

Telehealth Network of Minas Gerais

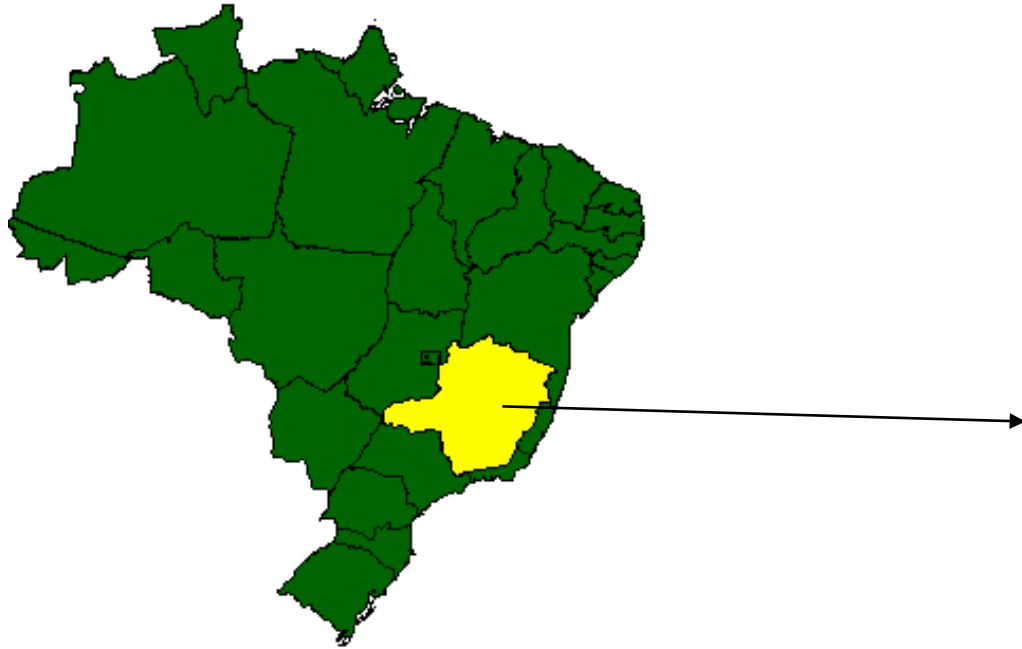
University Hospital Telehealth Center



***Internet2 Health Network Initiative,
Focus on Rural Health Care Pilot Program Workshop
October 17, 2008***

UH Telehealth Center

Brazil



184,000,000 inhabitants

5,507 cities

Minas Gerais



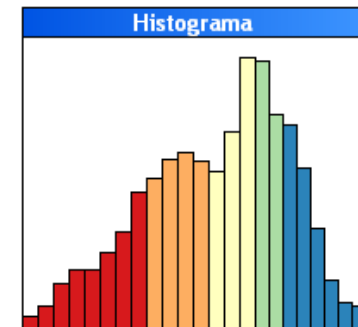
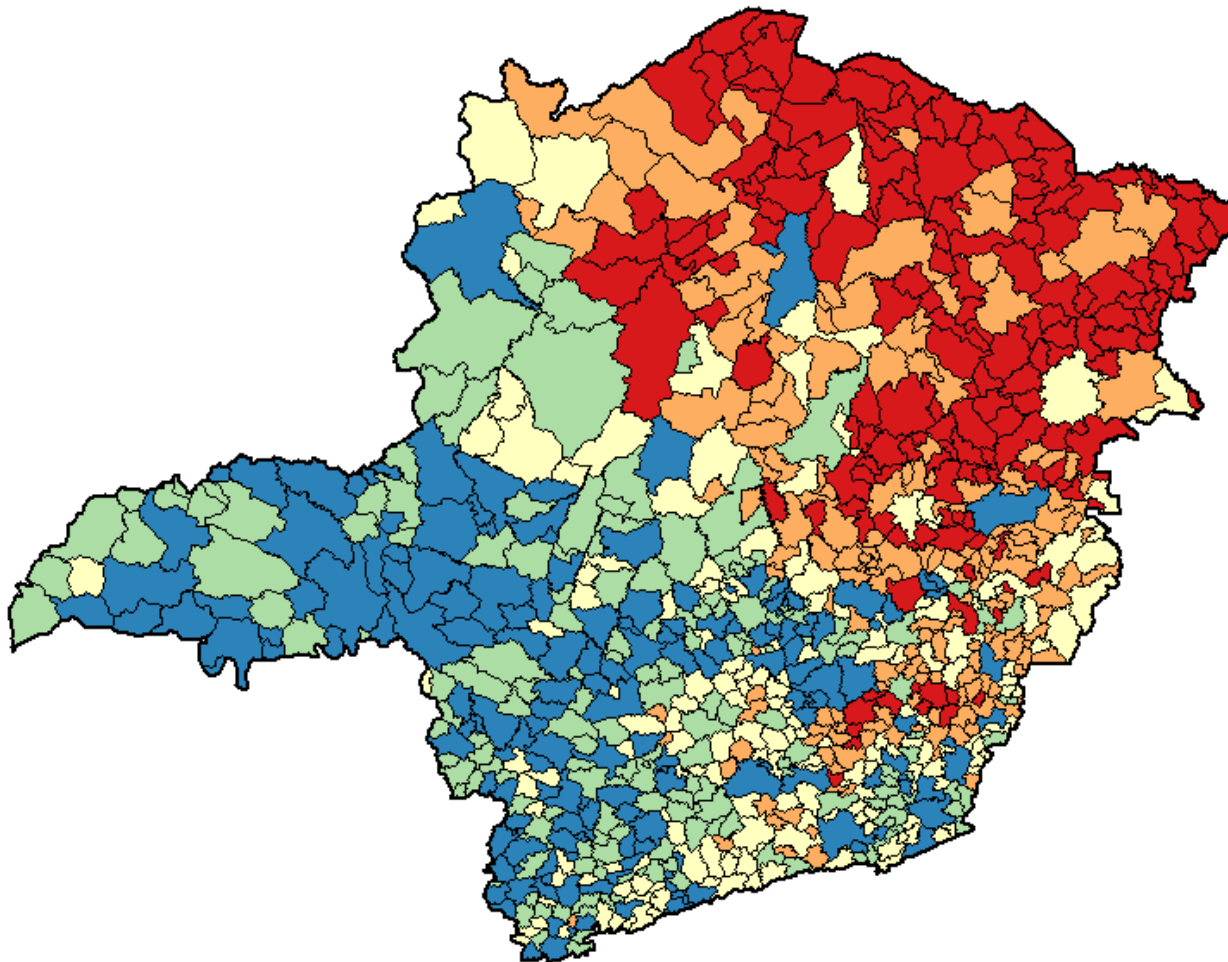
19,000,000 inhabitants

853 cities

60% with population less than
10,000 inhabitants

Human Development Index - HDI

Índice de Desenvolvimento Humano Municipal, 2000
Municípios do Estado de Minas Gerais



Legenda		
0,568 a 0,667	(171)	
0,668 a 0,707	(171)	
0,708 a 0,743	(175)	
0,744 a 0,770	(173)	
0,771 a 0,841	(163)	

Cardiovascular Diseases in Minas Gerais

- Major cause of death and illness in Brazil
- High costs
- Prevention and treatment
↓
priorities in public health
- Chagas Disease



Telehealth Center



**University Hospital of Federal University of Minas Gerais
(UFMG)**



UH Telehealth Center

Federal University of Minas Gerais: *34,174 students, 2,446 professors, 4,445 employees, 49 undergraduate courses, 220 graduate courses, 593 research groups.*

University Hospital: *467 beds, 3,500 urgency attendances/month, 1,600 hospitalisations/month, 32,000 consultations/month, 462 professors, 2,545 employees.*

Telehealth Center: *Created in 2005, clinical activities started in June/2006, 27 employees, 11,493 clinical attendances/month, 237 end points, covered population of 2,385,614 people.*

**2001 to
2003**

Telehealth model definition: connection between University and primary care.

Development of the telehealth model.

2004

BHTelehealth Project: a partnership between Municipal Health Department of Belo Horizonte and UFMG University Hospital

2005

Creation of UH Telehealth Center at the UFMG University Hospital

Minas Telecardio Project: a partnership between UH Telehealth Center and State Health Department of Minas Gerais, to implement telehealth system focusing in telecardiology in 82 villages.

2006

eHealth Brazil: supported by Ministry of Health in 100 villages in the state

**2007 to
2008**

Transformation of the Minas Telecardio Project in a permanent telehealth service supported by State Health Department of Minas Gerais, expanding to additional 97 villages and towns.

September 2008:

182 villages and towns in the State of Minas Gerais

23 towns in the State of Ceará

23 Health Centers in municipal area of Belo Horizonte

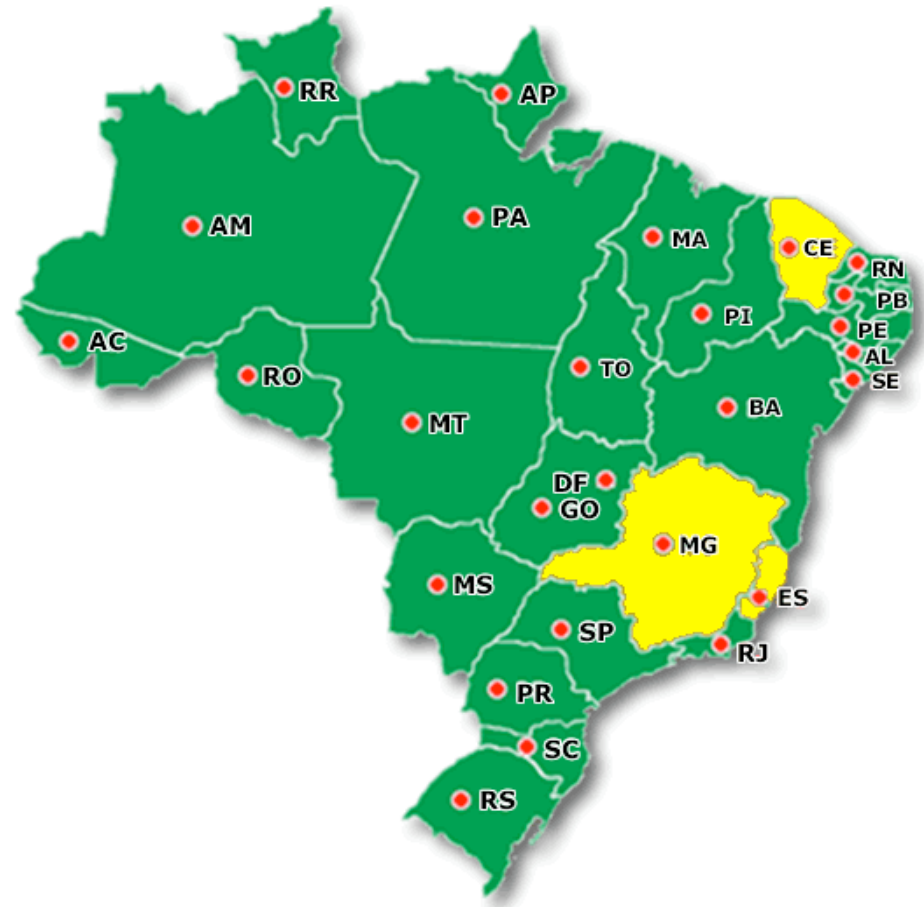
01 village in the State of Espírito Santo

2,385,614 inhabitants covered by the system

Partnership with

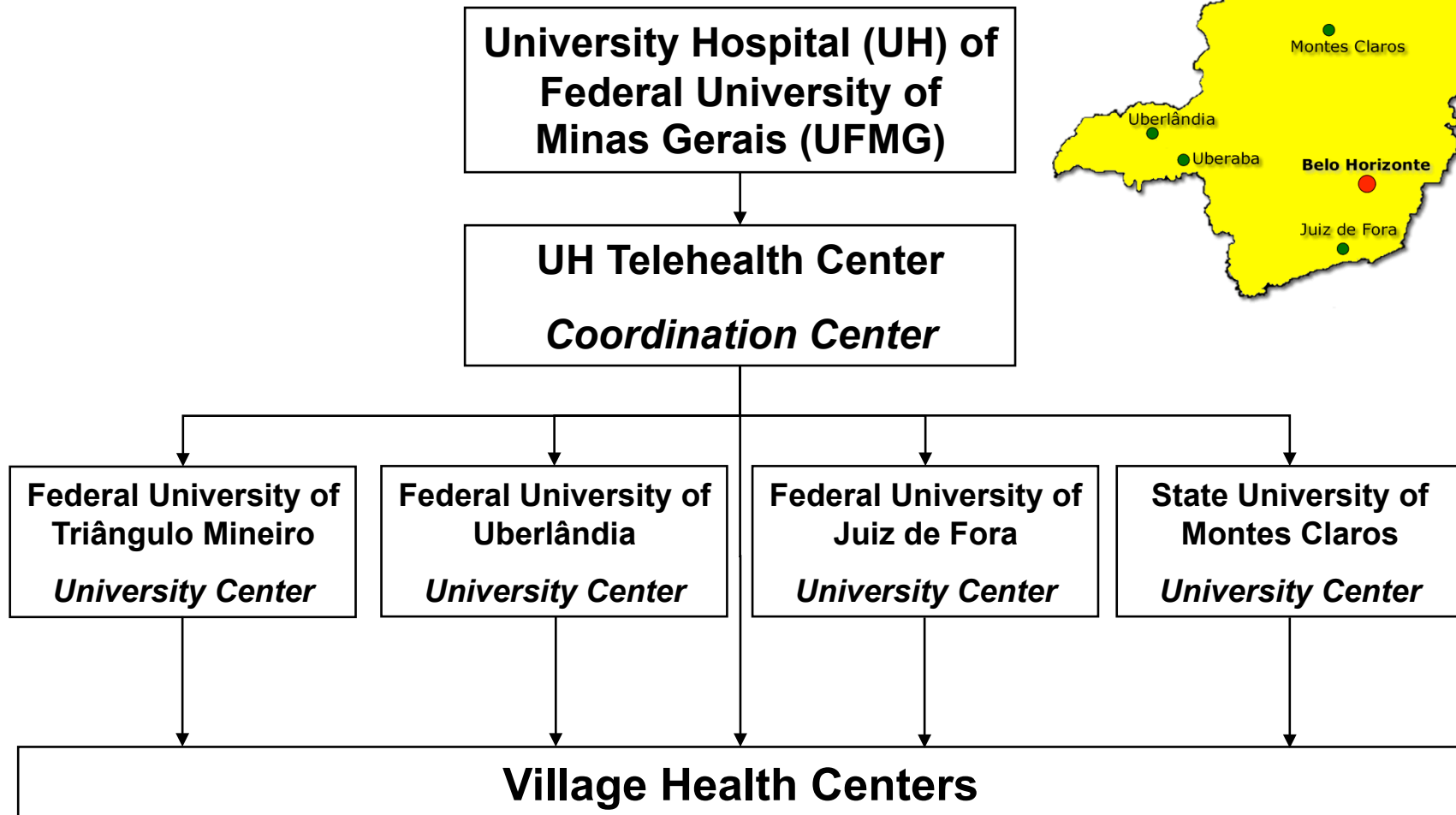
State of Ceará

State of Espírito Santo



UH Telehealth Center Model

*The telehealth network in the
State of Minas Gerais*



UH Telehealth Center Model

1. A system linking academia to primary care through:

- i. teleconsultations,
- ii. second opinion,
- iii. analysis of electrocardiograms by distance and
- iv. permanent education.

2. Criteria for participation:

- i. localization: remote and isolated areas,
- ii. low HDI,
- iii. explicit interest of the municipal management,
- iv. real necessity of the Telehealth system,
- v. level of implementation of the Family Health Program (PSF)
and
- vi. reasonable internet connection.

UH Telehealth Center Model

3. Equipment for villages:

- i. microcomputer,
- ii. webcam,
- iii. printer,
- iv. digital 12-lead ECG and
- v. digital camera.

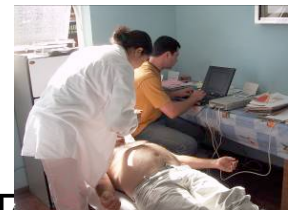


UH Telehealth Center

UH Telehealth Center Model

4. The implementation process:

- i. General motivational meeting at the Telehealth Center involving all management and clinical staff,
- ii. Planning of implementation, time and team requirements,
- iii. Specification and purchase of software and equipments,
- iv. Tests and technical support to improve internet connection quality at the villages,
- v. Visit to all villages,
- vi. Training technical and clinical local staff on the system at the Center,
- vii. Equipment delivery by the end of the training section.
- viii. Start up of activities.



Telehealth



UH Tel

UH Telehealth Center Activities

Starting in June/2006:

- 1. *Duty service in Telecardiology:*** three cardiologists stay on duty for 12 hours a day at the university centers to receive and analyze the ECG sent by local doctors in the villages. The specialists in duty discuss, when necessary, the clinical case with the local doctor using the Telecardiology system, supporting them mainly in the conduction of urgency cases.
- 2. *Teleconsultation or second opinion on other specialties:*** the local doctors can discuss a specific clinical case with a specialist of the university centers. The system permits both on-line and off-line teleconsultations.



Minas Novas

Telecardiology and tele-electrocardiography

Teleconsultations
on line and off line
in some specialties



UH Telehealth Center

UH Telehealth Center Activities

3. Educational support to the Family Health Program (FHP): lectures are delivered by the universities specialists, discussing on line with the local doctors specific subjects previously defined with them.

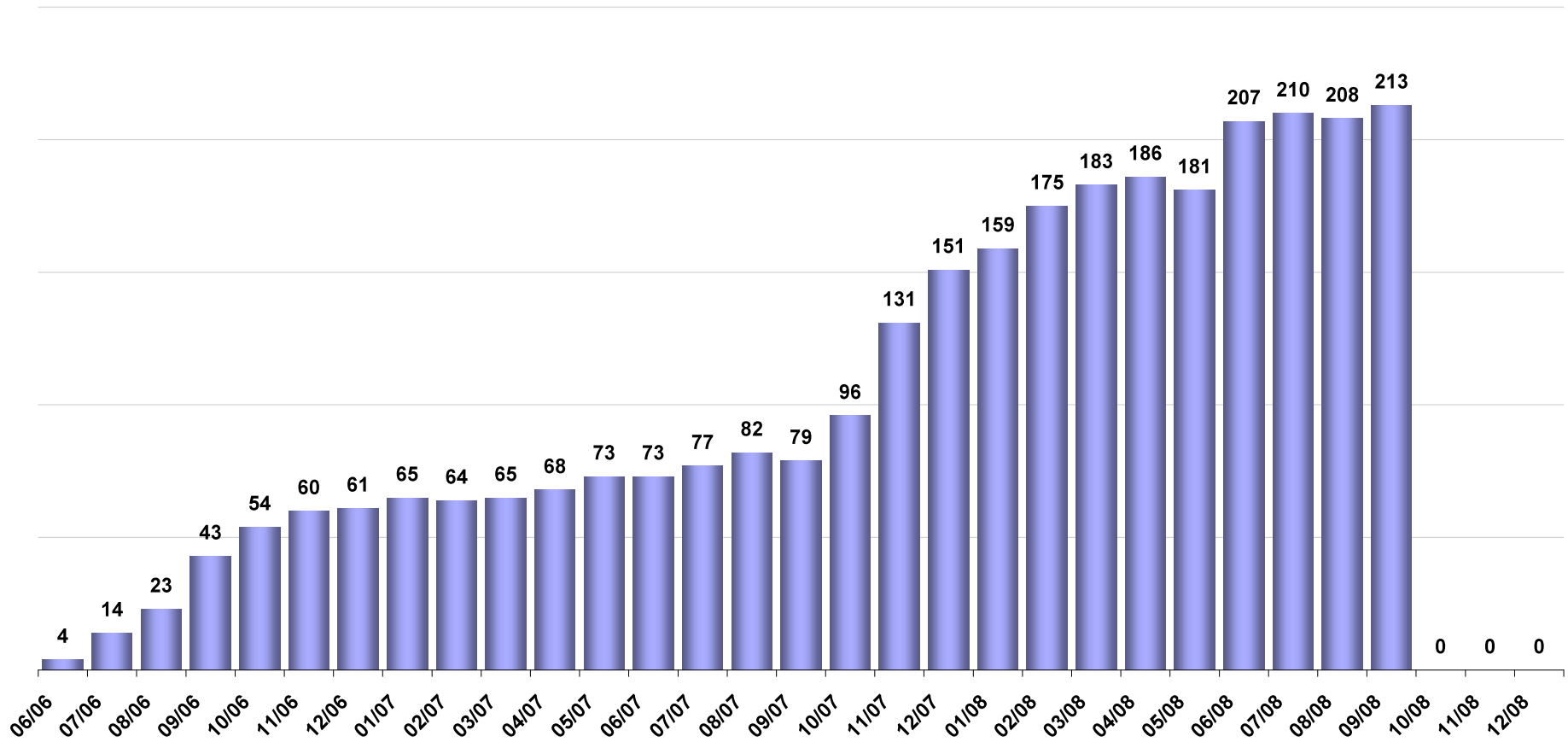


Results



UH Telehealth Center Results

Villages and Towns Connected

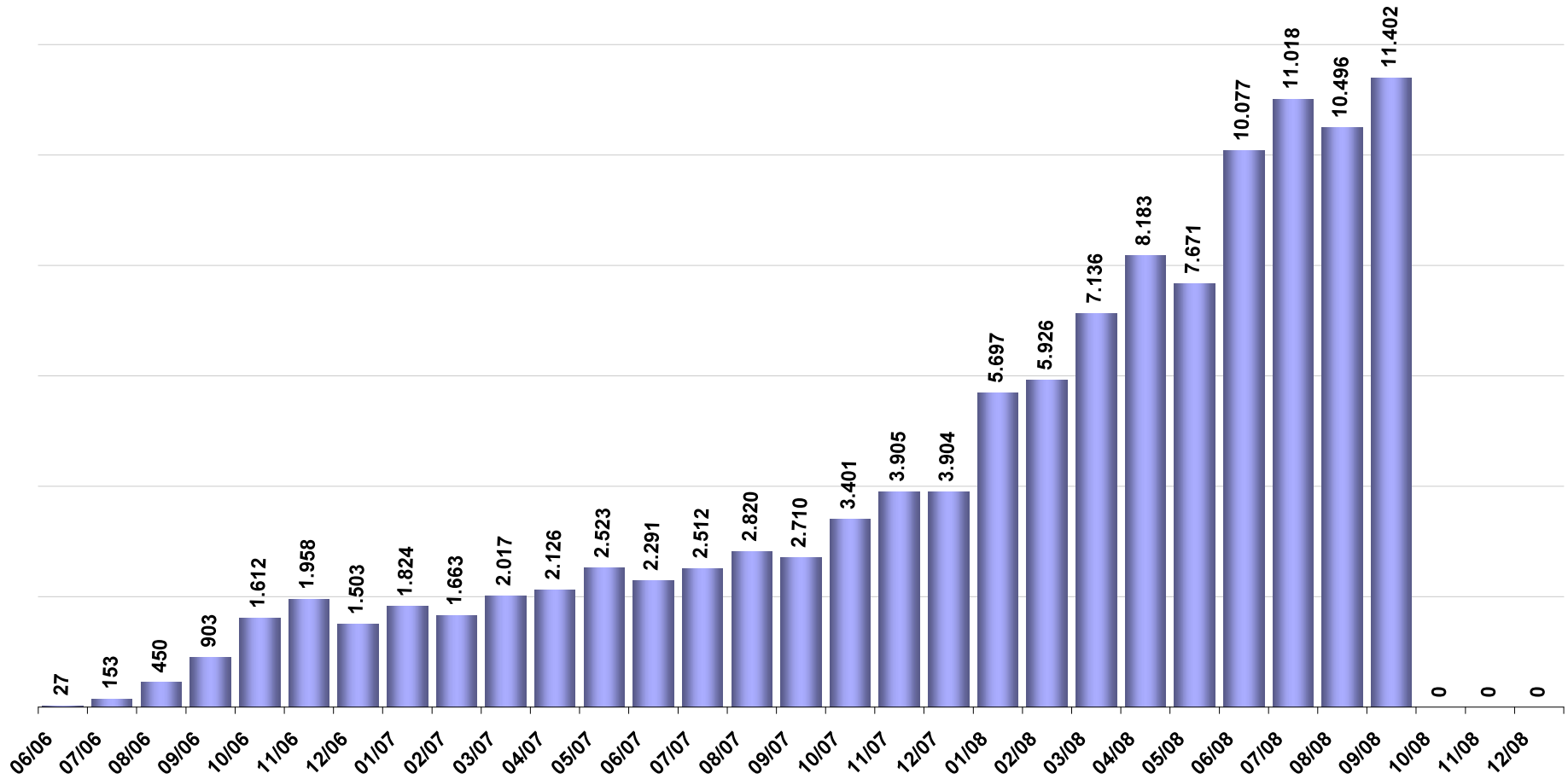




UH Telehealth Center Results

Monthly Number of ECGs

Accumulated Value: 115.908

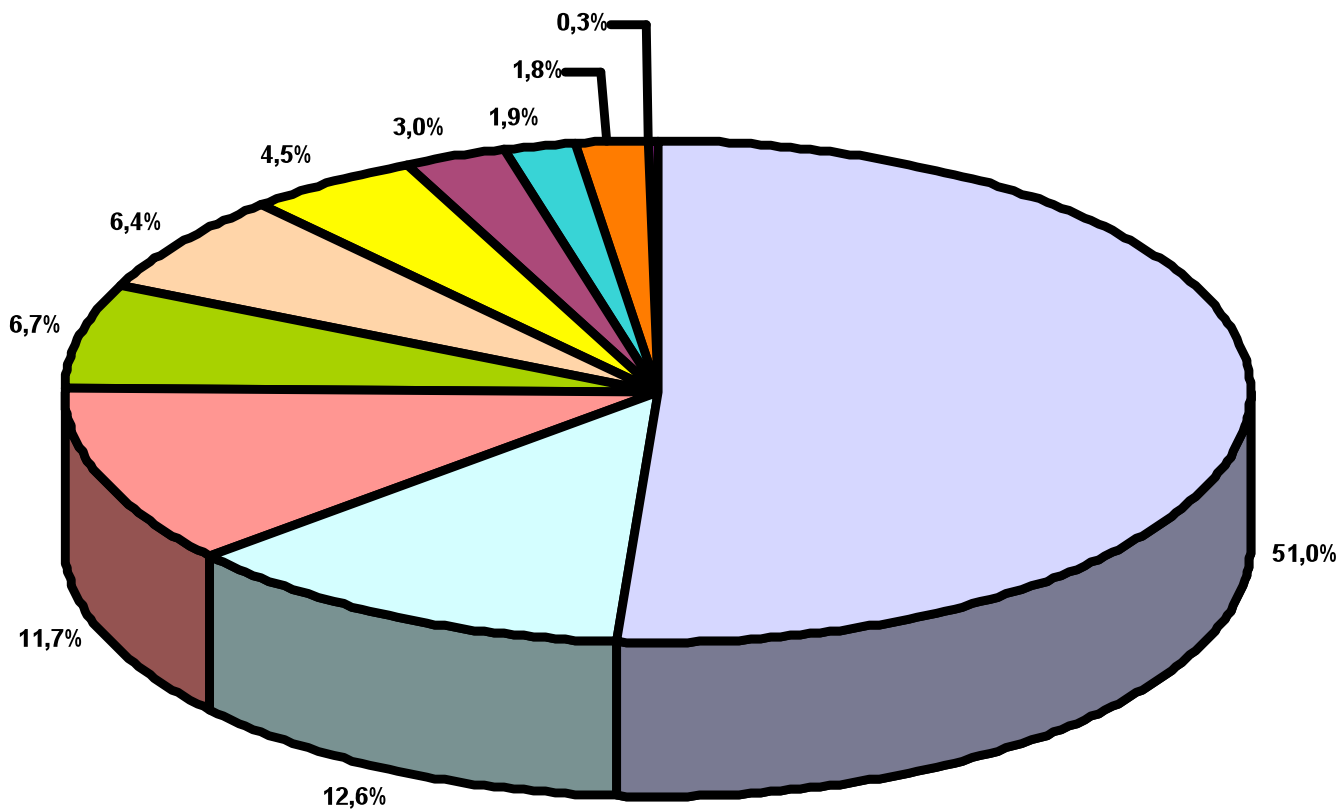


UH Telehealth Center

UH Telehealth Center Results



ECG Analysis Results



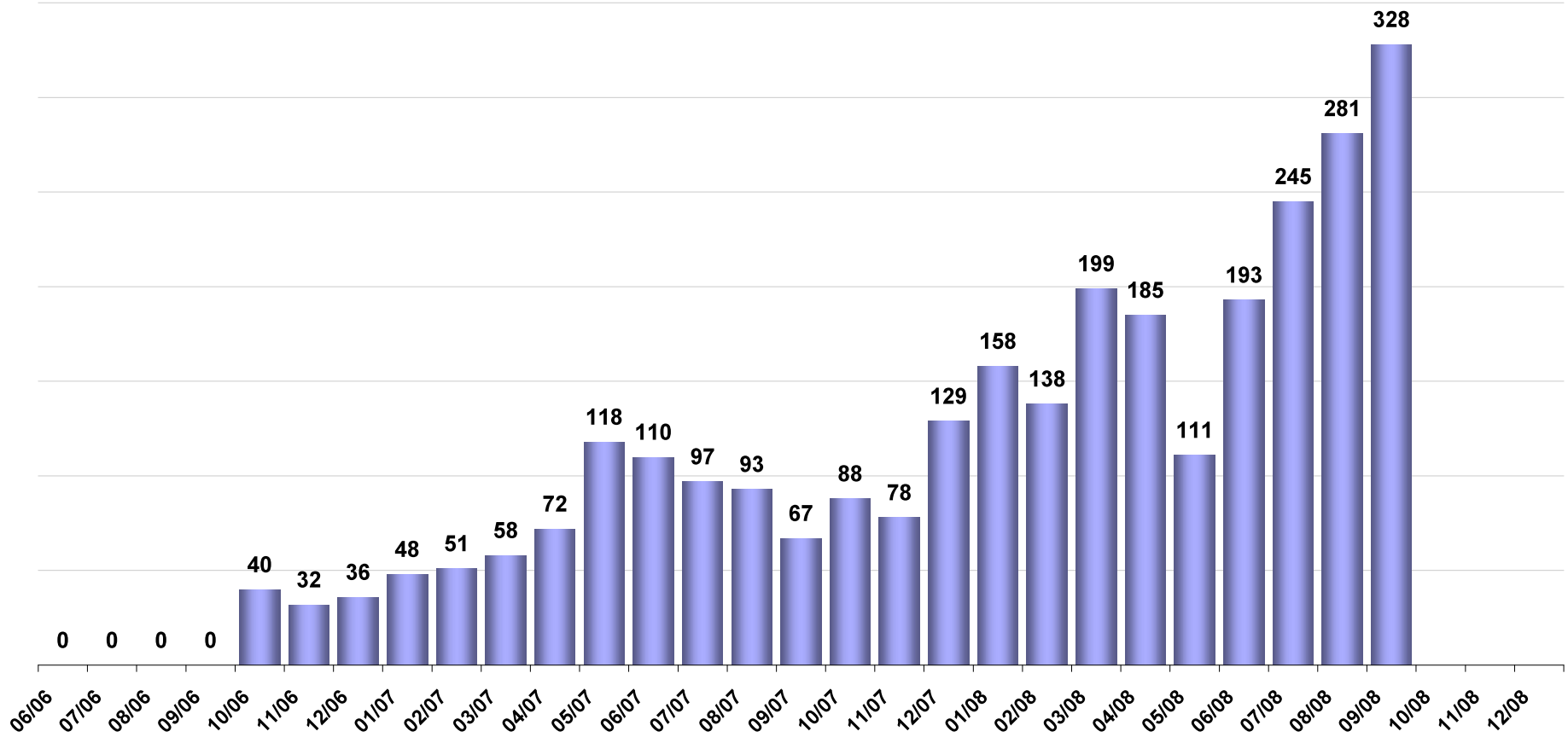
- Normal
- Heart Block
- Changes in Repolarization
- Heart Overload
- Arrhythmia
- Chagas disease
- Others
- Coronary Syndrome
- Atrial Fibrillation
- Pacemaker



UH Telehealth Center Results

Support to Urgency Clinical Cases

Accumulated Value: 2.955



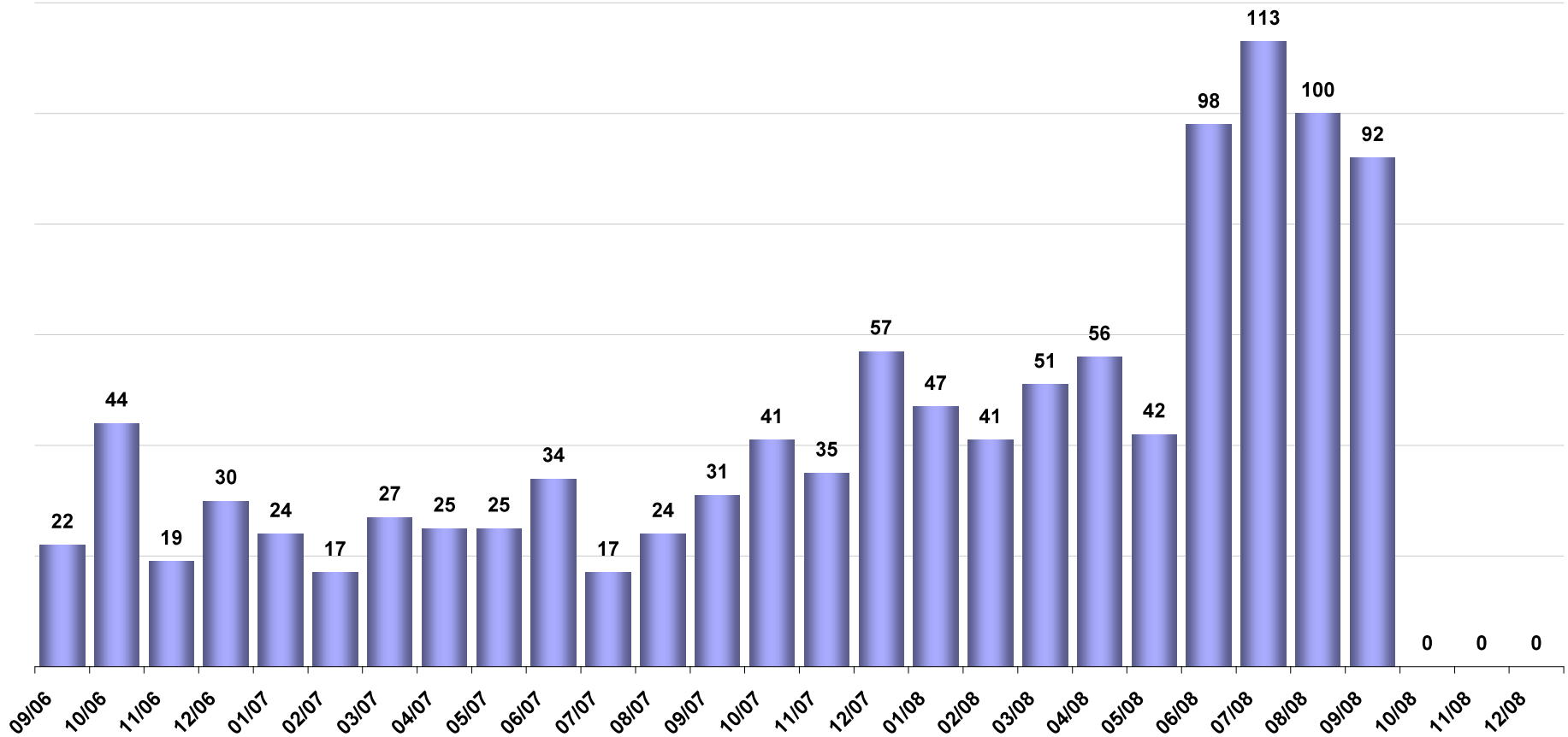
UH Telehealth Center



UH Telehealth Center Results

Teleconsultations

Accumulated Value: 1.112



UH Telehealth Center



Cost Effectiveness

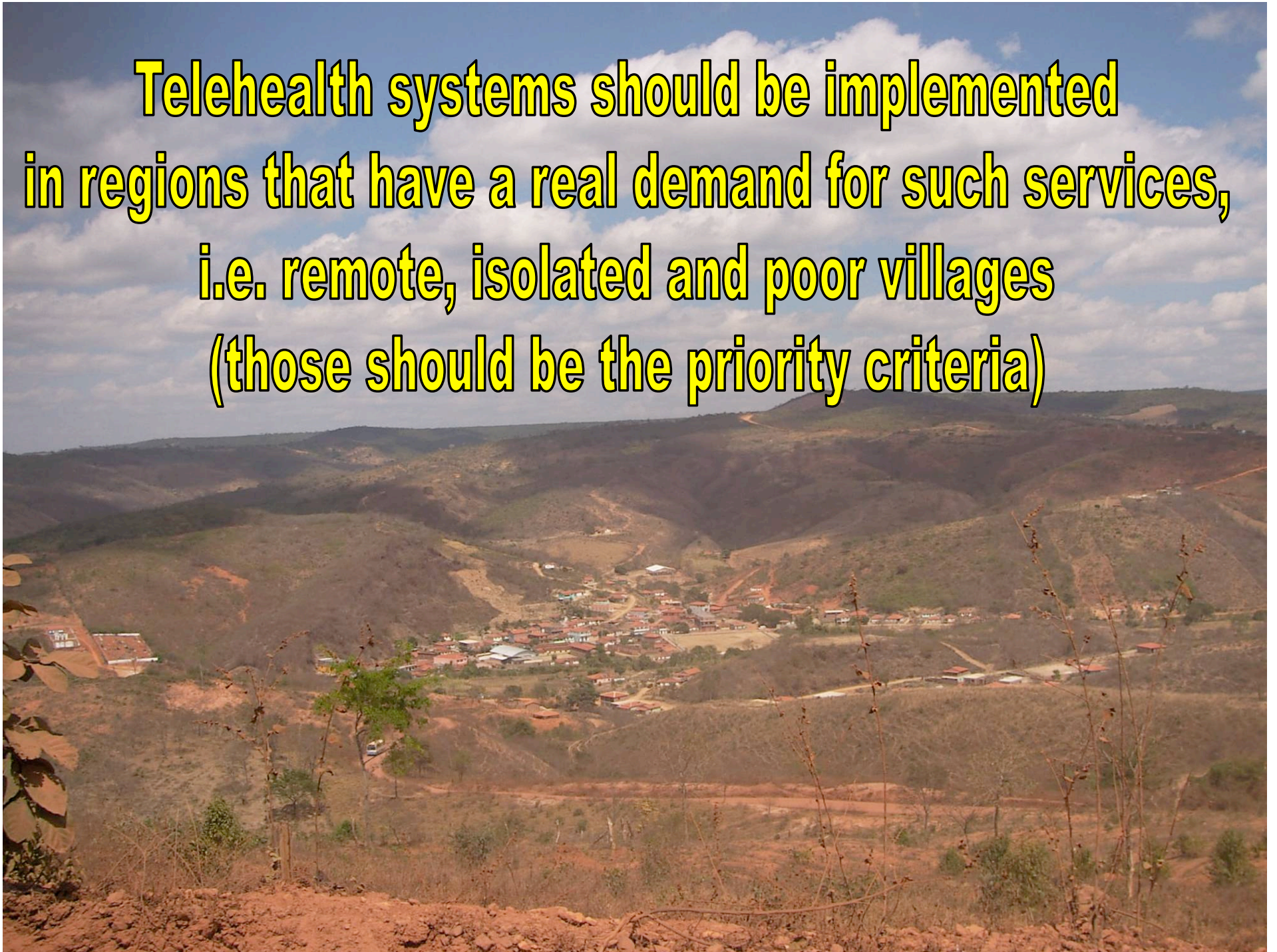


Investment (US\$/village)	6,434
Number of villages in the system	237
Telehealth Center operational cost (US\$/month)	51,500
Monthly number of ECG	11,400
Tele-ECG cost (US\$)	4,52
Unitary patient transfer cost to secondary level (US\$)	41,50
% Patient transfers to secondary level avoided	67%

Cost proportion (tele-ECG / to send patient to secondary level)	1/9
Annual liquid savings for the villages (US\$)	3,803,724
Investment / Monthly liquid savings (months)	5,7

Lessons Learned

**Telehealth systems should be implemented
in regions that have a real demand for such services,
i.e. remote, isolated and poor villages
(those should be the priority criteria)**



Patience and persistence are the most important ingredients to convince people to adopt a new way of working





Local managers and clinical staff accept the teleassistance when they realize that it will solve their daily public health problems



The system operation should be as simple as the local users

**Technology is the way of doing not the objective itself.
Consequently it should be according to
the real local conditions**





Face to face meetings are necessary activities before virtual ones to establish confidence and friendly relationship



Chapada do Norte

Veredinha





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