BRAZILIAN TELEHEALTH INITIATIVE

The Telemedicine University Network, RUTE, currently connecting 19 University Hospitals, will connect 57 across all federal states until 2009.

The National Telehealth Primary Care Program, initially rolled out across nine states and 900 municipalities.
<table>
<thead>
<tr>
<th><strong>Brazilian Telehealth Institutional Activities at national level</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Integration of Federal Ministries initiatives: Health, Science &amp; Technology, Education, Communication and Defense</td>
</tr>
<tr>
<td>☐ RUTE – Telemedicine University Network, Ministry of Science and Technology, started January 2006</td>
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<tr>
<td>☐ Portaria n° 561, March 16th 2006, Ministry of Health constitutes the Permanent Commission of Telehealth</td>
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<tr>
<td>☐ Portaria n° 35, January 1st 2007, Ministry of Health constitutes the National Telehealth Program in the Primary Attendance, 9 States and 900 remote municipalities</td>
</tr>
<tr>
<td>☐ 2 International Workshops of the Laboratory of Excellence and Innovation in e-Health - Latin America and Europe, Belo Horizonte, Dec 2006 and Sep 2007</td>
</tr>
<tr>
<td>☐ Internet2 and RNP signed October 11th 2007 an MoU in Telemedicine and Telehealth, RUTE and US Health Sciences, to jointly lead and collaborate on the development of next-generation telemedicine and telehealth technologies and applications</td>
</tr>
<tr>
<td>☐ eHealth Public Policies in Latin America – BID(RG-T1509)</td>
</tr>
</tbody>
</table>
Brazilian National Education and Research Network

Rede Nacional de Ensino e Pesquisa (RNP) is a not-for-profit corporation incorporated under the laws of Brazil that interconnects over 350 education and research institutions, helping an estimated public of over a million users, and linking all the Brazilian regional academic networks.
National Education and Research Network – RNP
“promoting the use of advanced networks in Brazil”
A 1Gbps R&E-Ring in each of the 27 state capitals!
REDECOMEP

Education and Research Community Metropolitan Area Network

www.redecomep.rnp.br
info@redecomep.rnp.br
• Hospital São Paulo e Escola Paulista de Medicina - Unifesp, (São Paulo)
• Hospital das Clínicas - FM USP, (São Paulo)
• Hospital Universitário de São Paulo - USP (São Paulo)
• Hospital das Clínicas da Unicamp (Campinas/SP)
• Instituto Dante Pazzanese de Cardiologia (São Paulo)
• Hospital Universitário Pedro Ernesto - UERJ (Rio de Janeiro)
• Fundação Oswaldo Cruz, (Rio de Janeiro)
• Hospital Universitário Prof. P. E. de São Thiago - UFSC (Florianópolis)
• Hospital das Clínicas Prof. Arnóbio Marques - UFPE (Recife)
• Hospital Universitário Walter Cantídio - UFC (Fortaleza)
• Hospital da Irmandade da Santa Casa de Misericórdia, (Porto Alegre)
• Hospital Universitário Getúlio Vargas - UFAM (Manaus)
• Hospital das Clínicas – UFMG, (Belo Horizonte)
• Hospital Universitário - UFES (Vitória)
• Hospital Universitário Prof. Alberto Antunes - UFAL (Maceió)
• Hospital Universitário Prof. Edgar Santos - UFBA (Salvador)
• Hospital das Clínicas - UFMA (São Luís)
• Hospital Universitário Lauro Wanderley -UFPB (João Pessoa)
• Hospital Universitário - UFPR (Curitiba)

Participating Hospitals – January 2006
Which infr@structure services are essential for a Telemedicine University Network?

- Enable the communication infr@structure
- Guarantee the service quality and integration
- Stimulate collaborative research, medical assistance and interinstitutional courses
- Involve the main actors: government, academy and enterprise
- Provide indicators and evaluate tele-services
- Enable demonstration projects
- Organize health specialties groups
Resolução CFM nº 1643/2002
Art. 1º - Defines Telemedicine as the Medical practice through the use of interactive audio-visual communication methodologies, with the aim to assist, educate and research in Health.

Resolução CFM nº 1639/2002
Art. 1º - Approves Technical Norms for Systems that store and handle Electronic Health Records.
Phase 2/2007: Manual for Certification of Electronic Health Record Systems

Support to Telemedicine and Telehealth Workshops:
• Manaus, Amazonas, March 2007
• Recife, Pernambuco, May 2007
• Brasília, Federal District, September 2007
### Existing Groups and Applications

<table>
<thead>
<tr>
<th>Medical Videoconferences</th>
<th>Teleconsulting and Image Telediagnostic</th>
<th>Distant Education Continuous Education</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collaborative Work Case Study</td>
<td>ISCMPA</td>
<td>Sala de Aula do Futuro</td>
</tr>
</tbody>
</table>

- **Unifesp**
- **Ufes**
- **FM-USP**
Health Family Program
Video on demand
VC Sessions
Distant Courses
Specialties participation

University Hospital
Federal University of Pernambuco - UFPE
Telehealth - Federal University of Minas Gerais - UFMG

Minas Telecardio
Minas Gerais State Secretary of Health

12 hours a day
500 ecg/day
(UFMG, UFU, UFTM, UFJF)

More than 300 Municipalities
Telemedicine for Remote and Rural Underserved Regions in LA Using e-Health Platforms

Image Telediagnosis: Ultrasound, X-Ray, Tomo
University Hospitals and Health State and Municipal Secretaries
Telemedicine National Program e-México

http://www.centec.gob.mx

Telecardiografía
Tele-educación
Telecirugía

Parallel Session e-health, Lisbon, April 28th -29th 2006
Acceso al Proyecto T@LEMED – Telemedicina de Brasil, esta presentación, tuvo la participación local del Dr. Ricardo Hidalgo, Decano de la Facultad de Ciencias de la Salud de la UTE y desde Brasil al Dr. Leonardo Avanza, Experto en tele diagnostico de la Universidad Hospital de Espíritu Santo de Brasil.
Telehealth applied to Primary Care and the Family Health Program

- 25,000 teams → 100,000,000 people
- 9 Reference Centers
- 9 x 100 remote sites

Regions of implementation

www.saude.gov.br/sgtes
Points of Telehealth

Telehealth points in Brazil for 2008

Participation of all Brazilian States
List of University Hospitals – Telemedicine University Network RUTE – 01/2007

Phase 1
Phase 2
Faculties
Telehealth Program
University Hospital Infra-structure

- Connection to a 1Gbps Metropolitan R&E Ring
- Create a Telehealth Unit with Videoconference Room, Teleconsult, Telediagnosis
- Participate in Special Interest Groups
- Demonstrate teleassistance, teleeducation and teleresearch

12 University Hospitals on-line
+ 7 December 2008
+ 18 June 2009
+ 20 December 2009
Special Interest Groups - SIGs

- Telehealth Standards
- Nursing
- Dentistry
- Otorrinolaringology
- Toxicology
- Trauma and Orthopedics
- Dermatology
- Pediatrics Radiology
- Neonatology
- Children and Adolescent Health
- Cardiology
- Continuous education
- Others under construction ...
Health Sciences Partnerships so far identified between Universities and Health Institutions in Brazil and USA MoU Internet2 and RNP

<table>
<thead>
<tr>
<th>Brazilian Universities and Health Institutions:</th>
<th>Special Interest Groups - SIGs:</th>
<th>American Universities and Health Institutions:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Universidade Federal Paulista UNIFESP</td>
<td>Oncology,</td>
<td>University of Florida,</td>
</tr>
<tr>
<td>Universidade Estadual de São Paulo USP</td>
<td>Orthopaedic Surgery,</td>
<td>St. Jude Children's Research Hospital,</td>
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<tr>
<td>Universidade Federal de Minas Gerais UFMG</td>
<td>Pathology, Pediatrics,</td>
<td>Colorado University,</td>
</tr>
<tr>
<td>Universidade Estadual do Rio de Janeiro UERJ</td>
<td>Autopsy, Virtual Man, Rural</td>
<td>University of Pittsburgh,</td>
</tr>
<tr>
<td>Universidade Federal do Rio de Janeiro UFRJ</td>
<td>Internship, Sportmedicine,</td>
<td>University Medical School Chicago,</td>
</tr>
<tr>
<td>Universidade Federal do Espírito Santo UFES</td>
<td>Radiology, Orthopedia and</td>
<td>Medical Missions for Children,</td>
</tr>
<tr>
<td>Universidade Federal de Santa Catarina UFSC</td>
<td>Trauma, Cardiology,</td>
<td>Georgetown University,</td>
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<tr>
<td>Universidade Federal do Ceará UFC</td>
<td>Gastroenterology, Hepatology,</td>
<td>University of California,</td>
</tr>
<tr>
<td>Universidade Federal da Bahia UFBA</td>
<td>Liver transplantation,</td>
<td>Stanford University,</td>
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<tr>
<td>Universidade Federal de Brasília UnB</td>
<td>Immunology, Infectious Diseases,</td>
<td>Cornell University Medical College,</td>
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<tr>
<td></td>
<td>Tropical Diseases, Adolescent</td>
<td>University of Iowa,</td>
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<td></td>
<td>Medicine &amp; Health, Contraception/</td>
<td>University of Pennsylvania,</td>
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<tr>
<td></td>
<td>Human Reproduction, Telepsychiatry,</td>
<td>University of Cincinnati,</td>
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<tr>
<td></td>
<td>Dermatology, Bio-Informatics,</td>
<td>University of Maryland,</td>
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<tr>
<td></td>
<td>Nursing, Otorrinolaringology,</td>
<td>Children Hospital in Pittsburgh,</td>
</tr>
<tr>
<td></td>
<td>Anesthesiology, Pediatric</td>
<td>Cleveland Clinic Children's Hospital,</td>
</tr>
<tr>
<td></td>
<td>Surgery, Endocrinology, Pneumology, Rheumatology,</td>
<td>Virginia Commonwealth University,</td>
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<tr>
<td></td>
<td>Alzheimer, Mastology, Nefrology, Urology, Violence</td>
<td>University of Kentucky,</td>
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<tr>
<td></td>
<td>Prevention, Health Rights,</td>
<td>University of Arizona,</td>
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<tr>
<td></td>
<td>Ethical and Legal Issues.</td>
<td>University of Miami Miller School of Medicine,</td>
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<td></td>
<td></td>
<td>University of New York.</td>
</tr>
<tr>
<td>Date</td>
<td>Speaker</td>
<td>Topic</td>
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<tr>
<td>7 March 2008</td>
<td>Dr. Lawrence Schachner</td>
<td>Vesicular eruptions of newborns</td>
</tr>
<tr>
<td>4 April 2008</td>
<td>Dr. Robert Johr</td>
<td>Dermoscopy: basics</td>
</tr>
<tr>
<td>2 May 2008</td>
<td>Dr. Joely Kaufman</td>
<td>Light Treatments</td>
</tr>
<tr>
<td>6 June 2008</td>
<td>Dr. Brian Berman</td>
<td>What’s New for Warts &amp; Keloids?</td>
</tr>
<tr>
<td>11 July 2008</td>
<td>Dr. Jonette Keri</td>
<td>Acne and rosacea update</td>
</tr>
<tr>
<td>1 August 2008</td>
<td>Dr. Paolo Romanelli</td>
<td>Histopathology of wound healing, basic concepts and novel markers</td>
</tr>
<tr>
<td>5 September 2008</td>
<td>Dr. Robert Kirsner</td>
<td>Evidenced based approach to venous leg &amp; diabetic foot ulcers</td>
</tr>
<tr>
<td>3 October 2008</td>
<td>Dr. Javier Alonso</td>
<td>&quot;Ulcerative Psoriasis&quot;? Beware of Fatal Cytotoxic Cutaneous Lymphoma</td>
</tr>
<tr>
<td>7 November 2008</td>
<td>Dr. Anne Burdick</td>
<td>Hansen’s Disease</td>
</tr>
<tr>
<td>5 December 2008</td>
<td>Dr. Keyvan Nouri</td>
<td>Cutaneous Laser Surgery</td>
</tr>
</tbody>
</table>
Ministries of Health participating:
Brasil, Colombia, Ecuador, México, Uruguay

RedCLARA

Project components
1. Regional Standards for transmission and infra-estructure
2. Strategy for the promotion, prevention and assistance through telehealth
3. Regional guide for telehealth managing
4. Strategy for a LA Telehealth University Network
5. Telehealth training and certification

Project RG-T1509: eHealth Public Policies in Latin America
First steps to nation wide eHealth

- Availability of communication infrastructure
- National dissemination of eHealth activities (research, education and assistance)
- National eHealth coordination and execution
- Ministerial Integration
State and municipal steps

- Integrate local and national projects
- Integrate and motivate health professionals in rural and underserved areas
- Develop an operational partnership on specific exams such as ECG
- Stimulate R&E Agencies and demonstrate eHealth results
Scientific Impact

- Increase national, regional and international collaboration, yielding increase in the scientific production
- New teaching methodologies and contribution to human resources development
- Increase scientific production in regions yet with no significant contribution
- Results dissemination to scientific, entrepreneurial and governamental communities
- Authorities awareness to eHealth procedures at municipal, state and national level
Technological Impact

- Opportunity to execute technological development and collaboration in advanced communication networks
- Human resources specialization in rural and underserved areas
- New tools and technologies to support eHealth (research, education and assistance)
- Stimuli to creating specialized pedagogical midia
- Stimuli to integrating specialists in on-line discussions, increasing video- and web-conferencing
- New processes to regulate procedures and internship
- Remote patients monitoring
Economic Impact

- Cost reduction to maintain network access
- Cost reduction for future network evolution
- Reduction in unnecessary patients displacements
- Reduction in waiting queues for attendance
- New statistic information
- Disease outbreak previous detection in rural and underserved areas
Social Impact

- eHealth Digital inclusion
- Specialized remote diagnosis and consulting
- Better health attendance in rural and underserved areas
- Increase specialized attendance
- Continuous education to health professionals
- Innovative approach to the brazilian Family Health Program
Lessons applied in Brazil

- Family Health Program
- Connectivity and eHealth Units in university and educational hospitals
- Implement Telehealth procedures (continuous education, second opinion and Teleconsult) into rural and underserved regions
- International collaboration
- National coordination
Achieved Results

- Comprehension of the technological opportunity
- Infr@-structure in University and Educational Hospitals
- Acceptance of eHealth norms
- Stimulate academy, government and enterprises
- Broaden discussion on health prevention
- Enable international collaboration
Telemedicine and eHealth – building collaborative Networks in Research, Education and Assistance for Diagnosis and Health Treatment in Brazil