GALILEO: An Integrated Cardiology Teleconsultation System in Chile

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Abstract and Objective

Timely evaluation of cardiologic patients by a specialist can be vital for their prognosis and outcome; in the Chilean public health context, high demand, lack of specialists and centralized imaging tests often result in waiting lists and delayed cardiologist assessment and intervention. GALILEO, a teleconsultation, teleimaging and tele-EKG platform has been in use since October 2008 in Chile's Bío-bío region, and has shown potential for significant reduction of time on patient referral to cardiologist response, reduction of patients' waiting lists for specialist assessment, overall positive impact on patient management and better use of the limited specialist time available versus the traditional patient referral system. This work's objective is to demonstrate these advantages.

Keywords:

Cardiology, Telemedicine.

Introduction

Timely evaluation of patients with a cardiologic condition by a specialist can be vital for their prognosis and outcome. In the Chilean public health system, high demand, long distances and lack of enough specialists result in significantly delayed evaluation by a cardiologist after initial assessment by the general practitioner, which in turn delays proper diagnosis and treatment. Current cardiologic practice shows that, in most cases, having the patient's medical history plus a limited set of test results can be enough for the specialist to accurately diagnose and initiate treatment. This fact led to the design and implementation of a comprehensive telemedicine solution, dubbed GALILEO. This system is operative in the Bío-bío region of Chile since October 2008, initially with Hospital Las Higueras as the main cardiology reference center and Curanilahue and San Carlos hospitals as associate centers.

Methods

GALILEO consists of three components: electronic teleconsultation (TC), tele-imaging (cardiologic ultrasound) and tele-EKG platforms. This system allows the transmission of clinical data from the referring centers to the cardiology reference center in this network (Hospital Las Higueras, Talcahuano), where cardiologists assess, diagnose and propose therapeutic actions, sending this information back to the referring center. The PICS TC platform is a web-based, secure, ad-hoc developed system, currently running on a cloud computing infrastructure. The other components are RIS-CARDIO-PACS from Agfa HealthCare for imaging, and MUSE EKG management system from General Electric. All of these work over a government's Internet connection (Ruta 5D).

Results

Since its start until February 2010, GALILEO has processed 515 TCs. On average, the reply from the specialist arrives under 54 hours. Also noted is the concordancy of the general practitioner and specialist's assessment of the seriousness and priority of each case; in 314 cases (60.97%), the GP's appreciation was equal to the specialist one; in 109 cases (21.17%) the GP overestimated the priority, and in 92 cases (17.86%) the GP underestimated the priority of the case. The weighted kappa coefficient of inter-rater agreement was 0.48 (moderate agreement).

Conclusion

In a country where the public health system can't always guarantee a timely assessment of patients by the required specialist, the GALILEO service model could become a vital tool for timely clinical decision making for complex patients. As remotely answering an TC takes much less time than scheduling a visit to the specialist's office, this system has the potential for greatly reducing the wait lists for specialists appointments, pre-selecting the cases where a physical visit is necessary (and conversely, handling the cases where the remote evaluation is deemed appropriate), and therefore reducing costs and enhancing quality healthcare accesibility for populations with limited access to specialists. GALILEO, still in its initial trial phase, is already in use by three Chilean public healthcare centers, and has also been recently used in the relief efforts after the February 27, 2010, 8.8-magnitude quake that hit the region, allowing field hospitals to communicate with specialists in the cities.