



## Tele-echocardiography in pediatric cardiology: the experience in Tuscany region

Alessandro Taddei<sup>1,2</sup>, Pierluigi Festa<sup>1</sup>, Giuseppe Santoro<sup>1</sup>, Nadia Assanta<sup>1</sup>,  
Fabrizio Conforti<sup>1</sup>, Gianna Alberini<sup>1</sup>, Gianluca Rocchi<sup>2</sup> and Luciano Ciucci<sup>1,2</sup>

<sup>1</sup>Gabriele Monasterio Tuscany Foundation, Heart Hospital, Massa

<sup>2</sup>Lions Clubs International, 108La Tuscany

Country: Italy

Email ID: [taddei@ftgm.it](mailto:taddei@ftgm.it)

### ABSTRACT

Regional teleconsulting network for heart malformations was developed in Tuscany by Monasterio Foundation (FTGM) established by National Research Council and Tuscany Region and specialized in cardiovascular and pulmonary diseases. Lions Clubs International supported since 2015 the development of this network (“Arriviamo al Cuore di Tutti”), which provides 24h service to 14 neonatology/pediatric centers throughout the region from two HUB centres (FTGM Heart Hospital in Massa and MEYER Paediatric University Hospital in Firenze). Both live and store-and-forward tele-echocardiography were implemented, while medical record web App was developed for collaborative reporting.

**Methods.** By tele-echocardiography the physician, who is examining the patient, is able to transmit echo-images to a reference center, where an expert cardiologist (“the consultant”) provides further analysis and interpretation. Each health-care center (SPOKE) was securely connected to reference pediatric cardiology center (HUB). Videoconference technology was applied on mobile medical-grade carts, equipped to transmit ultrasound images (live tele-echocardiography). Store-and-forward facility is also provided to transmit DICOM images for revision and in case of connection drawbacks.

A medical record system (developed by FTGM according to standard regulations) for patient documentation and reporting, shared between SPOKE and HUB centres.

**Results.** FTGM, supported by the Lions Clubs and promoted by Regional Authorities, cooperated with health-care institutions for implementing tele-echocardiography according to joint agreements for care delivery. ITC staff set up network connections and installed telemedicine workstations at both the two HUBs and at SPOKE centres (14). More than 500 patients were so far examined and followed up by tele-echocardiography.

**Conclusions.** Tele-echocardiography allows collaborative medical decision-making in diagnosis and care of complex and critical heart defects. It plays an important role in the early diagnosis, follow-up, or exclusion of cardiovascular abnormalities, planning patient mobility to tertiary specialist center when necessary. That was particularly important during the COVID-19 pandemia.

### BIOGRAPHY

Alessandro Taddei has served at National Research Council in biomedical engineering and medical informatics, first at Clinical Physiology Institute in Pisa and later at FTGM Heart Hospital. He has over 150 publications and his h-index is 13.

**Presenter Name:** Alessandro Taddei

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**Contact number:** +39 3484528705

