Workshop Report

"Strengthening efforts of Tele-medicine by deployment of CanalAVIST Application among TEIN3 Communities"

4-5 August, 2010

Jointly Convened By:

Nepal Research and Education Network (NREN)
Asian Institute of Technology (AIT), Thailand

With the Support of:

Acknowledgements

Nepal Research and Education Network (NREN) and Asian Institute of Technology (AIT) wish to thank all the members of the organizing committee for their support and dedication in convening this regional workshop. With a feeling of gratitude we acknowledge that the financial support provided by the Third Generation Trans-Eurasia Information Network (TEIN3) enabled the realization of this event. We are grateful to the country presenters, moderators, well wishers and participants for their contributions that were the soul of the event.

- Workshop Conveners

Summary

The workshop entitled "Strengthening efforts of Tele-medicine by deployment of CanalAVIST application among TEIN3 Communities" was held in Kathmandu from 4-5 August, 2010. It was jointly organized by Nepal Research and Education Network (NREN) and Asian Institute of Technology with the support of CanalAVIST, intERLab, and phect-NEPAL. The workshop was funded by TEIN3 project under TEIN3 Human Resource Development 2010 Programme.

Health policy makers, telemedicine practitioners, students of health sciences and biomedical engineering were the primary beneficiaries of the event.

The workshop was attended by a number of TEIN3 communities and also by participants beyond TEIN3. Sri Lanka, Pakistan, Bhutan, Thailand, Japan, Philippines, and Internet2 of United States were represented remotely while 30 participants were physically present in Kathmandu Model Hospital for the event.

TEIN3 network and Internet with Vclass application were used to facilitate remote participation. HD video of the conferences was sent to AIT using HD Technology, an application of CanalAVIST, and was broadcast to all participants through CanalAVIST and Vclass application.

The workshop was divided in two days. The first day was allocated for sharing experiences and the second day for discussions on real medical cases and CanalAVIST applications.

The event was successful not only in achieving its primary goals, but also in opening ways for strengthening existing practices and cooperation through the utilization of TEIN3 network. The participants have expressed their interest in developing long-term formal relations through the application.

1. Background

Tele-medicine, an important component of e-health, is one of the most rewarding and promising achievements of the advances in information and communication technology. It has unfolded the possibility of narrowing the gap between developed and underdeveloped countries, between cities and villages and between the 'haves' and 'have nots'. Through making services available to the needy in remotest areas, telemedicine can reduce mortality, morbidity, expenses, psychological strains and can be a very useful tool for producing health for the people at large. In South Asia, various constraints have limited the practice of telemedicine to methods that rely on small bandwidth. Store-and-forward technique is still the most widely used method in e-health. Tele-medicine as understood in more developed countries is still far away. Real time video-conferencing between centrally located experts and health-workers in remote areas seem to be a relatively advanced practice in this context. All this has been important armamentarium in the fight for health. Obviously though, all this is still far from adequate in addressing health needs of people. High definition real time video-conferencing has become an urgent necessity.

CanalAVIST, streams a high definition video through the Euro - Asian high speed research and education network in ASEAN countries and worldwide to deliver top quality remote presence experience to higher education and research institution in an efficient and affordable manner. It provides channels for seamless education, teaching, conferencing, lecture and talks in order to provide rapid dissemination and sustainable sharing of knowledge, information and data. It has made a successful glory on sharing of the information by breaking the trends of conventional visual data transmission. CanalAVIST has created a new avenue for clinical exchange and discussions among medical practitioners, surgeons and the students through its Digital Video Transport System (DVTS) and H.263 video transmission technology.

After connecting with TEIN3 network, south Asian countries have opened the door of high speed environment with European, American and developed Asian countries. It has opened more opportunities among the Tele-medicine practitioners for promotion of their traditional Tele-medicine efforts by the utilization of this network. Finally, the connection has overcome the speed breaker: bandwidth limitation.

TEIN3 communities are currently seeking the application that will strengthen the current efforts that had already initiated by the respective countries in their region focusing on Tele-medicine. Bandwidth constraints were our major problems but after connecting with TEIN3 it has been resolved and the next question is appropriate application for the quality visual transmission as well as regional collaboration. CanalAVIST has been working on high definition video transmission as well as creating best learning environment for research and education communities.

In this regards, the workshop was proposed to draw out the current effort relate to Tele-medicine and the way to go ahead along with the deployment of CanalAVIST for strengthening Tele-medicine initiatives among TEIN3 communities.

2. Objectives

The workshop had the following objectives:

- To inspect the efforts related to Tele-medicine in the region
- To explore the major hindrance in strengthening Tele-medicine and e-health initiatives
- To deploy the CanalAVIST for ensuring high quality video communication in the rural communities

3. Proceeding

3.1 Day One (4th August, 2010)

A. Opening and Remarks

Dr. Mahabir Pun, Vice Chairman of Nepal Research and Education Network welcomed the participants from various region of the world. Dr. Pun, a well known wireless activists and the leader of Tele medicine initiatives, delivered his remarks by indicating the trends of health services in the past and present in the context of Nepal. The remarks were primarily focused to enhance the current efforts and need of joint collaboration to promote these initiatives in the region.

Dr. Saroj Prasad Dhital, Director of Health Sciences of NREN briefed the details of schedule and the objectives of the workshop. He also elaborated some of the achievements of early efforts in telemedicine in Nepal. Retention of doctors and other health workers in villages, continued medical education, unhindered development of the remotely stationed doctors, and possibility of virtual classrooms were some of the achievements he talked about. In his remarks, he indicated, the workshop is an initial move to strengthen joint efforts and cooperation among TEIN3 communities and a powerful tool for sharing telemedicine initiatives in the region.

He talked about the huge gap in availability of health services between developed and less developed parts of the world. The doctors and health professionals in less fortunate parts of the world have to face challenges at two ends: In one hand, they have to continue fighting the basic health problems and other unfinished health agendas. In the other hand they cannot isolate themselves from the rest of the world - they have to catch up with the rest of the world in science and technology.

For poor countries, facing these challenges may be possible only by relying on tools that are being less and less costly, more and more accessible and more and more efficient. And that can be nothing but ICT. Hence the importance of telemedicine in bridging the gap.

Dr. Ram Hari Aryal, Secretary of Ministry of Science and Technology and Dr. Chet Raj Pant, Member, National Planning Commission, made positive remarks from the side of the government. They reiterated that the government of Nepal has prioritized health and information technology sector and will be allocating more budget to conduct different initiatives on these sectors.

Dr. Aryal had shared his recent observation visit to South Asian NRENs, their roles and the efforts. “After the observation of LEARN, PERN, VinaREN and ThaiREN, I have briefed the line minister about the essentiality of research and education network and currently I am working to allocate budget for this network” he said. Finally, he appreciated the activities of NREN and advise to meet together to make plan to work with government.

Mr Gaurab Raj Upadhaya, Technical Director of NREN made an introductory presentation on NREN and its current activities. He pointed out that Telemedicine initiative is currently the most prioritized activities of NREN. In the telemedicine network, more than 10 districts of Nepal are connected to Kathmandu Model Hospital and to each other. It has also helped Nepali doctors to benefit from the international pool of knowledge by establishing close communication with foreign medical universities and hospitals. NREN has formed its health sciences working group that is responsible to extend the initiatives throughout the country.

B. Sharing the Experiences

The workshop had aspired to share experiences among all TEIN3 members. However, only six countries from TEIN communities could be brought together for the event. Sri Lanka, Pakistan, Thailand, Philippines, Nepal, Japan and Intrnet2 of United States shared their experiences

Sri Lanka

Dr. Nimal Ratnayake, Technical Director of Lanka Education and Research Network (LEARN), talked about activities in Sri Lanka. Tele-teaching for health care providers and students have become quite common in Sri Lanka. Some of the medical universities that do not have adequate number of teaching staffs have been conducting regular remote classes on some subjects from other universities. All state universities and some of the private universities are equipped with video conferencing units and they have been utilizing these for Tele teaching activities. Post graduate training programs of post Graduate Institute of Medicine have been using video conferences facilities in their academic programs.

After the connection with TEIN3, LEARN has tested DVTS application over this high speed network. In a test done at the University of Peradeniya good quality live surgery video from the operation theatre was observed. According to Dr.Nimal, use of this application in various medical training is being considered.

Nepal

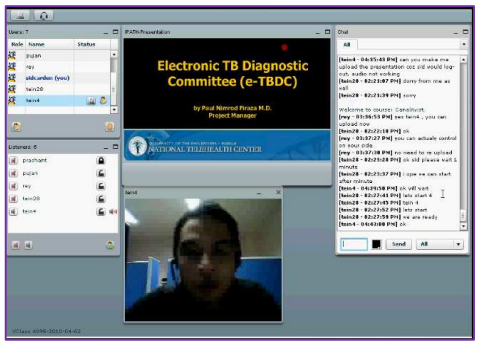
Dr. Saroj P. Dhital pointed that although the early initiatives in developing telemedicine in Nepal were taken by non-government organizations, the government has also been very enthusiastic. He welcomed the recent initiative from the government in creating a huge network starting with connecting 25 district hospitals.

Kathmandu Model Hospital, the medical partner of NREN, has been leading major initiatives in telemedicine in Nepal. Starting

from a pilot project on 2006, which connects more than 80 Km far rural community hospital through setting up wireless network, it is now connected to 10 rural health centers and has been conducting regular virtual classes, real time tele-consults. It is also connected to a number of universities in the US and is in process to get connected to universities in Japan and Korea while working to develop regional telemedicine network among South Asian TEIN3 partners.

Philippines

Dr. Paul Nimrod Firaza, Project Manager of National Telehealth Center, made a presentation about the initiatives of National Telehealth Center, Philippines. The success in control of Tuberculosis by iPath tele refferal system was impressive and worth learning for all participants. They have made a system, which enables direct conversations between the doctors to the barrios (DttB) and domain experts (DE).



Pakistan

Mr. Abdul Khalid, Higher Education Commission of Pakistan made the presentation on behalf of Pakistan. The presentation was focused on the overall activities and especially related to the health perspectives. He added that, Pakistan has been practicing interactive as well as store and forward method on the health sectors. Like many other developing countries, Pakistan also has started to realize the importance of Telemedicine/e-health and working to implement different telemedicine projects. Pakistan – US collaboration in telemedicine, Pakistan space organization satellite based telemedicine network, Taxilla project, Gilgit project are the recent development towards the promotion of telemedicine in Pakistan.

PERN is working to provide end to end Gigabit Ethernet connectivity to the medical institutions and teaching hospitals. Currently, 9 medical institutions and teaching hospitals are connected over the country and utilizing the PERN services. As relate to the plan, Pakistan is seeking to acquisition of such application (CanalAVIST) supporting HD real-time video conferencing and going to enhancing the PERN connectivity to all hospital and medical institutes.

Japan

Prof. Dr. Shuji Shimizu, Chairman of APAN Medical working group, delivered a presentation about the overall development towards Tele-health in the Asia region.

"Poor quality videos, cost for the video conferencing system and lacks of familiarity with the technology are the factors that are interrupting expansion of Telemedicine initiatives in the region" he said. He shared the recent development and deployment of technology on health sector such as DVTS technology for remote health services. "High quality videos without compression, little time delay, less expensive, and simple system are the characteristic of these system" he further said.

Dr.Shimizu presented the slides on Korea-Japan advanced medical network, live surgery between Korea and Japan, telemedicine for neurosurgery, live surgery and robotic surgery as well as the initiatives of APAN medical group among the participants of the workshop

Internet2 of USA

Dr. Michael Sullivan, Associate Director, Health sciences and Jocelyn Gerich, program Coordinator, International Relations of Internet2 shared their experiences and the activities of Tele health in USA. Participants learned from Dr. Sullivan the overall activities and connection of Internet2 among research and education communities of USA. Internet2 has been working to enhance the health services by deploying various health related applications. High Definition Video Conferencing (HDVC) for different specialties, large medical file transfer, cloud computing etc. are the major application that are being used in the Telehealth sector in USA. Members of Internet2 have been using the network to address the common as well as complicated health problems. For example, new born babies, when sick, can now be treated by health care applications over the network. High definition video files are sent to doctors who can suggest treatment over the network. Likewise, some psychiatric problems are also being dealt with using HDVC, People feel comfortable to register for emergency appointment in city hospitals. Large X-ray files, ECG, Ultrasound have been transmitted through the network. And finally, Dr. Sullivan re-congratulated TEIN3 communities for the workshop.

Sharing from the remote sites of Nepal

The participants from Kathmandu interacted with doctors and health care providers in remote rural districts of Nepal through video conferencing. Dolakha, Jomsom, Pharping, and Nangi were the major sites that shared their practical experience, difficulties and the opportunities provided by the telemedicine network. Telmedicine activities and the video conferencing facilities have not only helped in healthcare but have also contributed to strengthen rural economy by saving energy, time and money. Participants from rural Nepal also noted that power cuts, weather condition, lack of better devices and the bandwidth are the major problems they have been observing in the moment.

3.2 Day Two (5th August, 2010)

Dr Dhital started the second day by recapping the activities and outcomes of the previous day. It was obvious from the sharing that in recent years the practice of Telemedicine has been increasing among the TEIN3 communities. In Nepal, too, several efforts have been ongoing to strengthen Telemedicine activities. Most of the participants at the venue in Kathmandu being senior surgeons, the growing interest of Nepali clinicians in telemedicine looked encouraging. He remarked that only the clinicians with enough sense of social responsibility would be interested in telemedicine.

After that, the CanalAVIST team in Bangkok started the first session of day 2 with presentations relating to the application and the activities of CanalAVIST. The first presentation was by Prof. Kanchana Kanachanasut.

A. Presentation by the team of CanalAVIST

Prof. Kanchana addressed the session by thanking all the participants and remarked that it was nice step to strengthen Telemedicine initiatives among TEIN communities. She told that CanalAVIST is a consortium working to push education on TEIN3 network, was actually started from TEIN2. The idea was to organize members of TEIN3 and play as a gateway for the global collaboration. Currently, it provides streaming of the lectures, talks, conferences, training to multiple remote sites in real time but also scheduled for off-line delivery. It keeps rich repository of archived materials for rebroadcasting at regular schedules. Prof Kanchana further explained the need and utility of CanalAVIST by demonstrating different event conducted by CanalAVIST.

Mr. Pujan Srivastava made the second presentation on behalf of CanalAVIST. As a key technical person of CanalAVIST team, he reminded the technical efforts and preparation that had been done for this workshop and also conveyed thanks to all the NREN technical team for this first initiative over TEIN3 network. His presentation was focused on the system that was used to broadcast all sessions to all participants scattered in multiple

sites. He explained that due to the need of high bandwidth for DVTS technology, the technical team of CanalAVIST had deployed HD and Vclass technology. DVTS is really a good technology, but needs high bandwidth while HD technologies are operated on moderate bandwidth and also provide good quality video streaming. Vclass consumes even lower bandwidth and not very 'techno-intensive'. Mr. Pujan revealed that on the first day of the workshop there were 58 connections on Vclass. That meant a very wide participation – actually much more than expected. He concluded by saying, Vclass may what is needed for telemedicine reaching the rural areas.

Mr Esmond talked about the challenges in reaching rural communities through CanalAVIST. He addressed that there are a number of challenges such as those related to infrastructure, resource person and the eagerness to adopt new technology. Those applications will be sustainable which can be handled without mastering much technical details. He, too, agreed that the user friendly Vclass might be the best solution for the rural settings. Before concluding, he answered questions raised by participants and expressed his commitment to help in deployment of the technology.

B. Discussion on Clinical Cases

The second session of the day 2 was allocated for the discussion on clinical cases. Doctors from Kathmandu Model Hospital and Pra Mongkut Hospital of Bangkok had a very lively discussion on a case with diabetic foot.
The discussion led not only to in-depth exploration of complications of diabetes mellitus, but also to the societal dimensions of ill health and the social responsibility of medical doctors. These discussions brought doctors separated by thousands of miles together. It was good to witness how patients could benefit from the joint knowledge and skills of doctors separated by geographical distance but brought together by ICT.

4. Concluding the workshop

Dr. Dhital and Prof. Kanchana summarized the Telemedicine workshop from their respective sites. Dr. Dhital stated that the workshop had provided opportunity not only to learn about the CanalAVIST but also creating a positive environment bringing all of us together for a good cause. “This opportunity is really valuable for us because it has started the meaningful discussion among the health communities” he said. The outcomes of the workshop were summarized as follows:

- Information and Communication Technology are the vehicle for health
- None of us grow alone, common and joint efforts are needed
- HD and Vclass will be affordable technology to extend the telemedicine among TEIN3 communities

- Vclass seems to be one of the best applications to reach remote areas suffering from bandwidth limitation and lack of resources
- Sharing of experiences among the practitioners will avoid failures in other regions

Finally, the vice-chairman of Nepal Research and Education Network, Dr. Mahabir pun made concluding remarks and conveyed appreciation to all for the meaningful participation. He further added, all the initiatives towards telemedicine in the region are in preliminary phase and hoped that the technology used during the workshop will make the initiatives stronger and sustainable.

5. Technical Arrangement for the workshop

The venue at Kathmandu (Site 1) and the venue at AIT (site2) were the key site of the workshop. As it was the first initiative of NREN, and also first over TEIN3 network, its technical preparation was relatively long. NREN, although connected to TEIN3 network, still needed to settle a number of issues before the workshop.

The hospital and the Network Operation Center (NOC) of NREN were connected with 100Mbps fiber optic link. Site 1 used Sony 170 DV CAM to capture the video of the workshop and send the streaming to Site 2 over TEIN3 network. Both unicasting (point to point streaming) and multicasting (point to many point streaming) were used for participants outside the country in the TEIN3 network. Polycom (a video conferencing device) was used for the participants within the country using NREN network. Vclass (a web application) was used for the participants not having the access of TEIN3 network (observe Annex 4 for technical setup diagram).The video from the Camera was captured in the computer and streamed (unicast) to the site 2 and then site2 multicast the videos to the participants in different parts of the world.

6. Overall assessment and further directions

The objectives set out for the workshop were fully met. It addressed the expectation that was set before the workshop. The workshop inspected the efforts of telemedicine and explored the major hindrances in strengthening these initiatives. It also created new understanding among countries and the practitioner of Tele medicine and built the joint commitment to work together for better world. The participation in the workshop was more than expected; it indicated the increasing knowhow among the people in the

region. CanalAVIST application has been successfully deployed and TEIN3 network was fully utilized.

Follow up activities are needed to sustain these initiatives. NREN with the help of AIT and especially along with the team of CanalAVIST is in a position to initiate regular telemedicine sessions by deployment of these applications among the TEIN3 communities. In the initial phase of regular activities, medical sessions seem to be the most suitable ones and may be conducted among Sri Lanka, Nepal, Pakistan and Thailand through the TEIN network.

Annex: 1 Workshop details schedule

S. N.	Time	Activity	Presenters
DAY 1 (4th August, 2010)			
1	9:00 – 9:15	Welcome & Inaugural Speech	Dr.Mahabir Pun Vice-Chairman, NREN
2	9:15 – 9:30	Conference Overview	Dr. Saroj Prasad Dhital, Director of Health Sciences, NREN
3	9:30 – 10:00	Remarks	
		Secretary, Ministry of Science and Technology Member, National Planning Commission	Dr.Ramhari Aryal Dr.Chet Raj Pant, Member
4	10:00 – 10: 20	Introduction: NREN and its Initiatives	Mr.Gaurab Raj Upadhaya, Technical Director
5	10:20 – 10:40	Tea Break	
6	10:40 – 14:00	Learning from each other: Experience Sharing among TEIN Members	
	10:40 – 11:10 11:10 – 11:30 11:30 – 12:30 12:30 – 13:00 13:10 – 13:40 13:40 – 14:00	Pakistan Sri Lanka Launch Break Nepal Japan Phillippines	Prof. Asif Zafar Dr.Nimal Ratnayake Dr.Saroj Prasad Dhital Prof. Dr. Shuji Shimizu Dr. Paul Nimrod Firaza
7	14:00 – 14:20	Coffee Break	
8	14:20 – 15:40	Diagnosing and demonstrating the challenges: Interaction among remote Tele-medicine site of Nepal (Dolakha, Jomsom,	

		Pharping, Nangi)	
9	15:40 - 16:00	Internet2 and Telemedicine in the United States	Dr.Michael Sullivan
10	16:00 – 16:30	Technological Advancement in Tele-medicine	Mr.Gaurab Raj Upadhaya
11	16:30 onwards	Closing of the First Day	
DAY 2 (5th August, 2010)			
1	10:00 – 10:15	Recap of previous day	
2	10:15 – 10: 35	Tea Break	
3	10:35 – 11:35	CanalAVIST: Application for Tele-medicine	Professor Kanchana Kanchanasut, Executive Director, CanalAVIST; Mr. Pujan Srivastava, CanalAVIST Technical Coordinator
4	11:35 – 12:35	Launch Break	
5	12:35 – 13:35	CanalAVIST: Experience from ASEAN countries	Esmond Esguerra, CanalAVIST
6	13:35 – 15:00	Demonstration of CanalAVIST in tele-consult for remote stations (Nepal and Thailand)	Pra Mongkut Hospital, Thailand and Kathmandu Model Hospital
7	15:00 – 15:30	Challenges in reaching rural communities through CanalAVIST	Esmond Esguerra, CanalAVIST
8	15:30 – 16:00	Summary of the efforts and practices to strengthen tele-medicine initiatives in the region	Dr.Saroj Prasad Dhital
9	16:00 – 16:15	Summary and concluding Remarks	Dr. Mahabir Pun

Annex 2: List of Hospitals participating at Kathmandu

1. Dhulikhel Hospital, Kavrepalanchowk, Dhulikhel
2. Pasang Lhamu Nicole Nicky Hospital, Lukla, Solukhumbu
3. Bayal Pata Hospital, Achham
4. Om Hospital and Research Center Pvt.Ltd, Kathmandu
5. Tansen Hospital, Tansen, Palpa
6. DiSkin Hospital, Kathmandu
7. Nepalgunj Medical College and Teaching Hospital, Nepalgunj,Banke
8. Kathmandu Medical College and Teaching Hospital, Sinamangal
9. Nepal Medical College and Teaching Hospital, Attarkhel, Jorpati
10. Tribhuvan University Teaching Hospital, Maharajgunj
11. Tilganga Institute of Opthalmology, Tilganga
12. Anandaban Leprosy Hospital, Lalitpur
13. Kanti Children Hospital, Maharajgunj
14. Bir Hospital, NAMS
15. Kathmandu Model Hospital, Kathmandu
16. Ministry of Health, Telemedicine project

Annex 3: Details of the Clinical cases presented at the workshop

Case 1

55 yrs male, resident of Kathmandu,retired bank clerk, non-smoker and occasional alcohol consumer diagnosed as having diabetes 6 yrs back when he went for checkup in a local hospital for generalized weakness and gradual weight loss.

There was no family history of diabetes. There were no other significant co-morbidities.
He was given diabetic diet chart and advised for follow up. In the follow ups, his blood sugar was maintained by dietary modifications and wasn't prescribed any medications. Then he disappeared for 5years.

6 months back patient visited our hospital with complaints of tingling sensation and weakness of bilateral lower limbs along with polyuria ,polydipsia and weight loss.

Thorough checkup was done, his HbA1c level was 10.1 %, he had microalbuminuria and non- proliferative diabetic retinopathy. Twice a day regime insulin (Human insulin 30:70) was started, dose adjusted, counseling done regarding insulin therapy and sent home.

After taking insulin for 3 to 4 days, patient told the family members that he was feeling dizzy after injections and stopped medication by himself without consulting physicians. He went without insulin for next 3+ months.

2 months back patient developed blister on left foot, initially small in size so didn't seek any medical attention. Gradually it started increasing in size and was becoming painful. He was seen by practitioners in local medicine shop and alternate day dressing was done for two weeks. When no improvement was seen, he went to another general hospital and got admitted there. After few days of admission patient was advised for amputation of left great toe as the ulcer was increasing in size. Initially patient was unwilling but after discussion with family members he agreed. After amputation he stayed in the hospital for 3 weeks and since the wound was getting worse he was referred to our hospital.

At the time of admission, the wound was infected, has uncontrolled DM, anemia and hypoprotinemia. Multispeciality care was started with involvement of Plastic Surgery and Orthopedic Surgery along with Internal Medicine. Now his blood sugar is under control with insulin b.i.d. He received 1 unit of packed red cells transfusion and human albumin. He has been planned for skin graft and now waiting for the wound to be healthy and nutritional status to be better.

Case 2

12 years old girl weighing 34kg from Kathmandu, Nepal came to us with complaints of
a) Polyuria, polydypsia for 15 days
b) Loss of weight in last 20 days (3kg)
c) Increase in appetite

On examination:

Vitals were within normal limits
Systemic examinations were normal

Lab reports:

Blood sugar (Fasting)=376 mg/dl
Blood sugar (PP)=415mg/dl
Urine sugar=3+
Urine acetone=Positive
HbA1C=9.8%
CBC,ESR,RFT,LFT,USG Abdomen ,Mantoux test =normal

Child is now on 'pen-Insulin' (Mixtard/humiinsulin)
22 units in the morning 8am
16 units in the evening 8pm

All relevant education regarding the diabetes mellitus including Nutrition, monitoring, follow-up, features of hypoglycemia, sick day guidelines, short-term, long-term complications were explained in detail. Child takes injection on her own.

Case 3

Six year old girl diagnosed 18 months back, weighing 16kg from Dhulikhel, Nepal is now on injection insulin mixtard 12 units at 8am and 8 units at 8pm.Her HbA1c is 8%. Her blood sugar (RBS) is 175mg/dl.

She was diagnosed with complaints of polyuria, polydypsia for 15 days, loss of weight in last 20 days (3kg) and increase appetite

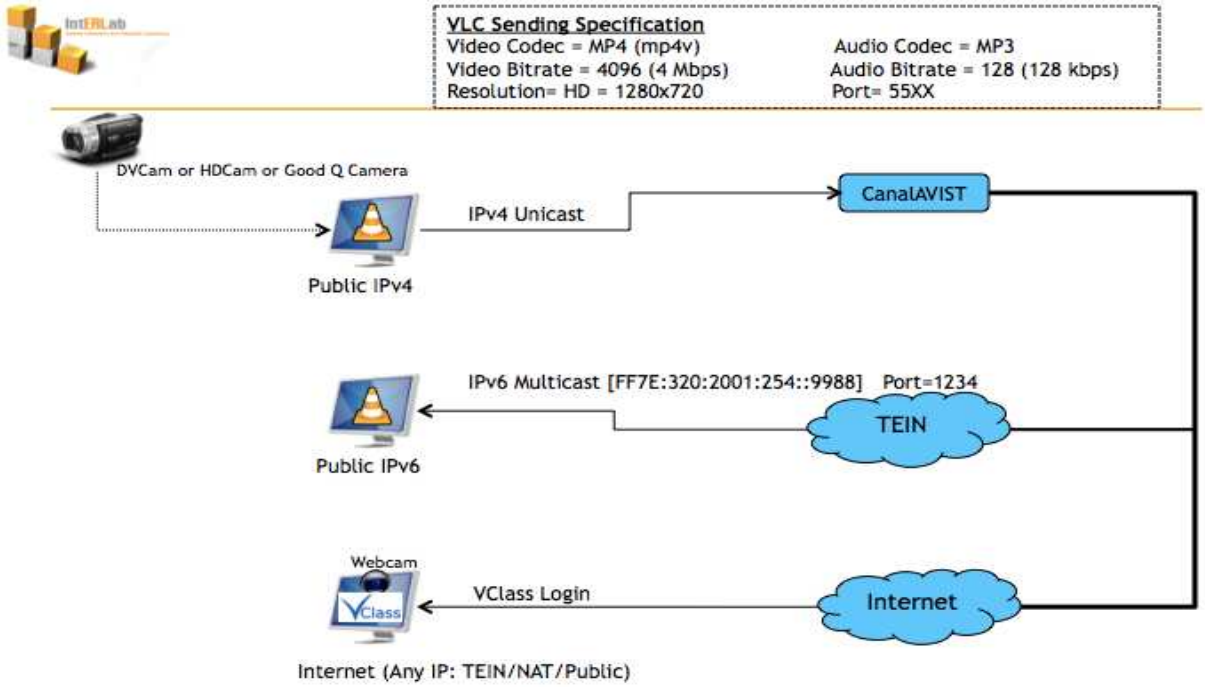
Now On examination:
Vitals were within normal limits
Systemic examinations were normal
Investigations at the time of diagnosis were as following:
Blood sugar (Random) = 399mg/dl
Urine sugar = 3+
Urine acetone = Positive
HbA1C = 7.7%
CBC,ESR,RFT,LFT,USG Abdomen ,Mantoux test =normal

All relevant education regarding the diabetes mellitus including Nutrition, monitoring, follow-up, features of hypoglycemia, sick day guidelines, short-term, long-term complications were explained in detail. She can't afford the fancy 'pen insulin' but is capable of drawing insulin from the vial to syringe and inject herself.

Possible discussions:

- Public Health perspective;
- Clinical perspective - what could have made the outcome better (from internist's, Pediatrician's, orthopedic surgeons and plastic surgeon's points of views);
- What can be done to ensure productive and rewarding lives for the kids?
- Any specific suggestions at this point?
- Different practices in different countries; How can our emerging network be helpful in dealing with diabetes in poor countries... etc

Annex 4: Technology and Network diagram of the workshop



VClass Login: http://vclass.dec.ait.ac.th/vclass/ait/quick_login.php

Annex 5: List of Local Participants at Kathmandu

S.N	Name	Designation	Organization	Email
1	Dr.Ramhari Aryal	Secretary	Ministry of Science and Technology	ramharyal@yahoo.com
2	Dr.Chet Raj Pant	Member	National Planning Commission	crpant@yahoo.com
3	Pritam Lal Shrestha	Student	University of Troms, Norway	pritamlal_s@yahoo.com
4	Prabin Raj Shakya	IT officer	Dhulikhel Hospital, KUTH	prabinrs@gmail.com
5	Tara Prasad Shrestha	Medical Superintendent	Pasang Lhamu Nicole Nicky Hospital	tarashrestha2003@yahoo.com
6	Dr. Sona Shilpakar	Medical Officer	Bayal Pata Hospital	sona@nyayahealth.org
7	Mr.BishwoBikram Rana	InformationTechnology Officer	Om Hospital and Research Center Pvt.Ltd	bishwo.rana@gmail.com
8	Dr. Theo D Beels	MD, Internal Medicine	Tansen Hospital	ebeels@gmail.com
9	Dr.Anil Kumar Jha	Chairman	DiSkin Hospital	dranilkjha@hotmail.com
10	Prof.D.V. Bahl	Professor of Surgery	Nepalgunj Medical College	drdigvijai@rediffmail.com
11	Dr.Lalita Bahl	Professor of Pediatrics	Nepalgunj Medical College	
12	Dr Shail Rupakheti	Lecturer	Kathmandu Medical College	shailrup@yahoo.com
13	Dr. Shekhar Babu Rizyal	Principal	Nepal Medical College and Teaching Hospital	principal@nmcth.edu
14	Dr.Pradeep Baidhya	Director	Institute of Medicine, TU Teaching Hospital	praidya@yahoo.com
15	Hari Narayan Vinwar		Tilganga Institute of Opthalmology	hvinwar@tilganga.com.np
16	Chandra Mandil Yogol	IT Officer	Dhulikhel Hospital, KUTH	c_yogol@hotmail.com
17	Dr.Pankaj Awale	Medical Officer	Anandaban Leprosy Hospital	
18	Dr.R.P Chaudhary	Pediatrics	Kanti Children Hospital	drrpchaudhary@yahoo.com
19	Dr.Bishesh Poudel	Clinical Hematologist	Bir Hospital, NAMS	drbishesh78@hotmail.com
20	Dr.Jyoti Bhattarai	Vice President	America Nepal Medical Foundation/Nepal	jyotikunwar@yahoo.com
21	Jiwan Giri	Telemedicine Practitioner	Nepal Wireless	girij@aol.com
22	Dr Basant Maharjan		Phect Nepal	basant06maharjan@yahoo.com
23	Bimal Gautam		Ministry of Health Telemedicine Project	
24	Kashi Rimal		Ministry of Health Telemedicine Project	rimalknr@yahoo.com
25	Keshav Pradhan		Ministry of Health Telemedicine Project	

List of remote Participants

International Participants			
Prof. Shuji Shimizu		Kyushu University	shimizu@surg1.med.kyushu-u.ac.jp
Dr. Bijendra Joshi		Kyushu University	bijendra4@hotmail.com
Isidor Cardenas		National Tele-health Center of the Philippines	sidcarden@gmail.com
Nazeer Husssain		Pakistan Research and Education Network	nhussain@hec.gov.pk
Nimal Ratnayake		Lanka Education and Research Network	nimalr@pdn.ac.lk
Jocelyn GERICH		Internet2	jgerich@internet2.edu
Michael Sullivan		Internet2 Health Sciences Group	msullivan@internet2.edu
Michael McGill		Internet2 Health Sciences Group	mmcgill@internet2.edu
Bineet Sharma		Computer Association of Nepal, USA Chapter	bineet@gmail.com

Annex 6: List of Team Members

Site 1: Nepal Research and Education Network (NREN)

Dr. Saroj Prasad Dhital, Director, Health Sciences
Mr. Gaurab Raj Upadhaya, Technical Director
Mr. Rajan Parajuli, Program Coordinator
Mr. Dibya Khatiwada, Technical Officer
Mr. Saroj Dhakal, Technical Officer
M/s Anita Shrestha, Administrative support

Site 2: Asian Institute of Technology (AIT)
Prof. Kanchana Kanchanasut, Director, intERLab
Mr. Pujan Srivastava, CanalAVIST Technical Coordinator
Mr. Esmond Esguerra, Secreteriat
Mr. Rey Padilla, Technical support
M/s. Nisarat Tansakul, Technical support