm
- Tuning Fork, Set of 4
- Pinwheel Wartenberg
- Forceps, Magill, Adult
- Forceps, Magill, Child
- Forceps, Straight
- Scissors, Lister Bandage
- Scissors, Universal Bandage

ME0066	DEFIBRILLATOR AND RESCUCITATION EQUIPMENT FOR MOBILE DISPENSARY

Defibrillator Features:
- Lightweight, easy to operate defibrillator with ECG monitor and min 2 channels recorder, for internal and external defibrillation semi-automatic and manual mode, alarms audible and visual.
- Built in rechargeable batteries suitable for 2 hours of continous operation or 50 chocs at 360 joules and charger.
- Synchronized and non-synchronized operation
- Delivered energy maximum at 360 joules, limited to 50 joules for internal defibrillation
- Charging time less than 6 seconds
- Display of selected stored and delivered energy
- Non invasive (fixed, override or on demand) pacer modes possibilities
- ECG acquisition via Paddles and patient cable with adjustable alarm limits and min 6 leads selection.
- Display (CRT, LCD or EL) has: ECG Alarm messages, sensitivity, lead, alarm limits heart rate, and defibrillated energy, large screen.
- Defibrillation modes
- External defibrillation via paddles

- External defibrillation via adhesive pads
- Semi automated defibrillation with voice controls
- Delivery to include the standard set of accessories for the complete proper function of the unit including pacing electrodes.
- Option SPO_2 monitoring
- Power supply: 220-240V, 50-60 Hz.

Instruments:

- ECG electrodes single use (50 packs)
- ECG cables.
- External Defibrillation electrodes (Adult and pediatric)
- Internal defibrillation paddles
- Stethoscope “Adult & Pediatric”
- Laryngoscope “Adult & Pediatric”
- Sphygmomanometer complete aneroid type
- Disposable tongue depressor
- Penlight
- Resuscitation bag + accessories in container (1 Adult, 1 Pediatric, 1 Infant)
- Complete sets of NASO& ORO-pharyngeal instruments
- Foot, electric or ventury operated suction system and tubing
- O2 cylinder manifold with reducing valves with Regulator & Humidifier, Small
- O2 demand valve, patient tubing & 3 size facemasks
- Scissors
- Paddle GEL
- ECG electrode GEL

ME0655	ULTRASONIC WASHER 20 L

- Bench top unit.
- Used to clean metal, plastic and ceramic dental parts. (In hard to reach places).
- User friendly.
- Variable cleaning frequency: 30 to 60 KHz.
- Average power: 80 Kw
- Includes cycle timer.
- Integrated thermostat controlled heater.
- Heavy duty construction.
- Stainless steel cleaning tank.
- Tank comes with strainer net.
- Tank capacity: approx. 20 L
- 1 - Operation Manual.
- Power supply: 220-240V, 50Hz.

ME0635	TABLE TOP WASHER DISINFECTOR 50 L

- Bench top unit.
- Instruments washer and disinfector,

- User friendly,
- Preset and user programmed washing cycles,
- LCD display of parameters,
- RS-232 or USB output connection for printing results,
- Built-in steam condenser,
- Built-in dryer,
- Fast washing pumps with high flow rate,
- High pressure for efficient spraying,
- Washing and Disinfection temperatures : up to 93°C,
- Internal water filtering system to guard against residues,
- Integrated detergent dispenser,
- All high quality and durable SS construction,
- Chamber volume : approx. 50 L
- If no integral printer, unit must be delivered with external compatible printer.
- Power supply: 220-240V 50Hz.
- Installation of unit to be included. Supplier to provide all MEP requirements and shop drawings prior to install,

To be delivered with all accessories necessary for normal and safe operation.

ME0645	STEAM STERILIZER 250L

Steam sterilizer system to have the following features and specifications:

- Single door,
- Pre-vacuum type,
- Fully automatic, microprocessor controlled,
- Comes with preset cycles protocols,
- User programmed protocols capability,
- Preset cycles should include for porous loads, heat sensitive materials, liquids, open instruments and glassware, flash cycle, disinfection and chamber leak test,
- Uses mechanical air-evacuation for high-volume sterilization,
- Operating pressure up to 33 psi,
- Operating temperature up to 137°C,
- Gauges for pressure and temperatures,
- 250 L internal chamber,
- Constructed from heavy duty high grade stainless steel,
- Pneumatic vertical sliding door (Compressed air: 5-6 bar),
- Built in recorder-printer for daily cycle number, chamber pressure, temperature, date and sterilization time.
- Unit to have an integrated steam generator,
- Alarms for pressure drop, leaks, door open and other malfunctions,
- Power supply: 380V/ 50Hz, 3 phase installation.
- Installation of unit to be included. Supplier to provide all MEP requirements and shop drawings prior to install,
- To include SS enclosure and side access panels.

To be delivered with all accessories necessary for normal and safe operation.

ME0650	BENCHTOP AUTOCALVE 30 L

Used for the sterilization of instruments; to have the following features and specifications:

- Bench mounted model.
- Front loading.
- Door locks during operations. Will not open until chamber has cooled down and has depressurized.
- Override device for safe door release.
- Inner chamber constructed of high-grade stainless steel.
- Chamber volume approx. 30 L.
- Microprocessor controlled operations.
- Built in water pump and steam generator.
- Maximum Heater wattage: 15 Kw.
- Temperature range up to max. 134°C.
- Over temperature alarm and Cut-off device.
- Automatic drying cycle.
- Digital or LCD display.
- Integrated data printer.
- Accepts wide range of racks and accessories.
- Power supply: 220-240V 50 Hz.

OE1700	WATER DI-RO UNIT FOR STERILIZER USE

Combined Reverse osmosis/Deionization unit for automatic production of ultra pure water.

- Capacity of 10–15 liters per hour.
- Fully automatic system
- Wall hanged system
- One RO processing unit
- One Di processing unit with Di water dispenser
- 60 L tank with RO water dispenser
- Sequence as follows: Feed water to RO unit, RO to 60 L tank, Tank to Di unit.
- Automatic power cut off in case of low water level.
- Power supply: 220-240V 50 Hz.

ME0066	HOLTER SYSTEM

To have the following features and specifications:

- Should be a PC based software compatible with windows OS.
- 3 Channel Arrhythmia analysis
- Full disclosure of ECG with different color coding for VE, SVE & PAUSES, Hourly count menu, Page scan, Mega scan,

- Minimum of 20 Templates editing to analyze VE, SVE, V-RUN, SV-RUN, PAUSE,ST, etc.
- Atrial fibrillation and Flutter analysis
- Heart Rate Variability (HRV) (Time Domain, 3D frequency Domain, Lorenz Point
- care plot,
- Pace Maker auto detection and analysis,
- Possible to have a unique 12 lead analysis with FCG CAD gram,
- 12-Lead ST scan
- QT analysis with validation,
- Vector cardiography,
- TWave Alternans analysis
- To print ECG strips from any part of Holter recording,
- Dedicated software capable of analyzing data from 3 Channel digital recorders,
- Memory card slot (type to be specified)
- Color Printing,

Recorders with following Configuration

- 3- Channel Digital recorder with removable storage media,
- Memory card- capacity 1 GB x 1
- 7-Lead cable x 1
- Recorder should be compatible with alkaline and rechargeable batteries
- Digital recorder should have a minimum of 512 samples/sec/channel for pacemaker
- Spike detection and at least 128 samples/sec/channel for recording and storage,
- 1000/sec/channel for VLP,
- Compatible PC software,
- Should be supplied with a latest technology PC with Colour Ink Jet Printer & UPS.

ME1288	TYMPANOMETER

Screening/diagnostic Tympanometer performs automatic impedance measurements for middle-ear evaluations. To have the following features and specifications:

Tympanometry mode

Reflex mode	
IPSI Frequencies	500, 1000, 2000 & 4000 Hz +/-2%
IPSI Intensities	70 - 105 dB HL (105 dB HL max. at 4000 Hz),
on/off ratio	Minimum 70 dB,
rise/fall time	Approx 10 msec.
Contra Intensities	Approx 60 - 110 dB HL
Pressure	Automatically set to peak value on tympanogram

Reflex decay mode	
Reflex Frequencies	500, 1000, 2000, 4000 Hz +/-2%
Contra Intensities	70 - 120 dB HL (115 dB HL max at 4000 Hz)
Pressure	Automatically set to peak value on tympanogram
Test Time	13 seconds, 10 seconds auto tone present

Eustachian tube function mode

Pressure Range +300 to 400 daPa (mm H2O)
Accuracy +/10 % or +/10 daPa, whichever is greater

Standard accessories
Display: LCD type graphical display shows graph of tympanogram, peak compliance, peak pressure, canal volume, gradient, reflex, graph and conclusion.
Printer: Integrated thermal printer
Probes: Regular probe
High tone frequency
Compatible Ear tip set
Power: 220-230 volts AC, 50/60 Hz

Port: RS-232C
To be delivered with: Carrying case, manual, calibration cavity tools, compatible thermal paper.

ME1213	AUDIOMETER

Microprocessor controlled unit for air and bone conduction and speech threshold testing, with digital display.

- Speech tests to include – ABLB, automatic threshold (HW), Bekesey, Langenbeck, SISI, Stanger (binaural pure tone stimulation). Screen audiometer with air and bone conduction.
- Automatic, semi automatic and manual modes.
- Channels : 2 separate and identical channels.
- Frequency range: 250 to 8000Hz (Bone).
- Frequency range: 125 to 8000Hz (Air).
- Attenuator range: -10 to +120 dB (air), –10 to +80 dB (bone) in 1 or 5 dB steps.
- Masking noise : narrow band, white noise.
- Attenuator accuracy: within 3dB of indicated level.
- Frequency accuracy ≤ 1%.
- To include automatic validity (check).
- Printer for Printout of audiometric test results.
- External inputs: CD/Tape, Microphones.
- Outputs: phones, bone conductor, insert phones / special phones and free field loudspeakers.
- Accessories: head phones (TDH 39), bone conductor, built in charger and battery, angiogram pad, earphones and carrying case.
- Power supply: 220-240V, 50-60 Hz.

ME0067	ECG 12 CHANNELS

To have the following features and specifications:

- Manual and automatic operation
- 3, 6, 12 channels print out.
- mobile (trolley mounted)
- 3 selectable sensitivity levels
- Speeds: 5, 10, 25 and 50 mm/sec.
- Programmable channel selection
- 12 leads pick-up

- Paper size A4

The ECG shall include at a minimum the following information on each record:
- The recording date and time.
- The sensitivity setting.
- The chart speed.
- The leads being recorded.

The ECG shall include the following visual indicators:
  - Battery status
  - Loose electrode contact
  - System status
- The ECG shall be capable of operating on either rechargeable battery or line power.
- The ECG shall measure all basic axes and durations including: RR, PQ, QT, ATC, P, QRS, T and HR.
- The ECG shall identify arrhythmias.
- Electrical Safety
- Calibration test should be in each starting cycle.
- The ECG shall come complete with patient leads, electrodes and 1 gel bottle & 1 box of A 4 paper.
- Power supply: 220-240V, 50-60 Hz.

ME0021	X-RAY FILM VIEWER SINGLE

To have the following features and specifications:

- Single screen viewer,
- Dimmable x-ray illumination,
- Wall mounted,
- Controls in one row at bottom of viewer,
- Housing made of enamel painted steel sheet,
- Viewer face made of durable translucent plastic,
- With Film gripper ,
- Dimensions: approx. 510 mm x 115 mm x 370 mm (H x D x W),
- Power supply: 220-240V, 50-60 Hz.

ME0068	SPOT CHECK MONITOR (PULSE, SPO2, NIBP, TEMP.)

Compact size vital signs monitor designed to be used on adult, pediatric and neonatal patients for intra-hospital fast monitoring. This preconfigured monitor shall have the following features and specifications:
Display:
  - LED or TFT type display
  - Numerical Values

Parameters monitored: NIBP, Pulse, SPO2 and Temperature

N.I.B.P (Non Invasive Blood Pressure)
  - Oscillometric method
  - Cuff pressure display
  - Cuff size: adult, pediatric, neonate
  - Quick connect hose connection is recommended.

Pulse

- 30 to 250 bpm

SpO2 (Pulse Oximetry)

- Disconnect & failure detection
- Disposable and reusable probe possibility

Temperature

- One input
- Selectable scale: °C or °F
- Range °C: 15° to 45°
- Range °F: 59° to 113°

Alarms:

- Audible and visual for malfunction and errors.
- Over pressure protection.

Data output:

- Via Ethernet cable

Battery:

- Long life Lithium Ion battery or equivalent

Power requirements:

- Power supply: 220-240V, 50-60 Hz.

Accessories:

For proper operation each monitor should be delivered complete with:

- One Temperature probe rectal with cover.
- SpO_2 sensors with one extension cable: (one reusable adult & pediatric).
- Wrap sensor for neonates.
- NIBP cuffs:1 infant, 1 pediatric, 1 medium and 1 large (adult)
- Spare rechargeable battery
- User Manual
- All necessary cables and attachment accessories.
- Compatible trolley with basket.

ME1277	SPIROMETER

Portable digital Spirometer, to have the following features and specifications:

- Lightweight handheld Spirometer,
- Runs mains power supply or rechargeable battery,
- Measures the following parameters:
  Basic - VC, FVC, FEVI, FEVI %, FEF25-75%, PEF, % Comparison of Measured Versus Predicted Results.
- Flow detection principle: Pneumo tachograph, Volume and flow to be specified.
- Range: for children, and adults with impaired airways.
- LCD display of parameters and graphs,
- Connects to PC via USB or RS232 ports,
- Comes with analysis software compatible with Windows OS,
- To be delivered with 100 Disposable Pneumotachs and mouthpieces.
- Comes with carrying pouch.

ME0046	CAST CUTTER (PLASTER SAW)

To have the following features and specifications:

- Oscillating frequency: 1400 cycles / min.
- Motor construction : double insulated
- Radio interference suppression
- Motor protection: automatic overload cut-out, manual reset
- Maximum depth of cut with 80 mm blade: 25 mm
- Length of power cord: 5 meters
- Noise level: 75 db

Comes with the following accessories:

- Blade 80 mm diameter
- Socket head screw key
- Spanner
- Power supply: 220-240V 50 Hz.

ME0100	INFUSION PUMP

General purpose infusion pump; to have the following features and specifications:

- Compact size.
- User friendly.
- Case made of high quality material resistant to impact.
- Dedicated patient set to ensure high accuracy in drug administration.
- Main and battery operation.
- LCD display for infusion parameters.
- Rate: 1-999 ml/hr in 1ml increments.
- Volume infused : 0-9999ml
- KVO : off- 5ml/hr
- Selectable occlusion pressure
- Air in line detection
- Free flow protection
- Rate / volume and volume/time programming
- Bolus capability : 200ml/hr
- Secondary infusion capability
- Battery life: 8 hrs at 125ml/hr when fully charged.
- Panel lock
- rate cannot be changed in run mode
- Alarms for :
- Low battery
- open door
- Malfunction
- Upstream/downstream occlusion
- Air in line
- Set miss-loading or bad set
- Power supply: 220-240V 50 Hz.

ME0101	SYRINGE PUMP

Syringe pump for intravenous injection therapy; to have the following features and specifications:

- (Accuracy to be better than 2%).
- Universal pump to accommodate syringes from all major manufacturers
- Membrane or soft touch, control key pad.
- User friendly.
- Large LCD display of chosen parameters.
- Display of infusion rate, infused volume, volume remaining, pressure level on bar graph and syringe size.
- Prime rate approx. 100ml/hr- 500ml/hr to a max of 2ml.
- Bolus rate up to 1200ml/hr with a 50 ml syringe
- Adjustable, occlusion pressure (approx. 250 – 600mmHg).
- Infusion rate: 0.1ml to 600ml/hr in 0.1 ml/hr increments.
- Volume limit: 0.1ml to 0.5ml in 0.1ml increments.
- Audible and visual alarm for:
- Fluid depletion, infusion near end, infusion end, high pressure / occlusion, system malfunction, syringe unlocked, plunger disengaged, low battery, mains failure, purge mode, KVO mode.
- Built in charger and rechargeable battery (4 – 6 hr capacity)
- lock function to prevent accidental changes of flow rates
- Light weight.
- Rail / pole clamp.
- Power supply: 220-240V 50 Hz.

ME1005	EXAMINATION LIGHT, WALL MOUNTED

General purpose examination light; to have the following features and specifications:

- Compact size light head,
- Wall mounted on heavy duty mechanism,
- On/Off switch,
- Light source: Tungsten halogen not less than 50watt,
- Parabolic reflector and heat absorbing filter,
- Built in transformer and control elements,
- Double jointed arm, Swivel Radius approx.100 cm,
- Maneuverable by means of a sterilisable handle,
- Height Movement: approx. 80 cm,
- Lamp head adjustable horizontally and vertically,
- Illumination Intensity ≥20 KLUX.
- To include all necessary mounting material for wall installation.
- Must comply with IEC-60601-2-41 directives or equivalent.
- Power supply: 220-240V 50 Hz.

ME0700	PATIENT SCALE WITH ROD

- Mechanical beam type,
- Heavy duty beam,
- For patient weighing and height measurement,
- Capacity up to 200kg in 100g increments,
- Telescopic height measurement rod range approx. 800 – 2000mm, in 1mm increments,
- Non slip platform cover.

ME0073	SPHYGMOMANOMETER

- Aneroid sphygmomanometer, mounted on mobile stand, with 5 swivel caster base for stability.
- Measurement range: 0-300mm Hg.
- Stand adjustable height range : 350mm

With the following attachments:

- Velcro cuff (14 x 54cm) with latex bag.
- Bulb with valve.
- Stethoscope, Adult/Pediatric
- Accessory basket.
- Should include adult and pediatric cuffs and bellows.

ME0013	SUCTION PUMP ELECTRIC 2 JARS

To have the following features and specifications:

- Totally enclosed oil free vacuum pump, supported on base with four anti-static swivel castors and braking system,
- Foot pedal operated,
- On indicator light,
- Protection against accidental aspiration of fluids inside the pump,
- Vacuum range 0-675 mm Hg approx.,
- Vacuum gauge,
- Integrated suction regulator,
- Suction capacity approx. 50 L/min
- Bacterial filter at the entrance of the apparatus,
- Carrying handle,
- 2 x 4 L graduated suction jars with overload cut out, and overflow protection.
- Comes with all necessary tubing and connectors,
- All parts in contact with bio- secretion are Autoclavable,
- Power supply: 220-240V 50 Hz.

ME1004	OPERATING LIGHT CEILING MOUNTED

Ceiling mounted OR light system for minor surgical procedures. System comprises a main light. Must have the following features and specifications:

- Free and unhindered rotation around central axle and joints.
- Fully balanced spring controlled system.
- Easy maneuverability and positioning via headlight integrated handle.
- Adjustable focusing with the handle.
- Handle easily removable and sterilisable.
- Multi-bulbs or single bulb (with automatic switch-over emergency bulb) system.
- IR filtration system.
- Light illumination: Min. 80 K Lux
- Color rendering index: from Ra-93 to Ra-96
- Color temperature: from 3300°K to 4300°K
- Low wattage light source: Max. 150 W (halogen) 70W (Gas discharge)
- Long life light source: Approx 1000 h (halogen) 5000h (Gas discharge)
- Light field diameter: Approx. 15-25 cm
- Working distance: Approx. 70-140 cm
- Depth of working area with focus: Min. 50 cm
- Maximum temperature increase at surgeon's head: 2°C
- Hermetically closed cupola to allow disinfection and cleaning.
- Easy and quick bulb replacement.
- Integrated light intensity (dimmer) control in light head.
- To be delivered with all necessary accessories and cables, including transformer, anchorage plate and bolts.
- Must comply with IEC-60601-2-41.

ME2000	ELECTROSURGICAL UNIT

- Universal electro surgical unit for general surgery
- Suitable for mono polar / bipolar applications and underwater cutting
- Cutting: 300 W
- Coagulation: 200 W
- Bipolar: 35 W/ 20 ohm
- Power crest factor : Coagulation>8 , Cut =1
- Separate controls for cut, coagulation and bipolar
- Adjustable homeostasis in cutting mode
- Foot switch & switching handle in mono-polar mode
- Foot switch control for bipolar mode

Supplied with:

- Double foot pedal cutting / coagulation
- Patient plate with cord
- Foot control (cutting & coagulation) handle
- 1 Set of electrodes (ball/knife/needle)
- Isolated bipolar forceps with cable
- Bipolar Foot Switch
- Manuals

- Power supply: 220-240V, 50 Hz.

ME0060	PATIENT MONITOR

A bedside vital signs monitor for adult and pediatric patients undergoing cardiac catheterization requiring special care under that environment. The monitor shall have the following features and specifications:

- 10 inch display
- Color LCD, EL or TFT type display
- Minimum resolution 800 x 600 pixels
- Up to six waveforms
- With networking capabilities via LAN network.
- Interface to connect to central station should be included.
- Preconfigured or Modular (preferred)
- Must include the following parameters:
    - ECG
    - RESPIRATION
    - N.I.B.P (Non Invasive Blood Pressure)
    - SpO2 (Pulse Oximetry)
    - TEMPERATURE.
    - DUAL I.B.P (Invasive Blood Pressure)
    - CARDIAC OUTPUT
    - CAPNOGRAPHY
    - CALCULATIONS & ANALYSIS
    - TRENDS
        - Graphical and tabular type
        - Memory Storage: min 24 hours
        - Data interval : 20 seconds
        - Adjustable vertical scaling when using graphical trends
    - OTHER FEATURES
        - User friendly interface, knob controlled.
        - Audible and visual alarms for faults and limits breach.
        - Power supply: 220-240V, 50 Hz.
        - Complies with IEC 60601-1
    - ACCESSORIES
        - For proper operation each monitor should be delivered complete with:
            - ECG cable 5 leads
            - Two Temperature probes rectal with covers.
            - SaO_2 sensors with one extension cable (one reusable adult and pediatric).
            - NIBP cuffs:1 pediatric, 1 medium and 1 large
            - Spare rechargeable battery
            - All necessary probes and accessories for modules.
            - User Manual
            - All necessary cables and attachment accessories.
            - Wall mounting set.

- Invasive pressure cables, transducers and transducer holders to be supplied as well as the 10 ea disposable kits.
- Cardiac output cables to be supplied as well as 5 catheters

ME0070	DIAGNOSTIC SET

Portable set of high quality diagnostic instruments:

- A Battery operated universal rechargeable handle,
- Stainless steel body construction, light weight,
- Halogen light source,
- Otoscope/Throat illuminator screw-on Head,
- Ophthalmoscope screw-on head,
- Nasal Illuminator screw-on head,
- To be offered with spare bulbs and case,
- Other heads can be fitted if needed,
- Multi-purpose stethoscope, with case or pouch,
- Percussion Hammer Buck,
- Tourniquet Strap,
- Percussion Hammer,
- Measuring Tap, 2M,
- Steel Rule, 30cm,
- Tuning Forks, Set of 4,
- Pinwheel,
- Penlight,
- Tympanic digital thermometer (in °C),
- To be delivered with good quality carrying bag.

ME0701	PEDIATRIC SCALE

- Digital scale,
- With clear LCD display,
- Measurements in Kg and Pounds,
- Suitable for infants and toddlers weighing,
- Capacity: up to 50 Kg,

ME0050	TRAUMA STRETCHER

To have the following features and specifications:

- Full length radiolucent sleep surface,
- with integral restraint holders and transport handles,
- 12 cm mattress pad with durable and washable cover,
- Large conductive casters,
- Stainless steel collapsible side rails,
- SS IV pole.
- Minimum 4 infusion support sockets,
- Storage basket,

- Full perimeter bumper system,
- Quick activated trendelenburg, reverse trendelenburg,
- drainage bag holders,
- Hydraulic hi-lo foot control on both sides,
- Hydraulic height adjustment: approx.60 to 100cm,
- Head and foot pan covers,
- Cantilever arm design mechanism with central brake and steering at the head and foot end.
- Oxygen tank holder with protective skid plate.
- Large patient weight capacity.

Approximate Dimensions
Sleep surface: 70cm x 200cm.
Overall length: 215cm.
Each stretcher to include the following attachments:

- Oxygen tank x1, size F and holder
- Arm board pad x1
- Restraint straps (one set per trolley)
- X-Ray cassette film tray slide and holder.

ME0051	PATIENT STRETCHER

- For general patient transport,
- Heavy duty steel construction,
- Fixed height trolley ,
- Dimensions approx. 200 x 75 x 75cm (LxHxW),
- Mounted on 4 large swivel castors 2 with brakes and steering,
- Radio translucent mattress platform,
- With adjustable backrest,
- O2 cylinder holder,
- 5cm conductive mattress with washable cover,
- ¾ Length collapsible patient safety side rails,
- 4 corner bumpers and IV pole holders,
- Facility for drainage bag and IV rod storage,
- Large weight capacity,

Complete with:

- IV rod.
- Storage basket.
- Patient restraint straps.

ME0011	OXYGEN FLOWMETER, 0-15L/MIN.

- To fit oxygen cylinder. Incorporating reducing valve, cylinder content gauge.
- Flowmeter graduated in liters per minute at 1 liter intervals.
- Adjustable flow ranges 0-15 L/min.
- With adaptor to fit humidifier and detachable,

- Autoclavable humidifier.

Complete with spanner

ME0190	ROUTINE RADIOGRAPHY (X-RAY) SYSTEM

A radiographic floating table for general purpose radiography; to have the following features and specification:

Table

- Bucky table.
- Floating tabletop, with electromagnetic brakes.
- Integrated X-Ray tube column.
  - Rotation around the vertical axis: ± 90 degrees.
  - Vertical displacement: ≥ 225 cm.
  - Longitudinal displacement: ≥ 270 cm.
  - Electromagnetic brakes.
  - Manual collimator.
  - X-Ray Tube rotation: ≥ 120 degrees.
  - Manual collimator.
- Bucky unit, including:
  - Grid ratio 12:1
  - Ionization chamber for automatic dose control
  - Suitable for cassettes from 13 X 18 up to 35 X 43 cm.

X-Ray Generator

- Computer controlled.
- High frequency, converter type.
- Minimum nominal rating 50 kW: 600 mA. 125 kV.
- Automatic mains correction.
- Automatic exposure control digitally controlled.
- APR, Anatomic Programs.
- Safety system for X-Ray Tube heat and Overload.
- Digital display for all exposure parameters.

X-Ray Tube

- Speed: 3000 rpm.
- Focal spot: ≈ 0.6/1.3 mm.
- 17/50 kW nominal power rating.
- 150 kV.

Wall Bucky stand

- Counterbalanced vertical displacement, including:
  - Grid ratio 12:1
  - Ionization chamber for automatic dose control
  - Suitable for cassettes from 13 X 18 up to 35 X 43 cm.

Accessories

- Ratchet Compressor.
- Lateral Cassette Holder.

Installation of unit is to be included. Supplier must provide all MEP requirements and shop drawings prior to install.

Radiation protection Screen, 200 x 220cm, with side wings:

Description: Floor mounted 2mm lead screen in laminated faced boards 200 x 220cm with one lead glass window of 60cm W x 80cm having 2mm lead equivalent in the top center, with one angled 2mm lead wing.

ME0192	MOBILE X-RAY UNIT

To have the following features and specifications:

Generator

- High frequency, converter type.
- Micro processor controlled.
- Automatic mains voltage compensation.
- 3 to 20 kW nominal output.
- Up to 110 kV max.
- Up to 300 ma.
- Timer 0.003 to 5.0 s.
- Digital display of exposure parameters.
- Mains supply 220 volt, 50 Hz.

X-Ray Tube

- Single tank type.
- Single focus.
- Fixed anode.
- Light beam collimator with halogen lamp and measuring tape.

Stand

- Articulated counterbalanced type column.
- Parking position for the articulated arm for transport.
- Base height: to be specified.
- Maximum height for transport to be specified.
- Maximum width for transport to be specified.
- Weight to be specified.
- Radiation protected cassette compartment for up to 5 cassettes "36 cm x 43 cm".
- To come with operator's protective lead apron.
- Power supply: 220-240V, 50 Hz.

ME0196	FLUOROSCOPY –RAY C-ARM

To have the following features and specifications:

X-ray generator

- X-Ray Generator: DC Converter, Constant Potential.
- Radiography: 20 mA, 110 kV.
- Fluoroscopy 0.10 mA to 7.0 mA, 110 kV.
- Fluoroscopy Modes: high definition, continuous and pulsed.
- Automatic/manual density control via kV and of mA.
- $\leq$ 0.6/1.4 mm focal spot X-Ray Tube with automatic changeover
- for small focus in fluoroscopy.
- Iris shutters for fluoroscopy automatically selectable.
- Fluoroscopic Patient Radiation Dose Display.

C-arm

- Fully balanced system.
- Height adjustable $\geq$ 50 cm motorized.
- Horizontal movement $\geq$ 20 cm.
- Scanning horizontal plane $\geq$ 20°.
- C arm rotation $\pm$ 180°.
- C arm Angulations “Orbital movement” $\geq$ 200°.
- SID $>$ 95 cm.

I.I. TV system

- 9 in H.R. Image Intensifier with fiber optic coupling.
- I.I. Magnification 9 in, 7 in and 5 in fields.
- Image Rotation $\geq$ 360°.
- Circular Grid R 1:10.
- High resolution, Solid State Digital CCD camera.
- AGC Automatic Gain Control.

Display monitor

- One 17 in, H.R. monitor.
- AEC “Automatic Brightness Control”.

Digital processor

- Multi-Patient Date Base.
- Solid state full frame memory for at least 16 images, upgradeable.
- Real time Digital Imaging processing for edge and
- Contrast enhancement.
- Recursive Filtering for Noise Integration.
- Last image hold.
- Multi Patient Data Base.

Fluoroscopy

- Continuous Fluoroscopy
- Pulsed Fluoroscopy
- Snapshot
- Subtracted Fluoroscopy

Connectivity

- Full DICOM Connectivity Package

Accessories

- Universal, Rotatable Cassette-holder for the II.
- Set of 5 sterile covers for the C-Arm, Tank unit and the II tube.
- To come with operator's protective lead apron.
- Power supply: 220-240V, 50 Hz.

ME0180	PORTABLE ULTRASOUND UNIT

Portable general purpose ultrasound system which can support applications such as Abdominal, Obstetrics/Gynecology, small parts, endocavity; to the following features and specifications:

- User interface: Keyboard, key panel, trackball
- 2-probe selector & one for pencil probe and support the following probes: Convex, linear, sector, endo cavity and pencil probe.
- A 12" video monitor that shall have adjustable height swivel and twist movements.
- Power system
- B/W and color printer and DVD
- Compatible Cart

The following specifications should be included:

- DICOM compatible.
- Application: Abdominal, OB/GYN, breast, small parts, endocavity.
- Imaging modes: B mode,
  M mode
  BM mode

- Doppler imaging modes PWD (Pulsed Wave Doppler)
  CWD (Continuous Wave Doppler)
  CDI (Color Doppler Imaging),
  Doppler Color Flow mapping CFM or power Doppler imaging
- Display function: Cine loop playback mode covering several seconds as well as freeze frame capability, depth change and zoom magnification.
- Analysis package including but not limited to: OB/GYN scanning.

- Image storage: Built in HDD, USB memory, DVD-CD.

- With the following multi-frequency or broadband probes:
  Convex probe
  Linear probe

Endo vaginal probe
Pencil probe

- Display at least 64 shades of grey and the scan converter will be 512 x 512 x 6 bits.
- Shall have at least 8 independent TGC controls plus general gain and dynamic gain adjustments.
- 8 Post processing programs.
- Additional display functions shall include at least 4 circumference or area calculations, gestational and obstetric reports, velocity, volume and heart rate calculations.
- Power supply: 220-240V, 50 Hz, and battery.

ME0199	FILM PROCESSOR-DARK ROOM ACCESSORIES

Automatic x-ray film processor that provides fully processed, dry, ready to read X-ray films; to have the following features and specifications:

Processor Specifications:

- Capacity per hour approx. 150 films in various sizes.
- Processing time 90 seconds
- 10 x 10cm up to 35 x 43cm film sizes.
- Operation with ambient incoming water temperature.
- Built-in automatic stand by control to save power, water and reduce processor wear.
- Developer temperature control.
- Automatic replenishment of fixer and developer to maintain high quality processed films.
- Replenishment tanks for fixer and developer.
- Floor standing.
- Power supply: 220-240V, 50-60 Hz.

Identification camera Specifications:

- Identification camera for recording hospital data, patient data and date in full room-light
- Camera should be suitable for normal window type cassettes.
- Built-in digital display should simultaneously indicate the date of identification.
- The intensity of the exposing light in the camera should be adjustable (to various film sensitivity).
- Power supply: 220-240V, 50-60 Hz.

- Both items are to be delivered with all necessary accessories and manuals.

Dark room accessories:

Cassettes

Cassettes with rare earth screens, window type for day light identification:

- 5 x 18cmx24cm.
- 5 x 24cmx30cm.
- 5 x 30cmx40cm.
- 5 x 35cmx35cm.
- 5 x 35cmx43cm.

Accessories

- Safe light for dark room incl. of filter set.
- Screen cleaner.
- Clip R, L , AP , PA
- Working table made from chrome nickel steel 1200x600mm

ME0191	PANORAMIC X-RAY

Panoramic dental imaging unit to have the following features and specifications:
Generator

- High frequency, Converter type.
- Micro-Processor controlled.
- Automatic mains voltage compensation.
- Up to 80 kV. Up to 14 ma.
- Automatic kV rise for spine density compensation.
- Pre-programmed and manual technique.
- Automatic mains compensation.

X-Ray tube

- Single tank type.
- Single focus.

Stand

- Suitable for standing and sitting patients.
- Vertical movement of the imaging system from 95 cm to 180 cm. fully counterbalanced.
- Motorised positioning device with light indication for optimum positioning.
- Flat metal cassette 15 x 30 cm with rare earth screens..
- Computer controlled multi-projection modes:
    - Standard projection
    - Children projection.
    - Orthogonality projection.
    - TMJ bi-axial projection.

Tele-Radiography

- Cephalostat suitable for flat cassettes18 x 24 cm.
- S.I.D 150 cm.
- Exposure time from 0.16 sec to 2.5 sec.
- Standard cassettes 18 x 24 cm with rare earth screens.
- Power supply: 220-240V, 50-60 Hz.

ME9988	AMBULANCE

To have the following features and specifications:

Vehicle and chassis:

- Van suitable to be converted to an ambulance,
- Long body approx. 5 m,
- High internal roof approx. 2.3 m,
- Width approx. 2 m,
- Body paint: white,
- With all round windows,
- Motor engine: 4 cylinders, 16 valves, approx. 2.5 L,
- 4 wheel ABS,
- Fuel injection,
- Power steering,
- Manual transmission 5 speeds,
- Runs on unleaded gasoline.

Interior:

- Isolated wooden floor (marine plywood grade),
- Floor covered with washable non-slip materials,
- Interior walls to be covered with ABS plastic panels,
- Partition between driver and care sides to be a sliding window (middle center),
- Small medication and instruments cabinet with shelves made from high quality laminated plywood and Plexiglas sliding doors,
- A bench with back rest for 2 EMTs to the right of the patient area, with storage compartment under lid,
- Upholstered foam mattress with washable cover,
- Seat belts for each EMT,
- 2 Oxygen cylinders- E-size holder,
- Fluorescent Lighting fixtures on the ceiling,
- Serum hanger above patient side (facing EMTs bench),
- Fire extinguisher holder one at driver's side and one in back compartment,
- Inflow /outflow fan fixed in roof for ventilation on compartment,
- Sanitary system with 20 L clean water tank stowed under bench,
- Portable stretcher (spine board) holding brackets,
- Stretcher securing mechanism (brackets),
- One 12 volts DC outlet,
- Siren and public address system at the driver's console,
- 2 way intercom.

Exterior

- Rear projector (loading light) 55 W,
- Flashing Light system dome beacon or bar type fixed on roof,
- Patient side windows to have glazed opaque screen,
- Logo of Cross and Crescent, and labeling "Ambulance" and "Wadi Khaled Social Services Center" in English and Arabic in reflective adhesive material.

Medical equipment and supplies:

- 2 x 2 Kg fire extinguishers,
- 2 x E-size aluminum oxygen cylinders, with flow meter and mask,
- Immediate Emergency Response Care Pack (professional trauma bag with supplies),
- Burns kit,
- Blankets,
- Retraining belts,
- Splints set (2 x 22 cm, 2 x 45 cm and 2 x 90 cm)
- Resuscitation equipment including Ambubag, laryngoscope, ophthalmoscope and defibrillator,
- Flashing Light system dome or bar type fixed on roof,
- Patient side windows to have glazed opaque screen,
- Spine board with restraints,
- Foldable heavy duty and light weight cot type patient stretcher, with body straps, 12 cm thick mattress with washable cover, in floor fasteners,
- Portable vital signs monitor (NIBP, SPO2, Temp),
- Manual sphygmomanometer,

- Removable and washable tray, made from durable materials,
- Battery powered.

ME7676	DENTAL UNIT COMPLETE

Complete dental treatment unit to have the following features and specifications:

- Dental chair:
  - Section with removable articulated head rest,
  - Adjustable position hand rests,
  - Hydraulic operation with back tilt and height adjustment,
  - Upholstered in impermeable washable material with chair mounted cuspidor,
  - Dental light, chair mounted,
  - Luminous intensity adjustable 8 to 40 Klux ,
  - Removable and washable light handles,
  - Floor control with presets of dental chair movements.

- Cart dental surgeon:
  - Chair mounted with floor fed services.
  - Instruments console to include:
    - Two air turbines : One normal, one with micro-head,
    - 1 micro-motor hand piece with spray. High-speed with contra angle,
    - 1 micro-motor hand piece. Low speed with contra angle,
    - 1 straight hand piece,
    - Ultrasonic descaler,
    - Chip blower in 1 Syringe, heated.
  - mayo tray top,
  - Integral air pressure gauge,
  - Water coolant adjustment foot control,
  - Dentist’s tool panel can be supplied as an integral part of the dental chair,
  - Foot control for dentist’s tools to be incorporated.

- Cart Assistant:
    - Mobile with wall or floor fed services, with saliva ejector hose,
    - High volume evacuator,
    - in 1 Syringe,
    - Mayo tray,
    - Assistant's tool panel can be supplied as an integral part of the dental chair.
- Suction unit,
- Air compressor (quiet),
- Dental surgeon's stool,
- Assistant stool,
- Power supply: 220-240V, 50-60 Hz.

All hand pieces and compatible burs shall be stainless steel, heavy duty, ergonomically designed and fully autoclavable. They will be chosen by dental staff during purchase.

All pre-installation civil, electrical and electromechanical works should be included.
Dental X-ray Unit, Wall Mounted:

Dental X-Ray apparatus for intra oral radiography to have the following features and specifications:

- Wall mounted on counterbalanced articulated arm,
- Microprocessor controlled,
- With preprogrammed exposure parameters,
- with digital display of settings,

System Specification:

- Single tank type.
- Tube head rotation:
    - 270° swing in the vertical plane.
    - 360° continuous rotation.
- Fixed rating 65 kV, 7.5 mA.
- 2 mm AL. equivalent inherent filtration.
- Open ended, lead lined cone:
    - 20 cm long.
    - 6 cm diameter.
- Electronic timer: +/- 80 to 2500 ms.
- Automatic power compensation.
- Power supply: 220-240V 50 Hz.

LB0800	ROUTINE MICROSCOPE

A professional binocular analog compound light microscope, digital ready for general medical laboratory applications; to have the following features and specifications:

Body

- Heavy duty frame (die cast metal)
- Anti-Mold design and finishing.
- Min. quadruple revolving objective nose piece (turret). 360° rotation

- Smooth ball bearing mechanism
- Stage with rack and pinion
- Tension adjustment mechanism
- 45° or 30° inclined body
- Spring loaded clips to hold slides.
- Slide guard system
- Min. 12 x 12 cm mechanical stage with drive controller
- X-Y coaxial controls

Illumination

- Min. Long life 12 V, 20 W Halogen Bulb
- Min. 1.25 ABBE condenser
- Adjustable height condenser with mounts for bright field, phase contrasts and dark field.
- Iris diaphragm
- Filters: All necessary filters for routine work.
- Fixed intensity illuminator.
- Easy lamp replacement

Focusing

- Fine and Coarse focusing
- Focusing knob on each side.

Optics

- Twin eye pieces: 10 X with 20mm FOV and 22mm eye relief.
- Color coded Plan-achromatic DIN type or equivalent objectives:
    - Magnification: 4 X, 10 X & 40 X.
    - Magnification: 100 X (oil immersion)
- Objectives interchangeable. (Can fit other type of objectives)
- Infinity corrected optics.

Digital specifications

- Configured to connect to digital camera or video camera via adapters (not included)

Accessories

- Comes with power cord, Carrying case, Antistatic pad, dust cover, spare halogen light bulb, oil bottle & cleaning kit.
- User manual
- Power supply: 220-240V 50Hz.

LAB0106	ELISA WASHER & READER

ELISA reader and washer for detection of immune responses, Antigens and Antibody testing; to have the following features and specifications:

- The apparatus shall read plates with 24,48 and 96 holes.
- Micro-Elisa reader shall be capable of reading at various modes.
- The apparatus shall be capable of formula and cut-off arrangement.
- The linear measurement interval, and resolution of the apparatus shall be 0-3.00 absorbent unit (A) and 0.001 A respectively.
- The apparatus shall contain filters with the standard interval of 405-630 mm; and such intervals may be increased up to 340-700 mm when required.
- The apparatus shall be capable of reading the result of 92 holes in a maximum duration of 2 minutes, and have the results written.

- The apparatus shall be micro-processor controlled, and have a RS232 outlet a kinetic ELISA program shall be provided with the apparatus.
- A continuous power source capable of feeding the reader and washer up to one hour, shall be provided together with the apparatus.
- ELISA washer which shall be provided with the apparatus must have the following specifications:
- It should be fully automatic.
- It should be capable of washing microplates with 16 holes.
- It should have more than 20 different washing programs.
- It should be capable of making double aspiration, bottom washing and agitating.
- The volumes of the washing and agitating bottles shall be at least 2 L.
- The volume of hole washing should be adjustable for required quantity.
- It should be capable of performing cross-aspiration.
- The flow rate of the washing solution should be adjustable.
- It should have agitating and non contamination programs.
- The following items shall be provided with the apparatus:
- Inner pressure and vacuum pumps.
- Washing, agitating, and waste bottles
- Maintenance kit and extra fuse.
- Power supply: 220-240V, 50 Hz.

LB0030	INCUBATOR

To have the following features and specifications:

- Capacity approx. 200 liters,
- Chemical and moisture-resistant chamber,
- Digital electronic control continuously displaying chamber,
- Temperature,
- Capable of operating in the temperature range ambient +5 °C to ≥ 70 °C,
- Fitted with inner glass door,
- Fitted with a circulating fan,
- Temperature fluctuation at 37 °C ≤ ± 0.5 °C,
- Temperature Control at 37 °C ≤ ± 0.2 °C,
- Over Temperature safety cut-out,
- Supplied with a minimum of 4 shelves.
- Power supply: 220-240V 50Hz.

LB0020	HOT PLATE-STIRRER

To have the following features and specifications:

- Ceramic top
- Chemicals resistant and easy to clean.
- Holds loads up to 10 L.
- Microprocessor controlled operations.
- LCD display for parameters.
- Control knobs for speed and temperature.

- Speed (stirrer) from 0 to 2000 rpm
- Regulated temperature up to 450ºC.
- Plate size: approx. 20 x 20 cm.
- Delivered with temperature probe, probe holder, retort rod and stir bar.
- Power supply: 220-240V 50Hz.

LB0021	WATER BATH 10 L

To have the following features and specifications:

- General purpose laboratory water bath.
- High grade stainless steel chamber and perforated stainless steel sample tray.
- Seamless contraction to guard against leaks.
- Poly-carbonate, see-through, removable cover.
- Integrated power stirrer for bath uniformity.
- Digital temperature display
- Low liquid level, over temperature safety cut-out device.
- Tank capacity: 20- 25L.
- Temperature range: 5oC above ambient – 100oC.
- Uniformity ± 0.1°C at 37°C
- Power supply: 220-240V 50Hz.
- To be delivered with necessary accessories.
- Safety features to be specified.

LB0010	CENTRIFUGE, BENCH TOP

To have the following features and specifications:

- Up to 6000 rpm,
- Digital and programmable,
- Built-in timer up to 60 min,
- Swing-out rotor, can accept 2 ml to 100 ml test tubes,
- Open door indicator,
- Imbalance cut off,
- Speed and time display,
- Power supply: 220-240V 50Hz.

LB0040	TUBE ROLLER MIXER

For smooth mixing of specimen for uniform suspension; to have the following features and specifications:

- Adjustable speed 2-60 rpm,
- Mixing by rotation,
- Adjustable mixing platform,
- 16 tubes capacity,
- Accept different kind of tubes (7ml, 10ml, 15ml… etc.),
- Power supply: 220-240V 50Hz.

LB0100	SEMI-AUTOMATED CLINICAL ANALYZER

Semi-automated Clinical Analyzer for small labs; to have the following features and specifications:

- Compact size,
- User Interface: 12.5cm Touch Screen or integrated alpha-numeric keyboard,
- Reaction Volume: 200µ| per minute,
- Data Display Reaction Curve, QC Record Parameter Setting,
- Reproducibility: Less Than 0.005 Abs,
- CV: Less Than 0.3%,
- Cross Contamination: Less Than 1%,
- Peltier Controlled Temperature RT, 25°C, 30°C, 37°C,
- Optional Disposable Cuvette,
- Monochromatic & Biochromatic Measurement,
- Measurement Procedures Absorbance, Double Wavelength, Endpoint, Enzymatic, Enzymatic Standard, Multi-standards, Kinetic, Nephelometry, Sample Blank, Two-points,
- Wavelength Range: 300-800nm ,
  Standard Preset: 340, 365, 415, 520, 545, 630nm,
- Light Source Halogen Lamp, 6V / 10W,
- Absorbance Range -0.3 - 2.5 Abs,
- Flow Cell 30µ| size,
- Ceramic Body Quartz Glass Window Flow Cell ,
- Reaction Volume 200-3000µ| / per tes,
- Storage Capacity>100 Test Parameters, 1060 Test Results, 31 Days QC Results,
- Data Output 320x240 dpi, LCD Graphics Touch Screen, 40mm High Speed Built-in Thermal Matrix Printer, RS232
- Power supply: 220-240V 50Hz

LB0101	FULLY AUTOMATED HEMATOLOGY ANALYZER 3 PARTS DIFFERENTIAL

To have the following features and specifications:

Up to 19 parameters with 3 differentials,
WBC,RBC,HGB,HCT,PLT,MCV,MCH,MCHC,RDW,MPV,LYM%,GRAN,MONO,
Screened and programmable,
Through put: 60 samples /h,
Whole blood sample aspiration,
Diluents pack include: Isonton, Lyse, Clenz and waste container,
Sample volume up to 100 ml from closed or open tube,
Possibility of micro-sampling and sampling from prediluted sample,
Built-in thermal printer,
LCD display,
External printer with color graph capability,

Automation of classical maneuvers:
Automatic dilution,
Automatic self check,
Automatic calibration,
Automatic rinse and clean after every sample,
Automatic cleansing of the probe.

Tests management software,
Flag indicators for anomalies,
Storage capability of up to 10 000 patients,
Possibility to transfer information via RS232 port or memory card,
Alphanumeric keyboard,
Power supply: 220-240V 50Hz.

LB0102	SEMI AUTOMATED COAGULATION ANALYZER

Coagulation analyzer to perform a variety of tests to detect abnormalities in normal blood clotting; to have the following features and specifications:

- Compact,
- User Friendly,
- 4 channel coagulation analyzer for analyzing up to 4 differential parameters simultaneously .
- Performs the following tests: PT, APTT, Fbg, TT and all factor assays should be possible on the coagulation analyzer.
- Coagulation tests to monitor the effects of drugs such as heparin, oral anticoagulants, and thrombolytic and antiplatelet agents, as well as the effects of blood component therapy.
- It should have the facility to store at least 4 reagents on board .
- It should do automatic mixing of the cuvette after the addition of the reagent, with automatic sensing of the reagent addition.
- It should be able to store standard curve with maximum points in it memory.
- The analyzer should have a built in display and a built in graphic printer.
- RS232 connection,
- Automatically calculates results related to the stored calibration curves with the corresponding units, activity and international normalized ratio (INR).
- Power supply: 220-240V 50 Hz.

LB0105	SPECTROPHOTOMETER

For various routine clinical tests; to have the following features and specifications:

- Bandwidth: nominal, 5 nm.
- Wavelength range: 300 - 1000 nm approx.
- Wavelength accuracy: ± 2 nm.
- Scanning wavelength resolution: 2 nm.
- Photometric accuracy: 1 % at 1A.
- Sample compartment with cell holder accommodating 6 positions.
- Compartment temperature range 15-50 º C.
- Automatic wavelength setting.
- Automatic filter selection.
- Reads: Absorbency, transmission, factor values and concentration.
- Controlled by built in microprocessor.
- Data input via integrated keyboard.
- Large LCD display.
- RS-232C interface and port for printer.

- Multi-language software.
- Power supply: 220-240V 50 Hz.

LB8080	BIOSAFETY CABINET CLASS 2 SMALL

To have the following features and specifications:

- Floor standing class 2 type A.
- For the safe handling of groups, 1, 2 and 3 pathogens.
- Compact single operator size (width max. 120 cm)
- Open fronted model.
- Steel construction with epoxy finish.
- Front viewing screen to be of toughened glass.
- Controls to be external.
- Controls to include on/off fan switch, on/off light switch, air velocity indicator, power on lamp,
- Hazard alarm.
- Exhaust air to be 99.99% HEPA filtered prior to being discharged. Air to be drawn through the filters by a fan mounted at the end of the ducting.
- Inward air velocity at front opening to be 0.75 m/s,
- Two Ultra- Violet lamps approx. 30W.
- Provided with complete set of service fixtures.
- Dimensions approx. 1400x 1200x 800 (H W D)
- Power supply: 220-240V 50 Hz

LB0041	VORTEX MIXER

To have the following features and specifications:

- Variable speed control
- Touch or continuous operation
- Provided with standard rubber cup head for test tubes.
- Controllable speed up to approx. 2000 RPM.
- Power supply: 220-240V 50hz

LB0600	PIPETTES SET (5)

To have the following features and specifications:

- Set of 5 variable volume micropipettes.
- Single hand operation, thumb action.
- Light weight and air tight design.
- Piston controlled pipeting.
- Separate tip ejector button.
- Pre-calibrated with calibration certificate.
- Set to include the following sizes:
    - to 10 µl
    - to 25 µl
    - to 100 µl
    - 100 to 250 µl
    - 250 to 1000 µl.
- Approx. dosage precision of the above capacities respectively: 1.5%, 1%, 0.8%, 0.6%, 0.5%.
- Color coded for easy size identification.
- Accessories to include: pipette rack, box of tips (1000 disposable) for each specified size.

OE5654	VACUUM CLEANER WET/DRY

- Wet/dry pick-up
- Tank capacity : 15-25 liters
- Motor power : 1000-1200 watts
- Complete tool sets for dry and wet cleaning.
- Hose vacuum 2-3 m.
- Power cable min. 15m.
- Power supply: 220-240V 50 Hz.

MF0011	TROLLEY SOILED LINEN, SINGLE WITH LID

- Ring (Circular)design,
- Ring diameter 60 cm,
- Durable Tubular steel construction,
- With stable M shape base,
- Chrome lid pedal activated,
- Capacity up to 120 liters.
- Mobile on heavy duty castors (4) with brake,
- Comes with compatible hamper bag (washable),
- Can also accept commercially available plastic bags.

MF0010	STEP ON 15 L WASTE BIN WITH LID

- Made of durable PVC,
- Washable,

- Capacity 15 liters.
- Strong pedal mechanism activates opening and closing of lid,
- Lid attached by heavy duty hinges,

MF0100	DOUBLE STEP STOOL

- Tubular mild steel construction,
- Steps are made of mild steel sheets lined with non-slip tread,
- Electrically welded joints,
- Chrome finish,
- Extra wide and deep steps,
- Rubber feet for extra stability,
- Load capacity ≥200 Kg.

MF0028	PLASTER CART

This mobile cart plaster is made of durable high quality SS and includes:

- 5 Drawers of approx. 150 mm height.
- 1 Drawer, of approx. 300 mm height.
- Work top of chrome nickel steel with run around profiled edge.
- 1 Extension plate approx. 500 mm, folding down type.
- 1 Holder with removable plaster bowl approx. 30 x 320 x 200 mm
- Complete with one large cast spreader and one small cast spreader.
- Dimensions: Approx. 900 x 600 x 800 mm.

MF0022	BOWL STAND, DOUBLE, SS

Unit made durable high quality SS with:

- Two detachable SS bowls,
- Supported on four large swivel anti-static wheels (50 mm dia.)
- Bowl diameter 300 mm approx.
- Stand height approx. 800 mm.

MF0020	SS TREATMENT AND DRESSING CART

- Mobile cart mounted on 4 swivel castors with bumper protectors and 2 with brakes.
- Made from high quality durable SS,
- 1 upper shelf, with up-stand on 3 sides.
- With 1 drawer approx. 20 cm high,
- Under shelf with up stands on 4 sides,
- Dimensions: approximately 1100 x 600 x 700mm. (HxWxL)

MF0027	MAYO TABLE

- This Mayo table is made (frame and table) durable high quality SS, with a hydraulic height adjustment supported on three antistatic swivel castors of 50 mm diameter.
- Table top 700 x 500 mm

MF0080	I.V. STAND MOBILE

- Constructed from high quality and durable SS,
- Shaft mounted on 5 star castor pedestal frame,
- 2 hooks model,
- height adjustable,
- Swivel castors to be electrically conductive.

MF0901	MANUAL OB-GYN EXAMINATION TABLE

To have the following features and specifications:

- Three sectioned,
- Heavy duty constructed examination table,
- Tubular steel frame, chrome plated or with epoxy finish,
- Back rest adjustable by means of tooth rack or other suitable mechanism,
- Upholstered with washable vinyl cover,
- Built-in examination paper roll holder at head of table,
- Fold-down and removable leg section,
- Two height adjustable leg supports with positioning clamps,
- Comes with compatible SS collector bowl on swinging support and retractable beneath the table surface,
- Dimensions approx. 190 x 65 x 80 cm. (LxWxH)

MF0021	KICK BUCKET

To have the following features and specifications:

- Made from durable SS,
- Removable seamless bucket (pail) with handle,
- Carriage ring mounted on four anti-static swivel castors,
- Bucket capacity approx. 10 L.

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