

Telemedicine Networking for Medical Support in Ecuador

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Luxembourg
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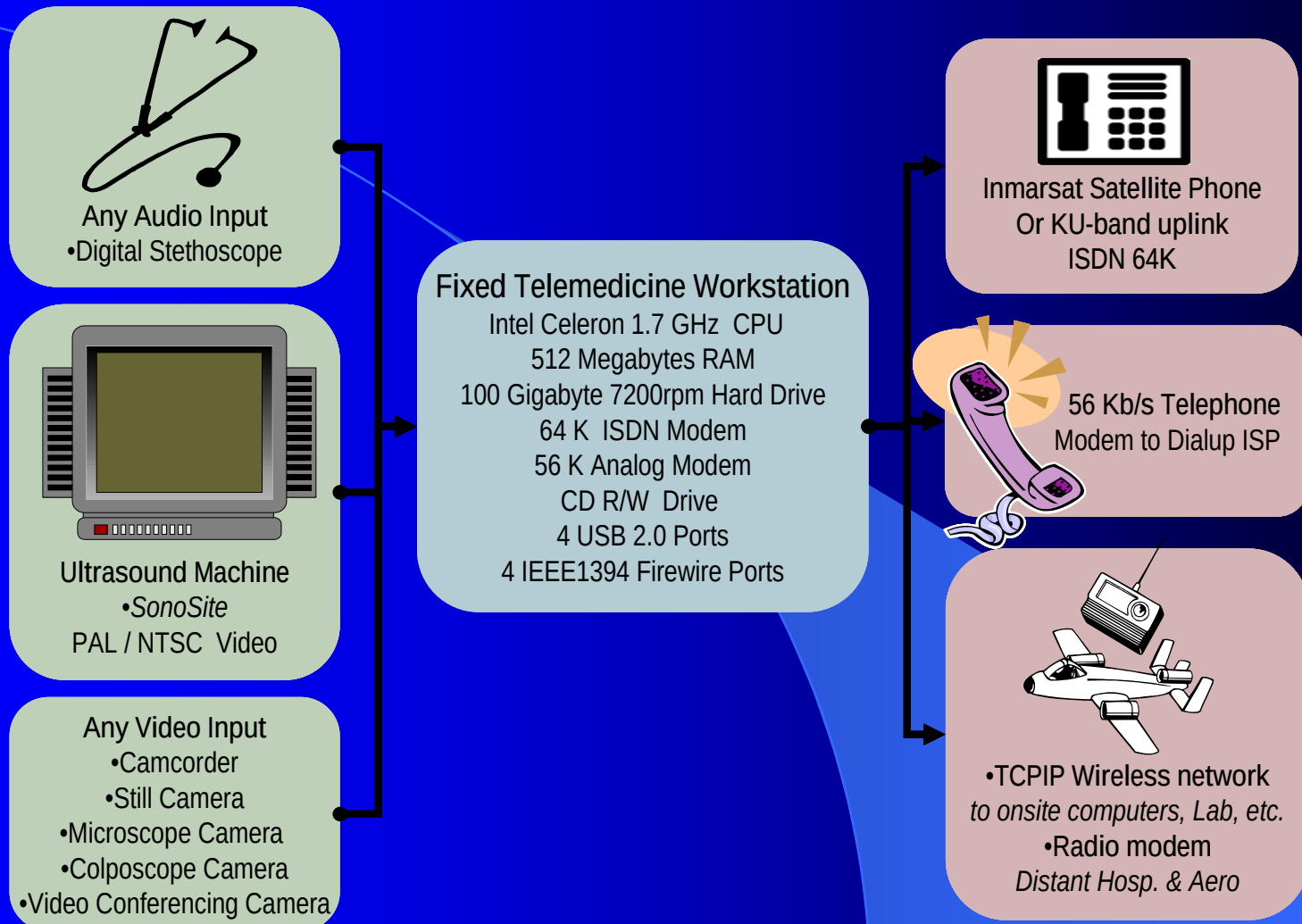


Fixed Telemedicine Unit

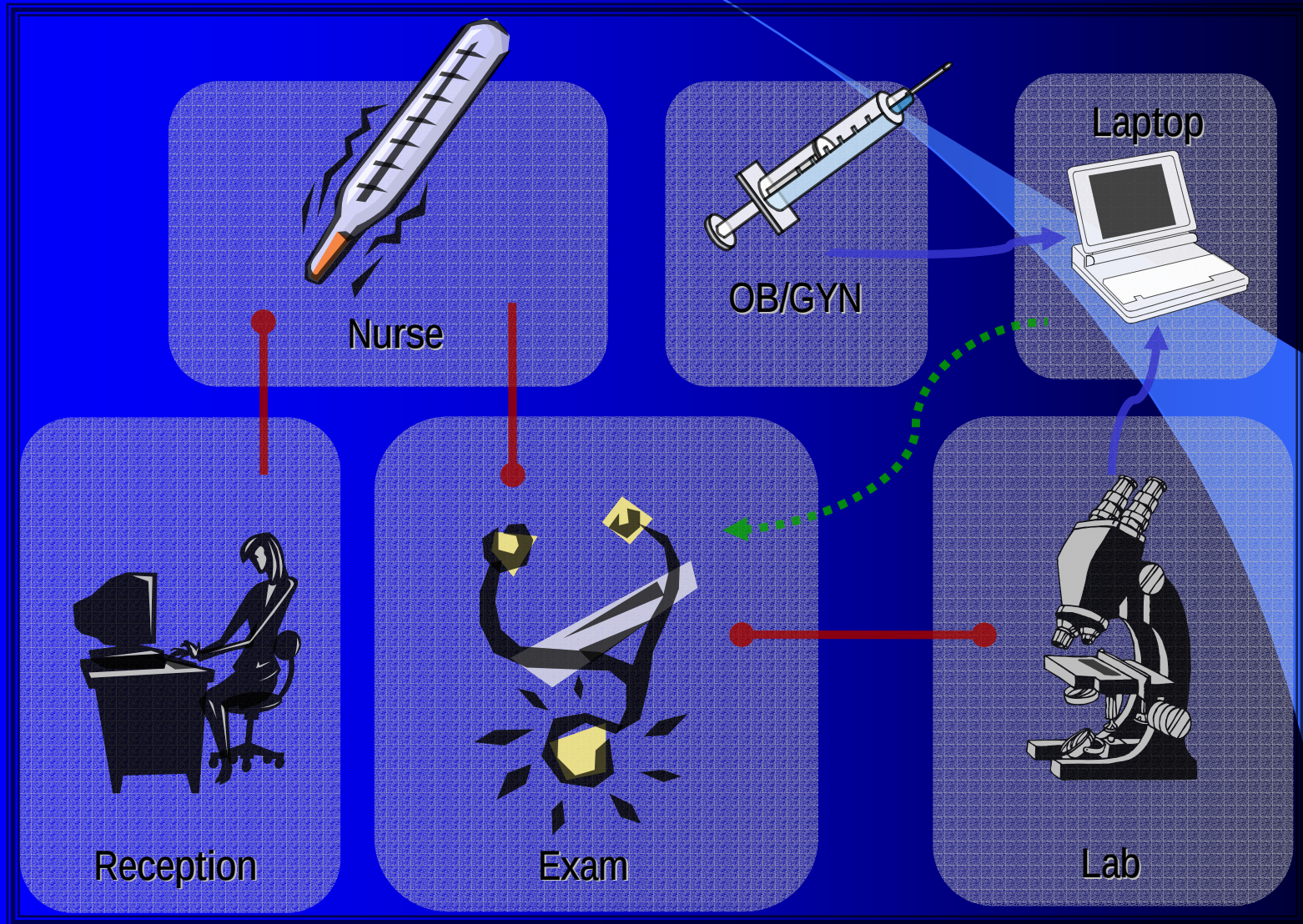
- Computer
- Software suite
- Electronic Health Record
- Scanner
- Digital Camera
- Camcorder
- DVD Burner
- Ultrasound
- Colposcopy
- Microscopy
- Telecommunications: radio, modem IP, LEOS, InMarSat

Clinica Luxemburgo

Fixed Telemedicine Workstation



LAN in Clinica Luxemburgo



High Frequency Radio

Application for image and text transfer



Clinica Luxemburgo EMR

	Totals	Percentage
Patients seen in Clinic	3956	
Patients entered in EMR	875	22%
Records sent elsewhere	610	70%
Records sent for consultation	379	43%
No. of U/S exams	1870	47%
U/S images saved to EMR	629	34%
U/S images sent elsewhere	478	76%
Patients impacted by telemedicine	486	12%
Patients referred to Luxemburgo	753	19%

Mobile Surgery Network Members



- Mobile Surgical Practice based in Cuenca, Ecuador
- Primary care telemedicine sites in:
 - Sucúa
 - Macas
 - Manglaralto

Area: 283,520 sq km (175,780 sq mi)

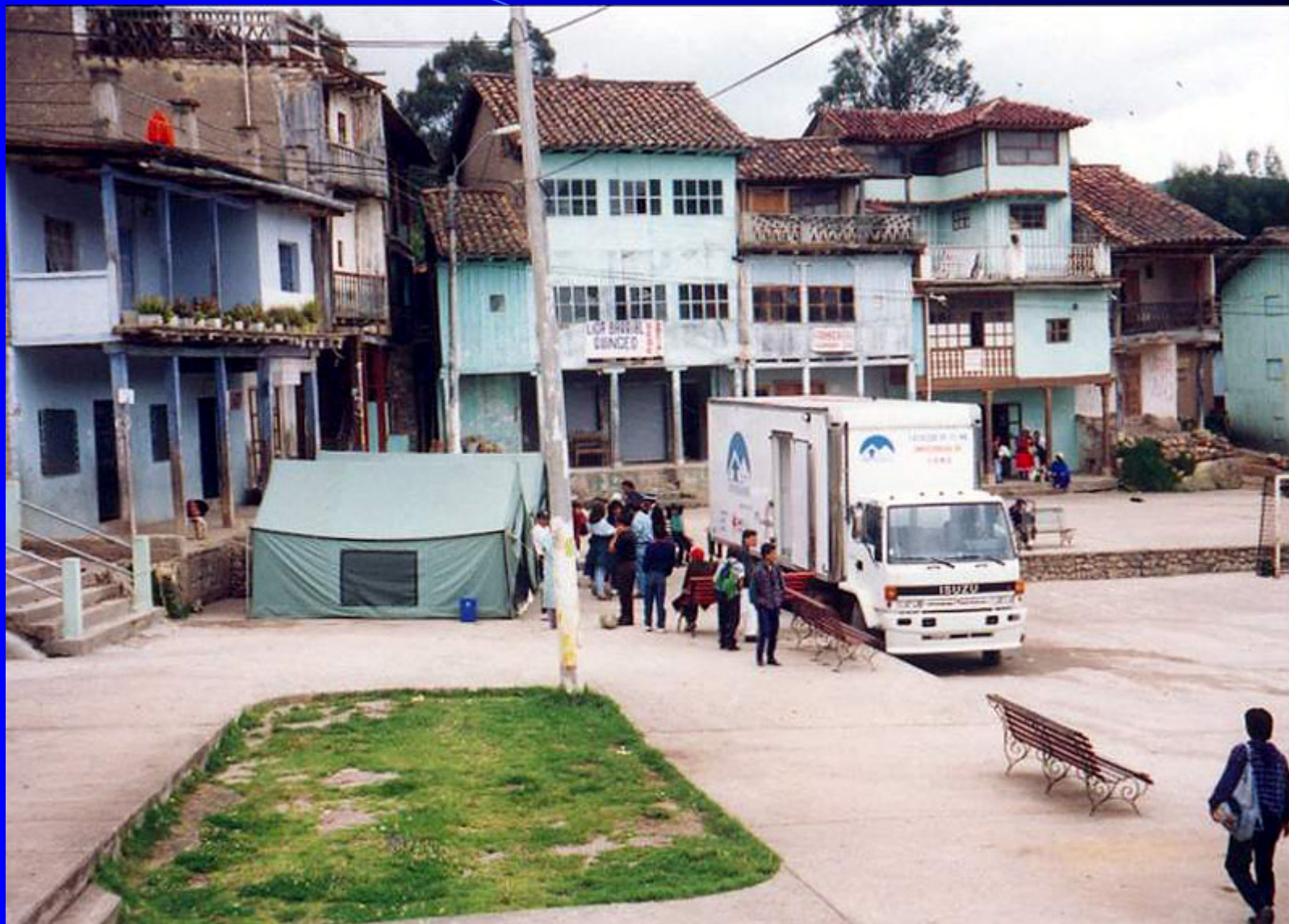
Population: 11,700,000

People: Mestizo (40%)
Indian (40%)
Spanish descent (15%)
African descent (5%)

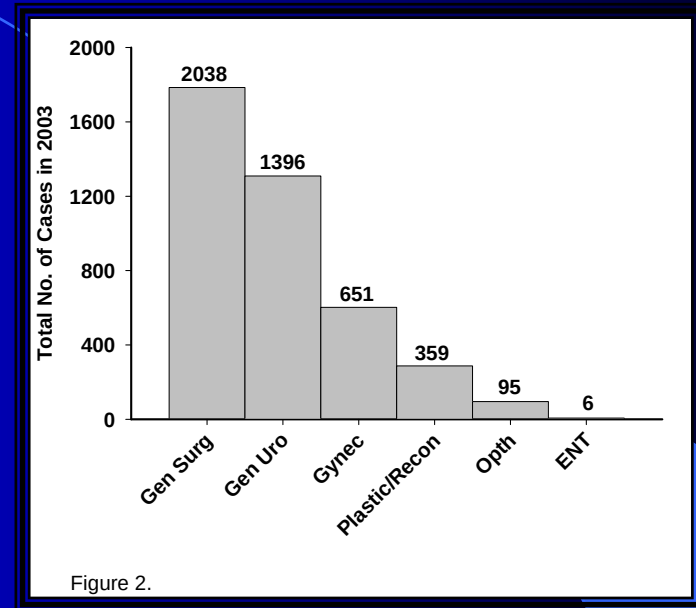
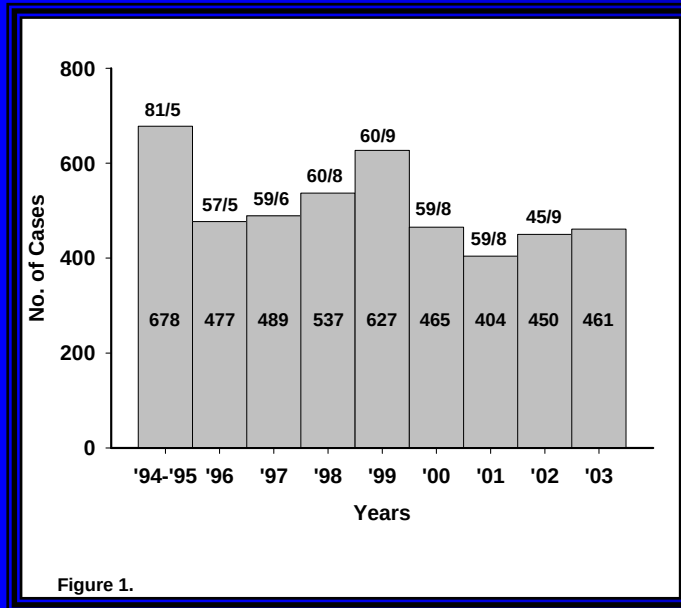








Cinterandes Mobile Surgery

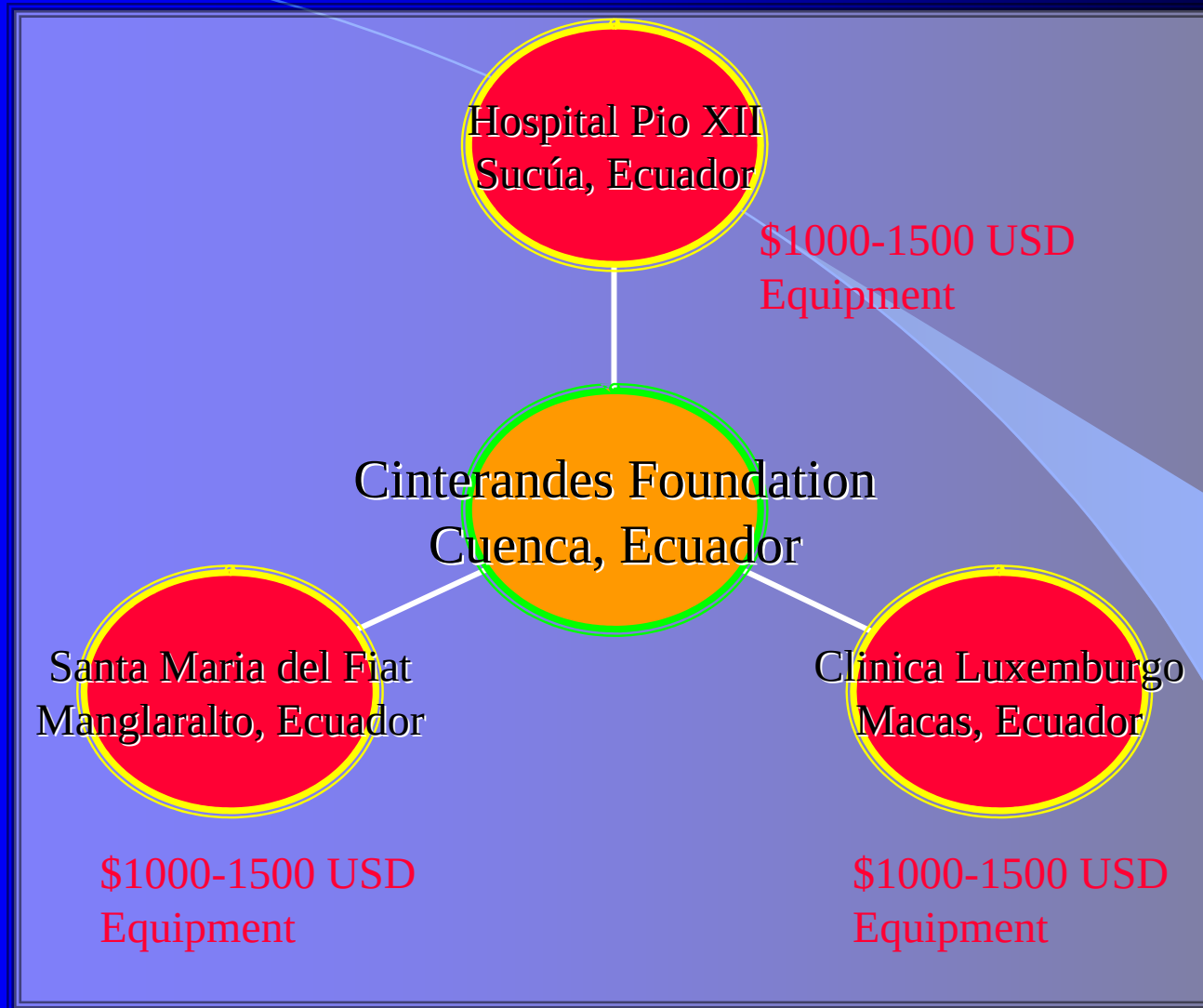


Most common operations:

Cholecystectomy	226
Inguinal hernia	699
Ventral hernia	557
Circumcision	767
Orchiopexy	362

Telemedicine for Mobile Surgery Integration

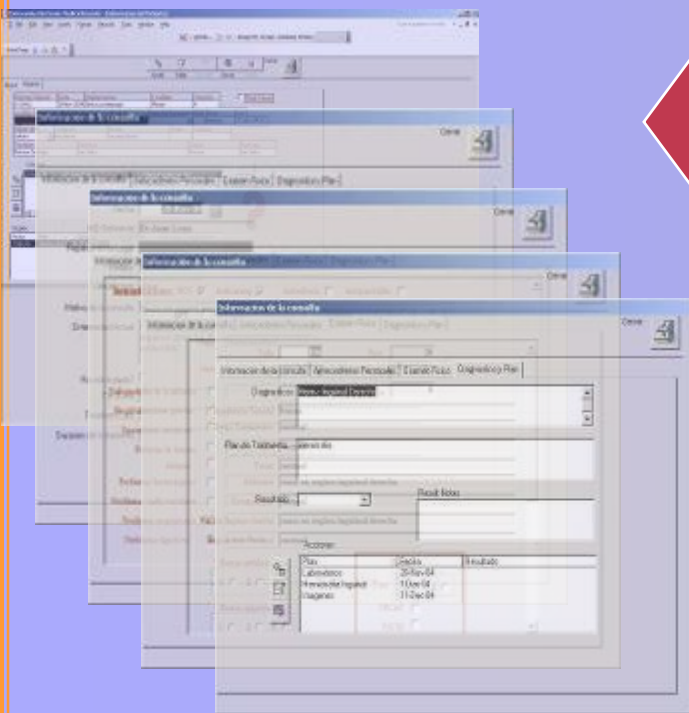
- Laptop computer
- Software suite
- Digital camera
- Telecommunications: modem IP



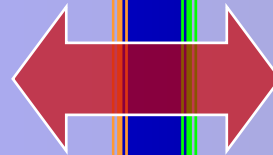
- Hub represents mobile surgical unit base headquarters
- Spokes represent various primary care facilities with fixed telemedicine stations (**base price shown**)
- Connectivity by modem

Cinterandes Interaction with Primary Care Centers

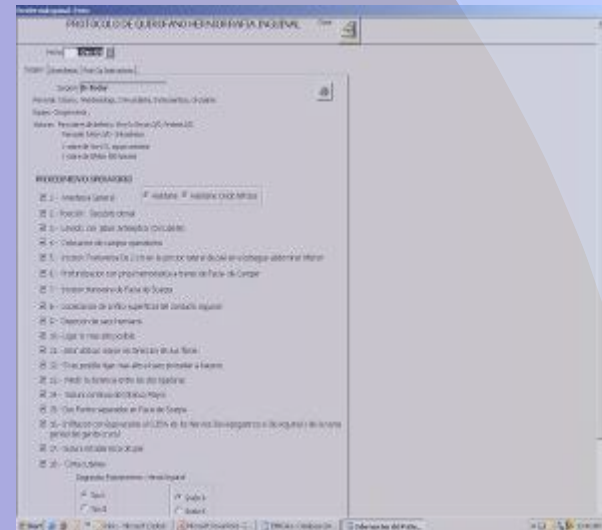
Primary Care Sends
Pt Information:



The image shows a stack of overlapping software windows from a medical information system. The windows contain various forms for patient data, including fields for name, date, and specific medical details. The windows are layered, with the most recent one in the foreground.



Cinterandes Receives &
Responds (Schedules
videoconference as needed)



The image is a screenshot of a software window titled "PROTOCOLO DE QUEJAS Y SÍNTOMAS INICIALES". It contains a list of symptoms and signs with checkboxes for selection. The list includes items like "Fiebre", "Tos", "Dolor de cabeza", "Dolor de garganta", "Dolor de pecho", "Dolor de estómago", "Dolor de espalda", "Dolor de articulaciones", "Dolor de músculos", "Dolor de piel", "Dolor de ojos", "Dolor de oídos", "Dolor de nariz", "Dolor de boca", "Dolor de lengua", "Dolor de garganta", "Dolor de pecho", "Dolor de estómago", "Dolor de espalda", "Dolor de articulaciones", "Dolor de músculos", "Dolor de piel", "Dolor de ojos", "Dolor de oídos", "Dolor de nariz", "Dolor de boca", "Dolor de lengua".

Mobile Surgery Network

- Trained personnel in three sites
- Networking with clinics in Sucúa, Macas & Manglaralto



Networking Results to Date

	<i>Preoperative Screening</i>	<i>Scheduled for Surgery</i>	<i>Underwent Surgery</i>	<i>Postoperative Evaluation</i>
Inguinal hernia	26	23	21	20
Cholecystectomy	18	14	14	13
Uterine Leiomyoma	2	2	1	1
Umbilical hernia	5	4	4	3
Cryptorchidism	4	4	1	1
Phymosis	4	4	1	1
Lipoma	2	2	2	1
Cystocele	2	2		
Miscellaneous	11	10	10	10
Totals	74	65	54	50

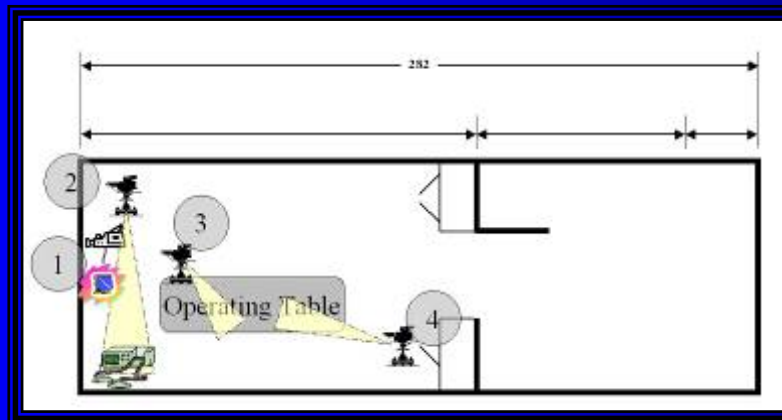
RDTU

Rapidly Deployable Telemedicine Unit

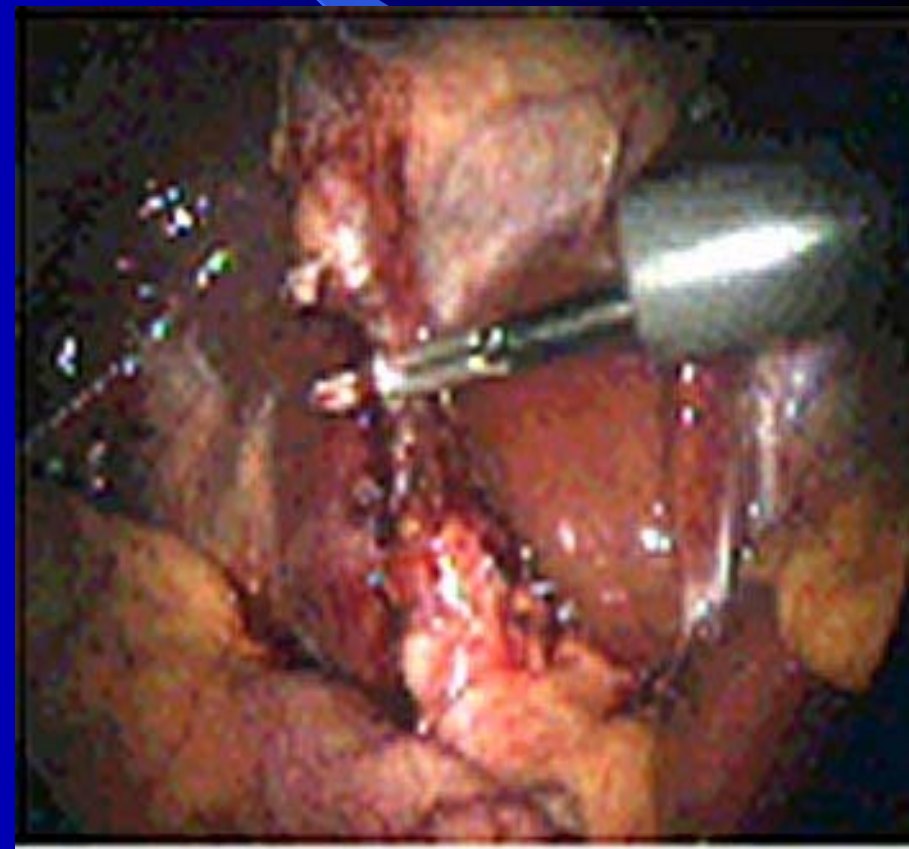


Multimedia EHR for Mobile Surgery

- Seven operations captured
- Comparison of electronic record v. paper (17 questions, 4 reviewers)









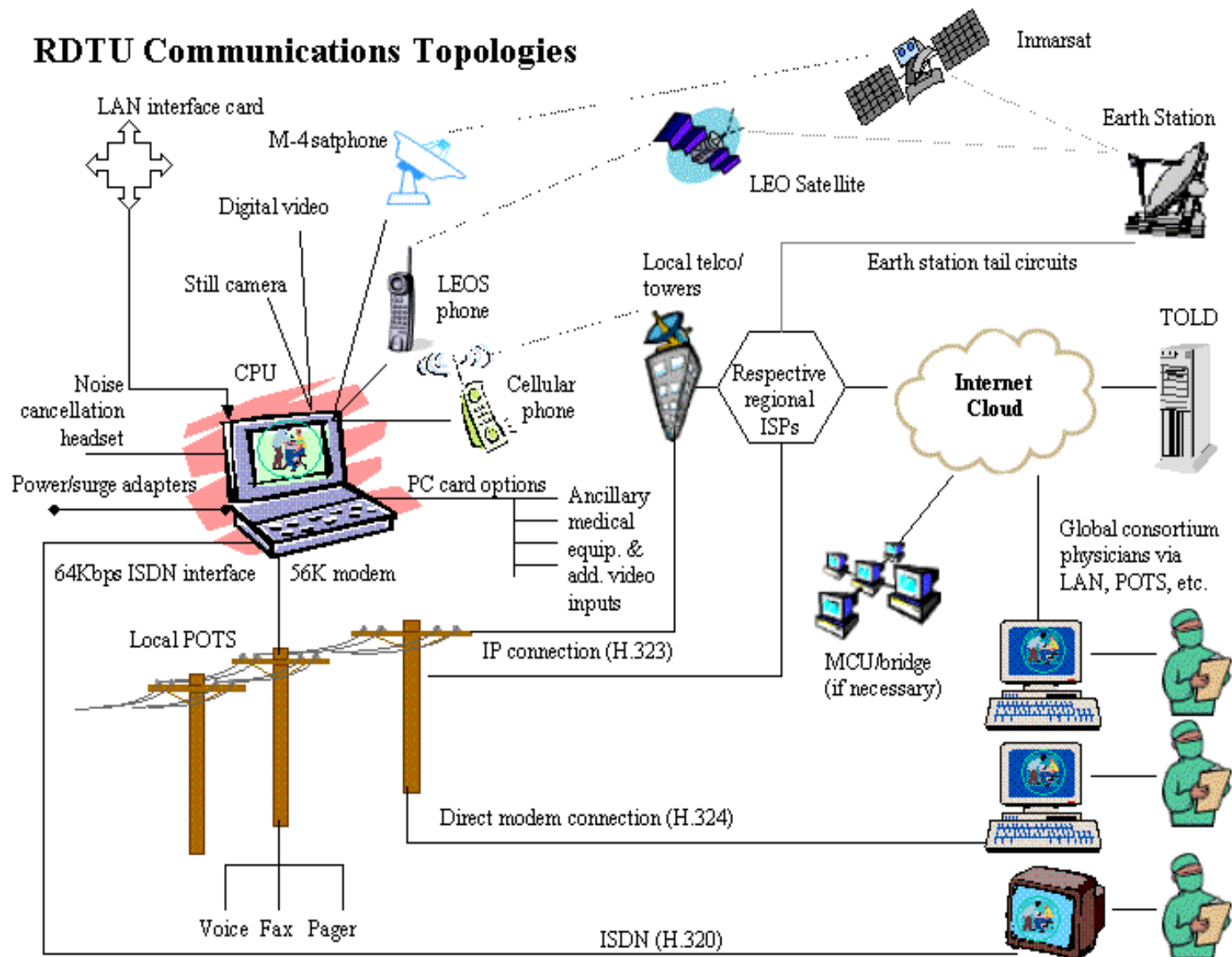
RDTU: From Ecuador to Richmond

- Image from Ecuador
- Image from Richmond



Schematic

RDTU Communications Topologies



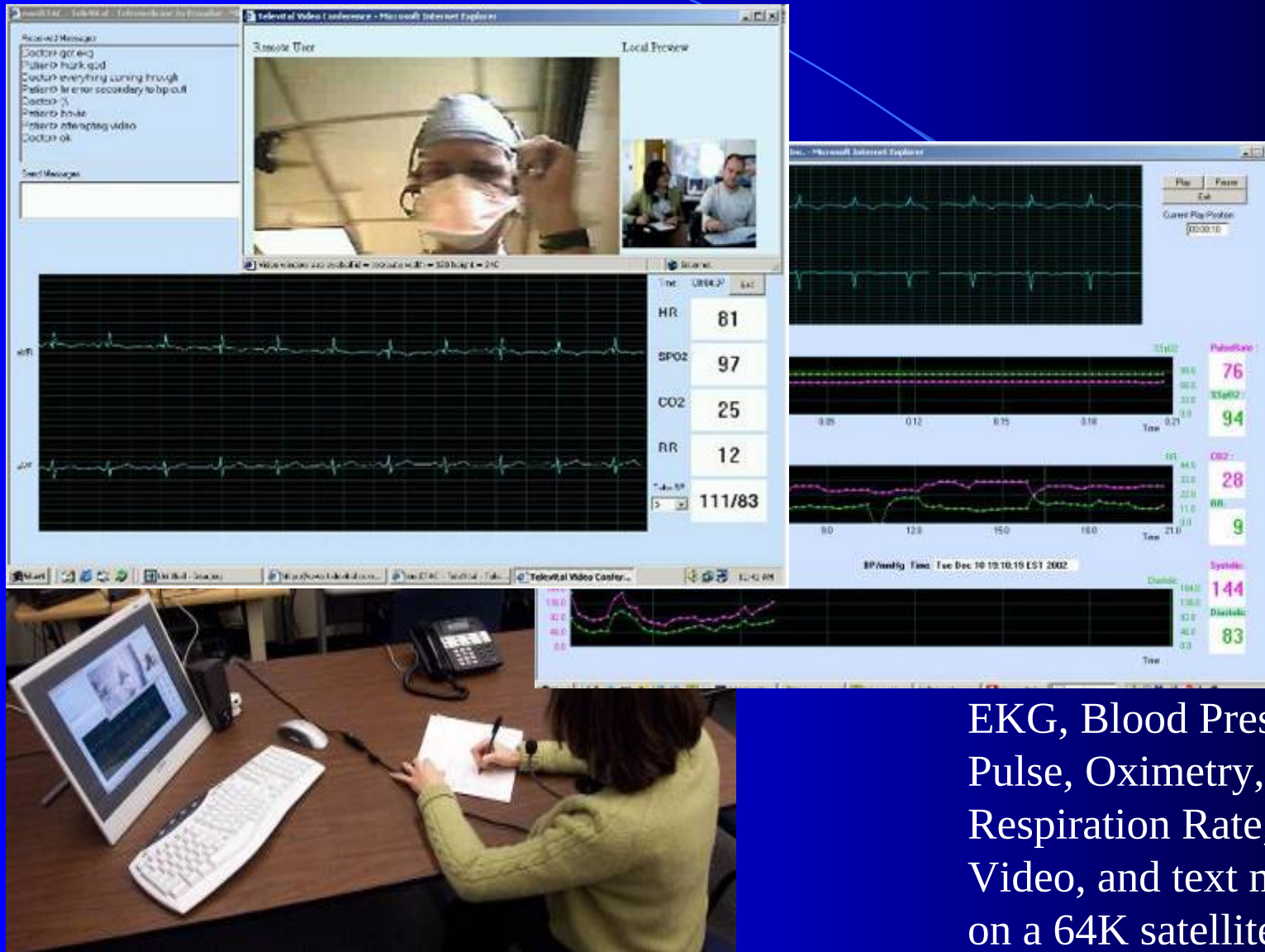
Remote Anesthesiology Monitoring

- First successful test in December 2001
- Two additional trials June 2002 and December 2002
- Total of seven anesthetics delivered with remote monitoring
- Part of MITAC's on going research & support for telemedicine in Ecuador

Teleanesthesia



Real-time



EKG, Blood Pressure, Pulse, Oximetry, ETCO2, Respiration Rate, Audio & Video, and text messaging on a 64K satellite connection

Telemedicine for Mobile Surgery

- Preoperative Period
- During the Operation
- Postoperative Period



Controles Posteriores

CONTROLES POSTERIORES

Cerrar 

Nombre Surgery **Colecistectomia abierta** 

Fecha **13-Mar-04**  Dia **0**

Como Se Siente?

Dolor

☒ Ninguno ☐ Moderado ☐ Intenso

Herida

☒ Normal
☐ Edema
☐ Seroma
☐ Hematoma
☐ Infeccion

Circuncision

Prepucio

☐ Normal
☐ Edema
☐ Seroma
☐ Hematoma
☐ Infeccion

Cubre El Glande

☒ No ☐ 1/3 ☐ + de 1/3

☐ Prepucio Borde Regular

Glande

☒ Limpio ☐ Costra ☐ Infeccion

Meato

☒ Libre ☐ Costra

Criptorquidia y/o testiculo en anscensor

Testiculo

	Der	Izq
Normal	☒	☒
Parte Alta Del Escroto	☒	☒
Conducto Inguinal	☒	☒

Tamano

	Der	Izq
Normal	☒	☒
Mayor	☐	☐
Menor	☐	☐

Herida Escrotal

	Der	Izq
Normal	☐	☐
Edema	☐	☐
Seroma	☐	☐
Hematoma	☐	☐
Infeccion	☐	☐

Hernia

☒ Curado ☐ Signos de recidiva

Observaciones:

Beyond the Last Road

- Cinterandes
- University of Azuay
- Ministry of Health
- ECORAE
- Provincial Government
- City Government
- Salesiano Missions
- MITAC
- Industry Donors



Tsunki Nua





Conclusions

- Telemedicine is applicable to fixed and mobile programs
- Telemedicine can utilize available telecommunications and can be cost effective
- Networking in Ecuador has demonstrable utility, utilization and has become self sustaining.

Telemedicine





www.meditac.com