



Project Report

Breaking the Wall with Telemedicine

Implementing an eHealth network between
the National Rehabilitation Hospitals
in Palestine

Authors:

Tove Sørensen
Jan-Hugo Olsen
Øyvind Brustad
Onar Aanestad

“Our needs are simple – we need to see and communicate”

Acknowledgements

We would like to express our thanks to Innovation Norway and The Norwegian Association of the Disabled / Atlasalliansen for their contribution to this feasibility study. Without their interest and support, the study would not have been accomplished.

Table of Contents

BACKGROUND 3

SCOPE AND PURPOSE 3

CONDUCTING THE STUDY 4

DISABILITY AND REHABILITATION IN PALESTINE 5

 THE REHABILITATION PROGRAMME 5

The Sunnaas Quality development project in Palestine – status and perspectives..... 6

Jerusalem Centre for Disabled Children (JCDC) 6

Bethlehem Arab Society for Rehabilitation (BASR)..... 7

Khalil Abu Raya Rehabilitation Centre, Ramallah 8

El Wafa Medical Rehabilitation Hospital, Gaza 8

SUMMARY NEEDS’ ASSESSMENT (TABLE) 10

TELECOMMUNICATION 12

General impression on the overall Technical Infrastructure 12

Existing infrastructure between the national rehabilitation hospitals..... 12

 IN-HOUSE TECHNICAL INFRASTRUCTURE - OVERVIEW 13

CONCLUSION AND RECOMMENDATIONS 14

ANNEXES 15

Programme of the visit 15

Palestine background information 16

Sunnaas Rehabilitation Hospital..... 17

NAD/Diakonia 18

Innovation Norway 18

Norwegian Centre for Telemedicine..... 18

Background

K. Abu Raya Rehabilitation Centre in Ramallah, Bethlehem Arab Society for Rehabilitation in Beit Jala, Jerusalem Centre for Disabled Children in Jerusalem and El Wafa Rehabilitation Hospital in Gaza City constitute the four rehabilitation hospitals in Palestine. They are an important part of the national rehabilitation sector and the only providers of specialized rehabilitation services to disabled Palestinians in the West Bank, Gaza and Jerusalem. The hospitals have divided the specialties between them and are all part of a national referral system.

The political situation in Palestine with road-blocks and difficulties to obtain travel permissions make it very difficult or even impossible for the professionals at the four hospitals to meet and to make use of each other's expertise and experience. The travel constraints also apply to patients who have difficulties going to the hospital which is specialized according to their needs. This makes any real cooperation and coordination almost impossible, and as a consequence hinders the development of a unified rehabilitation system on a national level. It also increases the general feeling of isolation and separation both inside Palestine as well as between the West Bank and Gaza.

In order to develop the quality of the services, the hospitals depend on professional cooperation with similar rehabilitation hospitals around the world. However, international experts are hesitant to visit Palestine. If they come, the visit to the West Bank and Gaza can be stopped due to lack of entry permits or due to occurring travel restrictions. As a consequence, the visit might be partly or fully cancelled which leads to a stressful situation for everyone involved. The costs for the visiting professionals must still be covered even if the trip is not completed.

Coordination and cooperation between the four rehabilitation hospitals has become increasingly difficult since the start of the last Intifada in 2000. The four hospitals approached the Norwegian Centre for Telemedicine (NST) through the Norwegian Association for Disabled (NAD) to investigate the possibilities to establish a telemedicine/ eHealth network to help them overcome the isolation due to travel restrictions. Telemedicine or eHealth is understood as the use of telecommunications to provide medical and health care at a distance, distance education and supervision included.¹ Telemedicine applications are neither new services nor new technologies in themselves, but rather *tools for improving or extending health care services*. In this study, our focus has been on communication between health care institutions and personnel.

Scope and purpose

The aim of the study was to investigate the needs and possibilities for establishing an eHealth network between the four rehabilitation hospitals in Palestine. In addition, the need for being connected to rehabilitation hospitals abroad was investigated. A needs assessment in the four hospitals was undertaken, and the available telecommunication infrastructure in Palestine was studied.

¹ In the following we will use "eHealth" for the sake of simplicity.

The Norwegian government aims to increase the activity on areas where Norwegian technology is especially relevant for developing countries. Telemedicine and distance learning are mentioned as two examples of such technology². In the same White Paper, the Norwegian government stresses the aim to increase the participation of trade and industry in development cooperation. Perhaps more than anywhere else in the world, eHealth or telemedicine can contribute to both of these goals in Palestine, while at the same time, this can be used to ease the difficult situation caused by a political conflict in which Norway is already heavily involved.

Conducting the study

The visit to Palestine was funded by Innovation Norway and the Norwegian Association of the Disabled. The feasibility study was conducted 12-18 September with a team of four persons from NST, Sunnaas and NAD:

NST	Jan-Hugo Olsen, Technical consultant Tove Sørensen, Head WHO Collaborating Centre for Telemedicine
Sunnaas	Øyvind Brustad, Technical consultant
NAD	Onar Aanestad, Local representative

There were initial discussions and a preparatory process in each hospital over a period of more than six months through the local representative of NAD. The team visited all four hospitals as well as the major telecommunications providers. The hospital visits lasted approximately four to five hours included a short tour around the departments. The concept of eHealth was explained during an introductory presentation. In the discussions the needs and expectations were discussed and prioritised. The first draft of the project report was sent to the hospitals for their approval regarding needs and updated description of the hospitals. Each hospital nominated a contact-person responsible for the follow-up communication between the team and the hospitals.

The contact-persons are:

JCDC:	Salwa Abed-Rabbo, Director's secretary
BASR:	Wael Zeit, Technical engineer
Abu Raya:	Ola Diab, Head of development and Public relations Dept.
El Wafa:	Dr. Medhat Abbas, Director

The description of the hospitals are based on input from the Sunnaas reports (May 2003, Nov/Dec 2003)) and information provided in the meetings..

² White paper Nr. 35 (2003-2004) on development policy, "Fighting Poverty"

Disability and rehabilitation in Palestine

Palestine has one of the most progressive jurisdictions regarding the right for persons with disabilities in the society. The Law on disabilities was approved in 1999. Although there is still a long way to go, there have been very positive changes in the attitudes towards disabled people in Palestine and to their inclusion in the society during the last ten years.

The need for rehabilitation services in Palestine has increased over the last years for several reasons. There is an increasing number of disabled children due to the Intifada, traffic and work accidents, inadequate services, malnutrition, genetic dysfunctions due to high age of the others, endemic infections due to lack of vaccines, accidents, traumas and deliveries at home. The tradition of marriage between close relatives is also resulting in that many children are born with disabilities.

According to the WHO-office for the Palestinian territories, rehabilitation is not a priority area of the Palestinian Ministry of Health but has been left to the NGOs to take care of. A national rehabilitation referral system is established, and there exists an agreement between the national rehabilitation hospitals to divide areas of expertise and refer patients. An agreement with the Ministry of Health covers part of the referral costs of the hospitals. The remaining costs of the patients have to be covered by the hospitals through donations.

The majority of the patients in Palestine are directed to the rehabilitation hospital with the right expertise. In the remaining cases, discussions and coordination between the hospital with the right expertise and the hospital where the patient is treated, is crucial to secure the appropriate treatment.

The Rehabilitation Programme

The Rehabilitation Program (RP) of the Norwegian Association of the Disabled (NAD) and Swedish Diakonia began as a co-operation between Palestinian NGOs providing rehabilitation services in 1989/90. In the early 1990s this co-operation developed into a long-term strategy aimed at strengthening the rehabilitation sector in Palestine as a whole. Since 1993, NAD/Diakonia's role has been to facilitate, co-operate and co-ordinate rehabilitation activities with a primary focus on Community Based Rehabilitation (CBR) as a means of promoting social inclusion of persons with disability. The Rehabilitation Programme in Palestine consists of distinct projects coordinated through a referral system with the dual aims of promoting social inclusion of persons with disabilities and increasing the quality of available services. CBR has since been adopted as a national strategy, providing 60-70% of rehabilitation services at the community level. Approximately 20-30% of services are provided at the regional level and 10-20% by specialist centres at the national level, which are intended to provide intensive, short-term rehabilitation services to disabled persons whose needs cannot be met at the community or district/regional levels. Support of centres providing specialized rehabilitation services that respond to the needs of the community is a part of the RP's holistic approach. The programme will implement activities aimed at further enhancing the quality of services provided by four such centres that are within the structure of the CBR program. This will, in turn, positively contribute to the continued development of the rehabilitation sector in Palestine in general.

Abu Raya, BASR, and JCDC are the three rehabilitation centres designated by the Palestinian Ministry of Health (MoH) as National Referral and Resource Centres for disabled people in

need of rehabilitation in Palestine within the structure of the Community Based Rehabilitation Program (CBR).

The Sunnaas Quality development project in Palestine – status and perspectives

Sunnaas Rehabilitation Hospital in Norway has cooperated with the Palestinian rehabilitation hospitals for almost two years to assess and develop a professional cooperation programme for improving the quality of the specialized services. The implementation of the proposed Quality Development Project is planned to start in January 2005 and to end in December 2006. Establishing an eHealth network between the hospitals and Sunnaas will be a tool to increase the quality of the services at hospitals, since the Sunnaas Quality development project will rely on intensive and regular follow up by video conference, e-mail and Internet between the planned visits.

Jerusalem Centre for Disabled Children (JCDC)

JCDC, founded in 1965, has been earmarked for serving disabled children in Palestine within the structure of the CBR program. The JCDC's main activities include the diagnosis, investigation, and formulation of treatment programs for disabled children with specialized needs. Services are provided primarily to children and young adults living in East Jerusalem and the central and northern areas of the West Bank (and Gaza when travel to Jerusalem is permitted) through the centre itself and its outreach clinics in Ramallah and Nablus, with the aim of integrating disabled children into their communities. JCDC actively involves family members as partners in the assessment, treatment and rehabilitation process. It also offers integrated educational programs for disabled children and vocational training opportunities for disabled adults in East Jerusalem. The JCDC has the only physician specialized in rehabilitation on the West Bank.



The JCDC's services are:

- Physiotherapy / hydrotherapy
- Occupational Therapy
- Recreational Therapy
- Psycho-social Therapy
- Special Education and mainly the Speech Therapy Unit which is a unique service providing treatment / education sessions to children post cochlear implant. Besides, the presence of the Orthopedic Workshop which is the biggest in East Jerusalem and the West Bank.

JCDC is participating in a EC funded project on ISO 2001 which will connect six big hospitals with the aim to extensive collaboration. Health Information System (HIS), personnel and economic systems will be part of this.

Bethlehem Arab Society for Rehabilitation (BASR)

BASR, originally established in 1960 as a home for disabled children and developed into a rehabilitation centre in 1988, provides intensive and comprehensive rehabilitation services for both children and adults with special needs at centralized and decentralized levels. It is the national referral centre for patients with brain trauma (CVA, TBI)³ and also treats orthopaedic injuries. The centre has 90 beds, five rehabilitation sections, one of which is for children with a variety of diagnoses. In



addition, there are four surgery sections; for orthopaedic and functional surgery, arthroscopic surgery, ophthalmic surgery and general and laparoscopic surgery. The rehabilitation departments serve both in and out patients. These consist of physiotherapy and hydrotherapy, occupational therapy, speech and language therapy, dysphagia unit, psychology and neuropsychology, social services, audiology, orthotics and prosthetics, and special education.

Today, no patients are being referred from Gaza due to the travel restrictions. As of September 2004, only 52 of available 90 beds for inpatients are in use. Other activities include day care provision for 700 children, some of whom are disabled, and the provision of in-kind technical AIDS such as wheelchairs.

The BASR has already plans for establishing a telemedicine unit. They have signed a contract with TelBios, an Italian company which will provide eight Palestinian hospitals with telemedicine units; six governmental hospitals, one Italian in Nazareth and BASR. The project will cover hardware, software and communication costs for one year. 6 ISDN lines will be installed for the system which main purpose is ophthalmology surgery consultations to San Rafael hospital, Milan, Italy. The system should be up and running on 30 September 2004. During the discussions, the question of interoperability was being addressed.

The centre has very advanced equipment and good localities. During the discussions, different application like tele-radiology and support to the new ortopedic-surgery hospital, were discussed.

³ CVA = cerebralvascular accident (stroke); TBI = traumatic brain injury

Khalil Abu Raya Rehabilitation Centre, Ramallah

Abu Raya (KARRC) became Palestine's first rehabilitation centre in 1990 as a result of Swedish financial and technical support. Today, the staff is 100% Palestinian. KARRC is the national centre for adults and children with spinal cord injuries (SCI) and spina bifida (SB). It also treats patients with brain injuries. This centre is currently developing two new projects, a surgical/orthopaedic inpatient unit for children and a school for rehabilitation nursing.



The average length of stay is 6-7 months for paraplegia and 9-12 months for tetraplegia. The centre has 120 employees covering all areas of rehabilitation; OTs, PTs, physicians, nurses, social workers, and a total of 65 beds. The centre is experiencing an increasing length of stay due to complications with bed sores and contractures, mainly because of waiting lists 1-2 months. It was also problems finding financial resources to get the patients back into the community. Another problem is also the follow-up of patients due to transportation problem, and even a problem for the staff to travel to and from work. Also in this patient group they reported an increasing number of complications and difficulties in follow up in the community.

Two new buildings are under construction, one will have an assembly hall with 150 seats. There is a library with Internet access for patients and staff. All departments have PCs connected into a network for sharing documents. A patient information system (Electronic Health Records) is under development.

El Wafa Medical Rehabilitation Hospital, Gaza

El Wafa, established in the 1980s as a centre for elderly people, has since 1996 been the only centre in Gaza specializing in rehabilitation medicine. It has 52 beds, mainly for patients with stroke, head injuries and spinal cord injuries, and two outreach programs in Rafah and Khan Younis. Despite the central role El Wafa plays in providing rehabilitation services in Gaza, it has no specialists in rehabilitation among its medical staff situation, and due mainly to the political situation, has few possibilities for input and/or exchange programs with the other centres in Palestine. In addition, it often receives referrals of patients who are too sick to benefit from its particular services and who require extensive medical care in addition to rehabilitation



interventions.

All treatment is free for the patients, covered by the Ministry of Health and NGOs. The total number of staff is 260 people, 150 of them being inside the hospital. The average length of stay for patients is 45 days. El Wafa has app 100 PCs around the hospital, most of them with Internet access. A patient information system (EHR) is under construction (proprietary solutions developed within the hospital). At the moment they keep the files digital and paper-based.

There are plans to open an Orthopedic surgery dept with six beds for one-day surgery (September 2004). El Wafa seems to have some equipment not being used because there is no-one who knows how to operate the system. El Wafa is the only hospital in Gaza certified to give medical students training in rehabilitation.

Summary needs' assessment (table)

Based on the discussions with the hospital groups, the needs for an eHealth network is summarized in the table below.

Activity	JCDC	BASR	Abu Raya	El Wafa
Regular management meetings	X	X	X	X
Regular MD sessions, offline and online	X	X	X	X
Regular OT sessions, offline and online	X	X	X	X
Regular PT sessions, offline and online	X	X	X	X
Regular nurse sessions, offline and online	X	X	X	X
Regular psychology sessions, offline and online	X	X	X	X
Regular social worker sessions, offline and online	X	X	X	X
Regular contact with David Henleys hospital in Uppsala, Sweden	X			
Regular video conferences with Sunnaas		X	X	X
Case discussions with the other Palestinian rehabilitation hospitals and/or foreign hospitals, also by use of VC facilities all over the West Bank	X	X	X	X
Discharge preparations with the other hospitals and/or the CBR program	X	X	X	X
Professionals meeting places for increased communication and contact on the production of prosthetic devices (only two places: Jerusalem and Bethlehem)	X	X		
Research cooperation, comparative study between JCDC, Jordan and Israel	X			
Psychological testing, cognitive assessments online		X	X	
Consult on referral cases where the patient is prevented from being admitted at the correct rehabilitation hospital	X	X	X	X
Lectures from Sunnaas to one or more the rehabilitation hospitals	X	X	X	X
Master program lectures and perhaps also distant learning, to Gaza from Australia, UK, Canada and Norway (Sunnaas)				X
OT Education Bethlehem/West Bank – Gaza, distant learning and VC (cooperation with the Norwegian OT Union and the University in Bethlehem)				X
Role modelling	X	X	X	X
Income generation by renting out video conference equipment	X	X	X	X
Updated information on rehabilitation news	X			X

(universities and industry).				
Training in taking urology tests, using the fluoroscopy x-ray				X
Meetings between patients in the same situation				X

Telecommunication

In order to find out as much as possible about the current infrastructure, the team had meetings with three suppliers of infrastructure (backbone networks/Internet Service Providers) in addition to a meeting with the British Council. The British Council is a large customer and has built up their own video-conferencing facilities in Jerusalem, Gaza city and Ramallah.

The following companies were included in the visit:

Palnet	Internet Service Provider (ISP), providing leased and ISDN lines.
PalTel	Supplier of infrastructure, backbone, and related services
Palestine Online	Internet Service Provider (ISP), providing leased and ISDN lines.

All companies were willing to collaborate with the project and will provide an offer based on our requirements in due time.

General impression on the overall Technical Infrastructure

The information given to us varies, both when discussing technical issues and economy. There seem to be a certain degree of uncertainty of what technical solutions can be provided. The monopoly situation favouring PalTel, and the fact that the companies have to trust the Israeli communication supplier, Bezeq, for the actual backbone networks, makes the situation unclear and Palestinian telecommunication services several times more expensive than the Israeli. In many cases it seems that monthly fees will have to be paid both to the Palestinian and the Israeli companies.

Existing infrastructure between the national rehabilitation hospitals

Today, there is no communication means between the rehabilitation hospitals except for telephone and e-mail. This means that we actually are trying to establish the first Palestinian Health Network. PalTel gave us the impression that connections to the hospitals will be prioritized. This may also affect the costs in a positive way.

We have confirmed information that the backbone network is based on fibre optics both on the West Bank and between the West Bank and Gaza. The stability of the fibre to Gaza is highly dependent on the owner of the fibre, which is Bezeq. However, there is established a backup system via wireless communication from Hebron to Gaza.

Except for the Jerusalem areas, there are two possible communication methods available. These are ISDN and leased lines. Leased lines can be based either on Frame Relay or TDM, (Time-Division Multiplexing).

The Jerusalem area is well equipped with low cost ADSL lines. We have not been able to get any accurate information whether or when ADSL will be available in Bethlehem, Ramallah and Gaza. This means that we initially will have to use leased lines with the possibility of converting to ADSL at a later stage.. ADSL would be the best option as the monthly fee for a given bandwidth is much lower than the alternatives.

In-house technical infrastructure - overview

The presence of in-house data infrastructure (Local Area Network – LAN) at the four rehabilitation hospitals varies. At present, all hospitals have established LANs to a certain extent. We were not able to find out the capacity and quality of these networks. This must be further investigated because the capacity of the local network is essential when using videoconference over these lines. Furthermore, the security policies and the structure of local firewalls must be clarified. In principle the use of videoconference over broadband (IP) will share the same physical lines and connections as other computer traffic. It is important that the network is structured in a way makes any interference as small as possible.

Health institutions in Palestine are obliged by law to keep patient information in the hospitals. If patients move, they can require a report from the institution, but not their full file. Regarding the issue of Patient Health Records, the situation varies between the hospitals. Princess Basma and Bethlehem have paper-based files today, but they have concrete plans for introducing an electronic patient information system. In Abu Raya and El Wafa, electronic health records (EHR) are being developed. Both EHR-systems are proprietary and designed within each hospital (no standard solutions).

The table below summarizes the current status for the four rehabilitation centres.

Name	Location	In-house network	External network – Internet access	Existing equipment
JCDC	Jerusalem	The internal network will be installed through the EC program.	ADSL-line from one PC. Web-site hosted by Al-Quds Network.	Few PCs. Health Information System will be installed through the EC program.
K. Abu Raya	Ramallah	Internal network to all departments, approx 15 PCs connected.	Internet access via modem	PCs in all departments. Using in-house developed system for Electronic Patient Records.
BASR	Bethlehem	Yes. All departments connected.	Internet access via modem line. – ISDN recently installed via the TelBios project. Mainly for video, can be shared	PCs in all departments. TelBios will provide electronic patient systems. VC equipment installed.
El Wafa	Gaza	Yes. All departments connected.	Connection (downlink?) available via the internal net from several PCs. Uplink ISDN – downlink satellite. Low bandwidth.	100 PCs, all departments. IN-hose developed system for electronic patient records.

Conclusion and recommendations

In general, the staff at all hospitals was very enthusiastic and had several ideas for collaboration and training via an eHealth rehabilitation network. At the same time, some concern was expressed regarding new technologies which could shift the focus from the patient to the technology. These dilemmas came up during the discussions, but the general impression is an overall agreement that the staff needed input in order to cope with their difficult working situation and to prevent professional isolation.

Our recommendations are:

- A pilot-project should be implemented with the aim to establish a telecommunication network between the four rehabilitation hospitals and international centres of excellence.
- The network should facilitate videoconferencing systems and a web-based network for sharing resources like literature, new research, training material, images and video.
- Requirement specifications should be presented to the major telecommunication providers in order to have a description of available network possibilities to the various locations and the investment and running costs involved.
- The quality rehabilitation programme between Sunnaas and Palestine should describe the use of an eHealth network as a necessary tool to implement (part of) their programme.
- The Norwegian Centre for Telemedicine will provide a system requirement for the telecommunication network and follow up with the local actors involved.
- Investigate the potential for the development of distance education programmes in collaboration with the national rehabilitation hospitals, universities and university colleges.

Annexes

Programme of the visit

Time period for visit: Sunday 12 September to Saturday 18 September

Day	Time	What
Sunday	0350	Arrival in Tel Aviv. Picked up by Onar. Drive to Jerusalem Hotel.
	11.00	Brunch at Jerusalem Hotel and going through the program
	13.00	Departure for Ramallah.
	14.00	Meeting with Palnet (Internet supplier, www.palnet.com) with Eng. Rajaie E. Issaid. Return to Jerusalem
Monday	0830	Departure for Jerusalem Centre for Disabled Children (JCDC), Jerusalem
	0900 - 1300	Meeting with JCDC
	1430 – 15.30	Meeting with British Council with Technology Manager Gabriel Batato
Tuesday	0800	Departure for Bethlehem Arab Society for Rehabilitation (BASR), Bethlehem
	0900 – 1400	Meeting with BASR
Wednesday	0800	Departure for Ramallah
	0900 – 1000	Meeting with Paltel (http://www.paltel.ps/home.cfm), the Palestinian “Telenor”. The meeting will be with Sales Director Mr. Ibrahim Mayyaleh, and Eng. Khaled Kawasmi
	1030 – 1500	Meeting at K. Abu Raya Rehabilitation Centre, Ramallah.
	1500 - 1800	<i>Departure to Gaza</i>
Thursday	0700	<i>Departure to Gaza (if we didn't go on Wednesday)</i>
	0900 or 1000 - 1400	Meeting with El Wafa Medical Rehabilitation Hospital, Gaza City. The starting time for the meeting will depend on whether we get to Gaza on Wednesday (then we can start 0900), or Thursday morning (then 1000).
	1300 – 1500	<i>Video Conference with El Wafa in case we do not get into Gaza. We will be at British Council, Jerusalem.</i>
	1400	Return to Jerusalem, arrival estimated to 1800
	1800 – 2000	Reception for the Norwegian Representative Office to the Palestinian Authorities. Ad-hoc meetings with the Norwegian Occupational Therapist Union, the Representative Office and others.
Friday	0845	Pick-up from Jerusalem Hotel

	0900 – 1030	Meeting with Program Director Ghada Harami, Diakonia/NAD (Onar’s office)
	1100 – 1200	Meeting at WHO with Head of Office, Dr. Ambrogio Manenti
	1430 - 1530	Meeting with Palestine Online
	Night (0130)	Transportation to the airport for Øyvind Brustad, departure 0530
Saturday	1245	Departure for the airport, departure 1640

Palestine background information

The Oslo agreements divided the West Bank (WB) into three zones: Areas A, B and C:

- ◆ In Area A (17.2% of the West Bank as of Oct. 2000), the Palestine Authorities (PA) has sole jurisdiction and security control, but Israel still retains authority over movement into and out of these areas, and has repeatedly made use of this ‘right’ during the current Intifada.
- ◆ In Area B (23.8%), the PA has civil authority and responsibility for public order, while Israel maintains a security presence and ‘overriding security responsibility’.
- ◆ The remaining 59% of the West Bank, Area C, is still under total Israeli occupation.

The West Bank and Gaza Strip (WBGs) remain occupied territory under International Law.

Government: Following the arrival of the Palestinian Authorities, the West Bank and Gaza (WBGs) were divided into 16 Governorates (11 in the WB: Jenin, Tubas, Tulkarem, Qalqilya, Salfit, Nablus, Ramallah, Jerusalem, Jericho, Bethlehem, Hebron and 5 in the GS: Jabalya, Gaza City, Deir Al-Balah, Khan Younis and Rafah). Each of these is headed by a governor appointed by President Arafat. The governorates are subordinate to the Ministry of Local Government and cooperate with the mayors and heads of village councils in their respective districts.

Since the arrival of the PA, the municipal and village councils took over administrative responsibilities (incl. water, electricity, waste disposal, schools, planning and building control, road construction and maintenance, control of public markets). Currently, there are 521 local authorities throughout the WBGs. Of these, 107 are municipalities, 11 local councils, 374 village councils or project committees, and 29 refugee camp directors. (PCBS, Local Community Survey, 2003).

Geography and population

Palestinian Territories: 6,020 km² (self-rule area: 210 km²)

- West Bank: 5,655 km²; 130 km long, 40-65 km in width

- Gaza Strip: 365 km²; 45 km long and 5-12 km in width

Borders: Israel 307 km (Green Line) Israel 51 km (Green Line), Jordan 97 km and Egypt 11 km

Population (2003): 3,634,495 (3-4 % need rehabilitation services)

- West Bank: 2,304,825

- Gaza: 1,329,670

Refugees: After the War of 1948, the UN Conciliation Commission estimated that 726,000 Palestinians (75% of the Arab population of Palestine) had fled outside (“1948 refugees”) while 32,000 remained within the armistice lines. Today the total 1948 refugee population is estimated at 5.5 million, incl. 4 million registered with UNRWA and 1.5 million not registered (either they simply did not register or did not need assistance at the time they became refugees). In addition, there are 263,000 internally displaced (of 1948) and some 773,000 1967 displaced persons. (PLO Negotiations Affairs Department, Factsheet on Palestinian Refugees, May 2003).

Natural population increase (2003) 3.5%

Population, 0-14 years (mid-2003): 46.1%

Median Age (2003): 16.5 years

Population density (persons per km², 2003): 603.7

Settlements: The actual built-up areas of the settlements is tiny, but to maintain them, a network of roads and bypass roads, fences, buffer zones and outposts are used to maintain control over much larger areas, while Palestinians are forbidden to build near settlements or within 150 meters of the bypass roads that serve them.

Jewish settlers comprise about 231 000 people in the West Bank and Gaza and about 200 000 in Eastern Jerusalem, which is 8% of the total Israeli-Jewish population (FMEP, Report on Israeli Settlements. Nov.-Dec. 2003). Israeli settlers constitute 9-10% of the total West Bank population, and only 0.6% of the Gaza population. (PASSIA, Settlements Special Bulletin, 2001).

PALDIS put the total figure of residential settlement sites in the West Bank at 174, excl. paramilitary and military installations. (PALDIS, Ideological Settlement in the West Bank, Report, July 2002). According to Peace Now there are 145 settlements in the West Bank and Gaza. In Gaza, there are 19 settlements with a total built-up area of 26.66 km² and housing some 6,500 Israeli settlers (as opposed to one million Palestinians with a built-up area of 50.3 km² only). (ARIJ. An Analysis of the Recent Geo-political situation in Gaza Strip. Sept. 2003). In addition, in late April 2003, Peace Now reported that there were 108 outposts in the West Bank, 72 of which were built after PM Sharon took office.

Sunnaas Rehabilitation Hospital

Sunnaas Rehabilitation hospital (<http://www.sunnaas.no>) Sunnaas, the national rehabilitation hospital in Norway, brings into the collaboration world class expertise in most fields within rehabilitation. Sunnaas also has experience in applying e-health in rehabilitation. The use of e-health will also be an integrated part of the follow up of the planned Quality Development Project at the four national rehabilitation hospitals, which will be conducted by Sunnaas together with senior rehabilitation expert Dr. David Henley, who has more than 15 years experience in developing the rehabilitation sector in Palestine. Hence, Sunnaas will have the responsibility for the rehabilitation content in the project by guaranteeing that the telemedicine network will be used regularly in the daily work at the four hospitals.

NAD/Diakonia

The Norwegian Association of the Disabled (NAD) (www.nhf.no)

NAD brings to the collaboration more than ten years experience in developing the rehabilitation sector in Palestine in general and the specialized rehabilitation services in specific. The four national rehabilitation hospitals are all central and close Diakonia/NAD partners for up to 15 years. Due to its first hand knowledge about each centre and about Palestine in general, the Diakonia/NAD regional office in Jerusalem should have an important role in the project as local facilitator and to guarantee that the an e-health project contributes to the development of the rehabilitation sector in Palestine.

Innovation Norway

Innovation Norway (www.invanor.no)

Innovation Norway brings to the collaboration experience in introducing Norwegian technology into international markets. Innovation Norway has facilitated several e-health projects abroad, whereof developing countries are prioritized areas. They were also the main funder of this feasibility study. International technological cooperation is a cornerstone in its activities, as well as facilitating contact between Norwegian and foreign companies and technological environments. The organization also has health, rehabilitation and telemedicine technology as areas of expertise. Hence, Innovation Norway will not have any formal role in the project, but will serve as adviser and link with regard to relevant Norwegian technology providers to secure participation from the industry in the project.

Norwegian Centre for Telemedicine

The Norwegian Centre for Telemedicine (NST) is a research and development centre that aims to gather, produce and provide knowledge about telemedicine and ehealth both nationally and internationally. The NST works actively to ensure that telemedicine and ehealth services are integrated into health service provision. The Norwegian Ministry of Health officially opened the Department of Telemedicine at the University Hospital of North Norway in 1993, and identified the NST as a national competence centre for telemedicine research and development activity for the nation. The University Hospital of North Norway has been involved in a variety of telemedicine activities since the late 1980s. Today the NST has about 110 employees.

The Norwegian Ministry of Health officially opened the Department of Telemedicine at the University Hospital of North Norway in 1993, and identified the NST as a national competence centre for telemedicine research and development activity for the nation. In 2002 the [World Health Organization](http://www.who.int) (WHO) designated the NST as its first [Collaborating Centre for Telemedicine](#). The University Hospital of North Norway has been involved in a variety of telemedicine activities since the late 1980s.