A Success Story in Remote Diagnostics: Better Results with Significantly Lower Costs

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Abstract: **This paper describes how the need for a telemedicine specialist consultation service in Finland was identified, explains how the service is implemented, presents how the service helps public health care to reduce costs and discusses the benefits gained. Until now, more than 20 000 specialist reports have been channeled to over 130 practices around the country.**

Introduction

In Finland, municipalities are obliged by law to arrange healthcare for their inhabitants. There are 342 municipalities and their population varies from less than 1 000 up to 580 000. Because of this wide range in population size, the opportunities of municipalities to provide primary care and specialized medical care for the inhabitants differ significantly.

Primary healthcare is delivered at health centres employing mainly general practitioners and nurses who provide most day-to-day medical services. In larger municipalities health centre operations are arranged by the municipality itself whereas smaller municipalities have formed joint municipal organizations to perform the task economically and to secure the required level of medical expertise.

When a general practitioner suspects that a patient needs specialized care, the patient will typically be referred to the secondary care sector. Secondary and tertiary care is provided in hospitals, through outpatient and inpatient departments. The secondary level consists of 15 central hospitals and around 40 other smaller specialized district hospitals. The tertiary level is a network of five university teaching hospitals where the most specialized care is given. All these hospitals are maintained by federations of municipalities, i.e. hospital districts.

Since municipalities are legally required to finance the healthcare, the cost of secondary care will eventually be shared among municipalities. Municipalities negotiate on the provision and costs of services with their hospital district annually. However, municipalities may feel powerless to influ-

ence the costs and provision of hospital care. In many cases, they are not able to utilize the medical, economic and other skills necessary for arranging services in the most efficient manner. As financial situation changed, municipalities started showing an interest in controlling specialized care costs and planning annual budgets more accurately. [1, 2]

Although the access to care and quality of healthcare are of high standard in Finland, there have been incidents where patients are not adequately referred to specialized care. Waiting times for referrals in the secondary care are typically long and high costs of specialized care are passed on to the municipalities. On the other hand, health centers seldom have facilities or skills for special diagnostic examinations.

Based on the above observations, the emergence of new ambulatory diagnostic devices, and their acceptance and scientific approval [3], an innovative remote analysis service was launched at the end of 2002 as a joint venture between renowned medical specialists, innovative IT professionals and business administration professionals. The service was first introduced with the polysomnography sleep test but was gradually expanded to include another five diagnostic services, including 24-h ECG-registration, 24-h Ambulatory Blood Pressure Monitoring, and Spirometry Consultation.

Telemedicine diagnostics services

Operating model

The remote analysis service operator equips the medical practices with the registration devices free of charge, thus, no initial investment is required. Deployment takes place in less than 30 minutes via a PC and Internet access. The initial two month test phase includes a few specialist reports free of charge with no obligation to continue services. Charges are based on the actual use that arises from the number of delivered reports. In case the number of registrations remains below the annual minimum of 10 registrations over the four-year contract period a nominal fee will be charged.

A nurse hooks up the registration device on a patient. The registration takes place over a 24-hour period (or overnight in case of the polysomnography) during the patient's daily life. On the following day, the patient returns the device. Thereafter the nurse uploads the registered data without the patient's personal identification data to the remote server over a secure connection. The data is checked for accuracy by technicians and then forwarded to the specialist for interpretation and analysis. The leading specialists in the field rank analyze the data and write a report to be returned promptly for download at the practice's interface.

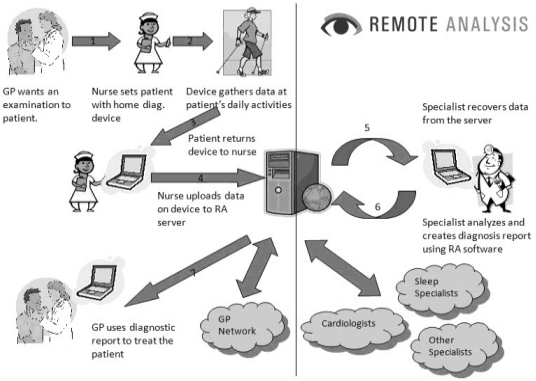

Figure 1. The remote analysis operating model.

Demand of telemedicine services

Since the introduction of this service, the number of reports has grown progressively. In 2009, more than 8 000 specialist reports were channeled to about 130 health centres, private clinics, occupational health units, hospitals and laboratories. Based on the demand during 2007 – 2009, the estimated number of reports to be delivered in 2010 will exceed 9 500. To this date, approximately every third district health centre in Finland uses this service.

Discussion

The ease, speed, flexibility, and cost-effectiveness of the described approach are obvious. Patients benefit from prompt diagnosis: testing can be initiated in patients' daily activities as soon as the GP has ordered a test.

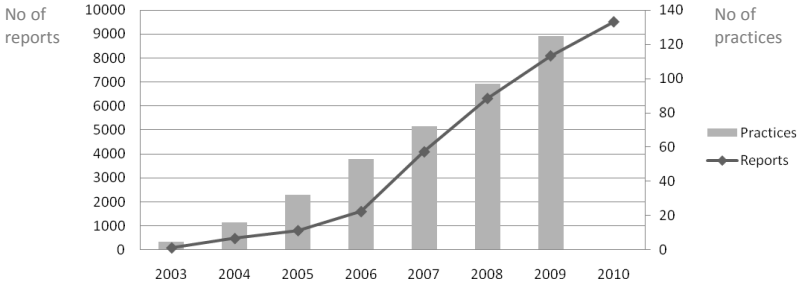

Figure 2. The number of reports and practices using the service

The attending physician gets a consultation report with treatment recommendations from the special experts of the field. Often the patient can be treated in the nearest health centre. Patients and specialists benefit as they no longer have to travel to meet each other and queues to secondary care shorten as only patients requiring secondary care treatment will be referred.

The cost of a typical outpatient appointment in a secondary care unit accounts at least several hundreds of Euros whereas the cost of a telemedicine specialist consultation is only a fraction of that. The costs of specialized care can be controlled by using telemedicine in diagnosis and treatment of patients in the primary care. By reducing the number of referrals via screening, they also reduce the burden and resource utilization in specialized hospital districts. Lately, district hospitals have taken similar steps to set up a process model to provide consultation to GPs prior to accepting any referrals from health centers. Financially, it is also noteworthy that no heavy investment or complicated implementation project are required to set up the functional remote analysis system. Moreover, operating costs are low, as charges are tied to actual usage.

Conclusion

The diagnostics service offered by Remote Analysis Ltd has changed the traditional division of work between primary and secondary care in Finland. This private enterprise initiative has contributed to public health by improving access to diagnosis, shortening queues to secondary care and reducing costs. Taking into account the unique features of each national health care system this service can be applied globally.

References

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