Telemonitoring of Diabetic Retinopathy in Rural Areas in Lithuania

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Who We Are

- Lithuanian University of Health Sciences
  - The Family Clinic
  - Telemedicine Centre
  - Eye Clinic
- Telemedicine Research Centre, Kaunas
- Vilnius University Hospital / Santariskes
- Kaltinenai Primary Care Centre
Aim

To pilot the ways and methods of improving accessibility of population in rural and remote locations in Lithuania to high quality and timely healthcare and to test the viability of bringing the services and diagnostics closer and faster to the patients via telehomecare.
Clinical Aims

- To measure vision, intraocular pressure and to make eye fundus images.
- To send this data from the rural area to competence centre for evaluation.
- The competence centre selects patients in need for consultation and treatment (vitreosurgery, laser therapy, etc.) at the centre.
Problem

Population in those locations is often underserved by modern diagnostic services, largely due to the travel time, cost and wait time constraints. Bringing the service closer to the patients, their home or near home serves as an equivalent of virtually providing tertiary level service at a primary level physical location.
Objectives

- To provide infrastructure (mobile digital medical diagnostic systems—eye fundus camera and camera for anterior segment).
- To train the primary care medical personnel on new telemedicine diagnostic equipment and technologies.
- To perform monitoring of diabetic retinopathy for patients in rural areas seeking minimization of complications.
Research and Practical Implementation

- Telemedicine Research: > 10 years experience
- A functioning telemedicine network:
  - fixed locations
  - mobile locations
  - screenings
- Focus: ophthalmology; work with primary MDs
- Telemedicine Research Centre: several hundred tele-ophthalmology consultations per month
Current Services and Activities

- Telemedicine network in Lithuania: active network for remote diagnostics of eye diseases, fixed and mobile. Network participants range from large (Vilnius University Santariskes Clinic; LUHS) to medium (city polyclinics) to small rural clinics in Lithuania, and growing.

Ave Vita klinika (Kaunas)
Kaunas Silainiai Polyclinic
Lekešienės Clinic (Vilkaviskis)
Laurinavičių enės Clinic (Vilnius)
Kaltinėnai PCC
LHSU Family Clinic
Eagle Vision optics
VU Santariskės Clinics
Elektrenai PCC
Laimutės Clinic (Ukmerge)
Diabetic Retinopathy

- The focus of this presentation is telemonitoring of diabetic retinopathy in rural areas in Lithuania.
- It is conducted with participation of our fixed and mobile locations.
- Mobile team: Family Clinic of LUHS.
- Teleconsultations: Telemedicine Research Centre.
Technical Side

- Medical devices used: digital eye fundus camera Smartscope M5
- Data system: by Vilnius University Hospital / Santariskes and IT company Softneta
Teleconsultation Process
Request for teleconsultation from rural area is received
Consulting doctor logs into central server of university hospital
Website for eye fundus images evaluation
Evaluation of eye fundus image received from rural area
Describing image online
Image evaluation ready to be sent
Results

- Monitoring was conducted in the period of six months in 2011 in different regions of Lithuania.
- 330 patients with diabetic retinopathy were evaluated remotely utilizing telemedicine network between primary healthcare centres and competence centres.
Results

- 44 patients were diagnosed with non-proliferant diabetic retinopathy with maculopathy
- 13 patients were diagnosed with proliferant diabetic retinopathy
- 64 had increased intraocular pressure with increased excavation of optic nerve head
- 22 patients were diagnosed with hypertensive retinopathy
Outcomes

Our experience shows that cooperation of tertiary and primary level physicians and use of telemedicine is effective in early diagnostics of diabetic retinopathy.
Outcomes

By using telehomecare, we did not completely replace the need for some patients to visit the tertiary clinic in person—it complemented each other, allowed to eliminate some unnecessary visits to the tertiary level clinic, and in some cases, encouraged patients to visit the tertiary level clinic and address their health condition sooner.
Lessons Learned

- Necessity of having a high quality, portable, relatively low-cost equipment suitable for telemedicine applications; necessity of generating interest of such projects among local family physicians;
- Necessity of proper training of local family physicians in using the equipment and telemedicine applications;
- Self-sustainability is not easy in the times of economic–financial stress but on a broad-scale, it is beneficial both for the family physicians and patients.
Our Experience

- We do permanent telemonitoring and telescreening not only for diabetic retinopathy, but also for others:
  - Aging macula degeneration
  - Glaucoma
  - Intraocular tumours
  - Eye fundus for neurological patients
  - Eye fundus for cardiological patients
Future Plans

- Continue retinopathy screenings in expanded network
- Add dermatology, otology specialties to the network
- On the basis of collected images and data to form a portal of clinical decision support for medical doctors
Thank you for your attention

Telemedicine Research Centre

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