

14th

AICT

ASIAN INTERVENTIONAL CARDIOVASCULAR THERAPEUTICS
THE OFFICIAL CONGRESS OF APSIC

Rolling 600,000 Remote Patients Encounters to STEMI Intervention

Sameer Mehta, MD, FACC, MBA

- Chairman, Lumen Foundation
- Voluntary Associate Professor, University of Miami
- Course Director, Lumen Global
- Chairperson Global STEMI Programs (PRINCE, MIDAS, CHINA, SPAN, DREAM, CHILE, HINT, THAI, LATIN)
 - Co Chair, GLOW
- Global STEMI Director, ITMS Telemedicine, Sao Paulo, Brazil





Conflicts of Interest

Speaker's name : Sameer Mehta

No Conflict of Interest with Industry

Latin America Telemedicine Infarct Network (LATIN)

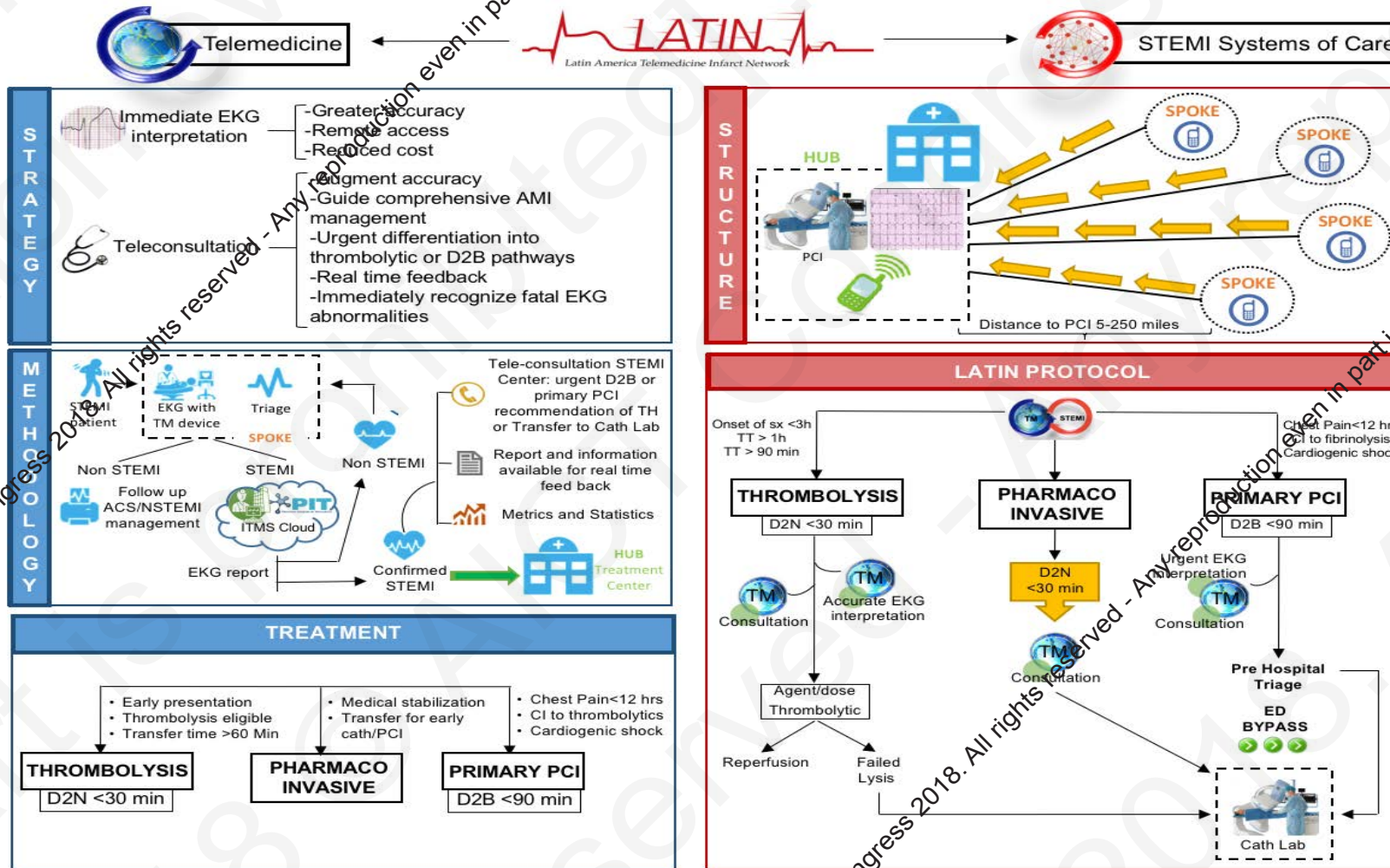
- My legacy in medicine, the finest compilation of my experience of 20 years with STEMI interventions
- An unprecedented ability to provide quality, scientific, guidelines based and comprehensive AMI management for the poorest
- LATIN is a scalable model of telemedicine based STEMI systems of care approach
- And a cost-effective and global template to save lives from AMI.

CORONARY ARTERY DISEASE

A Tale of Two Cities: STEMI Interventions in Developed and Developing Countries and the Potential of Telemedicine to Reduce Disparities in Care

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TRACY ZHANG, B.S.,^{1,2} JENNIFER C. KOSTELA, M.D.,⁶ OLGA REYNBAKH, M.D.,⁷
BRENO FALCÃO, M.D.,⁵ ALICIA HENAO VELÁSQUEZ, M.D.,¹ ESTEFANIA OLIVEROS, M.D.,⁸
and CAMILO PENA, M.D.⁹

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STEMI: ST Elevation Myocardial Infarction; EKG: Electrocardiogram; D2B: Door to Balloon Time; D2N: Door to Needle; TM: Telemedicine; PCI: Percutaneous Coronary Intervention; CI: Contraindication; TT: Transfer Time; ED: Emergency Department

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Navigation Map of LATIN Processes providing AMI umbrella to 95 million poor patients in LATIN America

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COLOMBIA

Institution / Distance / Ambulance / Telemedicine Dx / Treatment / # EKG / STEMI Dx / STEMI Rx

Prim Health Clinic Km Unidirectiona Bogota (BOG) Primary PCI (PCI)
Community Hosp Bidirectional Uberlandia (UL) Thrombolysis (T)
Centralized Sao Paulo (SP) Pharmaco-invasive (PI)

165,392 / 1,473 / 645

- CAMU Canta Claro: 3.5 / BOG / PCI / 1,831 / 4 / 1
- CAMU Iris López Durán: 80.6 / BOG / PCI / 140 / 1 / 0
- CAMU La Granja: 2.4 / BOG / PCI / x / 7 / 1
- CL Cardiovascular del Caribe: 20 / BOG / PCI / 7 / 4 / 3
- ESE CAMU El Amparo: 3.57 / BOG / PCI / 6,227 / 32 / 9
- ESE CAMU Sta. Teresita: 61 / BOG / PCI / 3,722 / 25 / 11
- ESE Hosp. San Diego: 18 / BOG / PCI / 2,248 / 51 / 17
- ESE Hosp. San Juan: 70.2 / BOG / PCI / 1,682 / 20 / 8
- ESE Hosp. San Nicolás: 54 / BOG / PCI / 6,042 / 40 / 14
- ESE Hosp. San Rafael: 91.4 / BOG / PCI / 1,372 / 18 / 2

- Clínica de Uraba: 0 / BOG / PCI / 641 / 1 / 1
- Hosp. Francisco Luis Jiménez: 11.4 / BOG / PCI / 634 / 4 / 2
- Hosp. Francisco Valderama: 33.5 / BOG / PCI / 446 / 7 / 2
- Hosp. San Sebastián Necoclí: 80 / BOG / PCI / 1,063 / 9 / 6

- Clínica Minerva: 0 / BOG / PCI / 238 / 0 / 0
- Hosp. Regional Libano: 133 / BOG / PCI / 63 / 4 / 1
- Hosp. San Juan Bautista: 155 / BOG / PCI / 107 / 1 / 0
- Hosp. San Rafael Espinal: 60.2 / BOG / PCI / 167 / 9 / 2

- CL Occidente: 0 / BOG / PCI / 319 / 10 / 8
- Hosp. Joaquín Paz Borrero: 9.2 / BOG / PCI / 1,390 / 7 / 6

**CAMINO UNIVERSITARIO
DISTRITAL ADELITA DE CHAR**

- Camino Hosp. General: 3.4 / BOG / PCI / 6,232 / 73 / 33
- Camino Murillo: 2.4 / BOG / PCI / 5,167 / 45 / 24
- Camino Nazareth: 1 / BOG / PCI / 8,344 / 52 / 31
- Camino S. Metropolitana: 6 / BOG / PCI / 1,568 / 20 / 10
- Camino Simón Bolívar: 4.5 / BOG / PCI / 5,506 / 52 / 27
- Camino Suroccidente: 8.1 / BOG / PCI / 3,700 / 29 / 13
- ESE Hosp. Pto. Colombia: 26 / BOG / PCI / 507 / 1 / 1
- Hosp. La Manga: 4 / BOG / PCI / 866 / 6 / 5
- Paso Juan Mina: 14 / BOG / PCI / 445 / 2 / 1
- Paso La Chinita: 4.2 / BOG / PCI / 312 / 2 / 1
- Paso La Playa: 20 / BOG / PCI / 240 / 0 / 0
- Paso Las Flórez: 13 / BOG / PCI / 371 / 3 / 1
- Hosp. Juan Domínguez Romero: 3.2 / BOG / PCI / 1,584 / 2 / 1
- Hosp. Materno Infantil 13 Junio: 7.3 / BOG / PCI / 1,104 / 10 / 5
- Hosp. Materno Infantil Metrop: 7.3 / BOG / PCI / 506 / 9 / 5
- Clínica Los Almendros: 6.7 / BOG / PCI / 1,341 / 0 / 0

**CLÍNICA CARDIOVASCULAR DEL
CARIBE**

- Clínica San José: 0 / BOG / PCI / 1,727 / 24 / 20
- ESE Hosp. Juan Luis Condo: 15 / BOG / PCI / 2,302 / 15 / 8
- I.P.S Loma de Bolívar: 5.9 / BOG / PCI / 1,645 / 7 / 5
- PCL Juan Atalaya: 5.1 / BOG / PCI / 3,246 / 16 / 8
- UB Comunería: 4.6 / BOG / PCI / 1,073 / 9 / 7
- UB Libertad: 12.2 / BOG / PCI / 1,050 / 16 / 8
- UB PTE Sarco Leones: 1.4 / BOG / PCI / 1,592 / 16 / 7

**CLÍNICA ZONA
FRANCA**

- Clínica Palermo: 0 / BOG / PCI / 22 / 0 / 0
- Clínica Partenon: 10.1 / BOG / PCI / 24 / 0 / 0
- ESE Hosp. de Engativa: 12.6 / BOG / PCI / 60 / 3 / 0

CLÍNICA MINERVA

- CL COOP Univ. de Colombia: 7.3 / BOG / PCI / 666 / 42 / 17
- CL SCOOP Llanos: 3 / BOG / PCI / 708 / 32 / 22
- Hosp. Local Guama: 40.3 / BOG / PCI / 1,652 / 4 / 3
- Hosp. Local Pto. López: 86 / BOG / PCI / 3,565 / 12 / 8
- Hosp. Local San Martín: 64 / BOG / PCI / 4,127 / 16 / 2
- Hosp. Municipal Acacias: 28 / BOG / PCI / 2,161 / 32 / 19
- Hosp. Departamental: 7 / BOG / PCI / 1,006 / 62 / 27

**ANGIOGRAFÍA DE
OCCIDENTE**

- Hosp. Jorge Isaac Rincón Torres: 118 / BOG / PCI / 358 / 0 / 0

**ANGIOGRAFÍA DE
COLOMBIA**

- CL Occidente: 0 / BOG / PCI / 319 / 10 / 8
- Hosp. Joaquín Paz Borrero: 9.2 / BOG / PCI / 1,390 / 7 / 6

**INSTITUTO CARDIOVASCULAR DEL
CESAR**

- Clínica de Uraba: 0 / BOG / PCI / 641 / 1 / 1
- Hosp. Francisco Luis Jiménez: 11.4 / BOG / PCI / 634 / 4 / 2
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- UB Libertad: 12.2 / BOG / PCI / 1,050 / 16 / 8
- UB PTE Sarco Leones: 1.4 / BOG / PCI / 1,592 / 16 / 7

CLÍNICA PALERMO

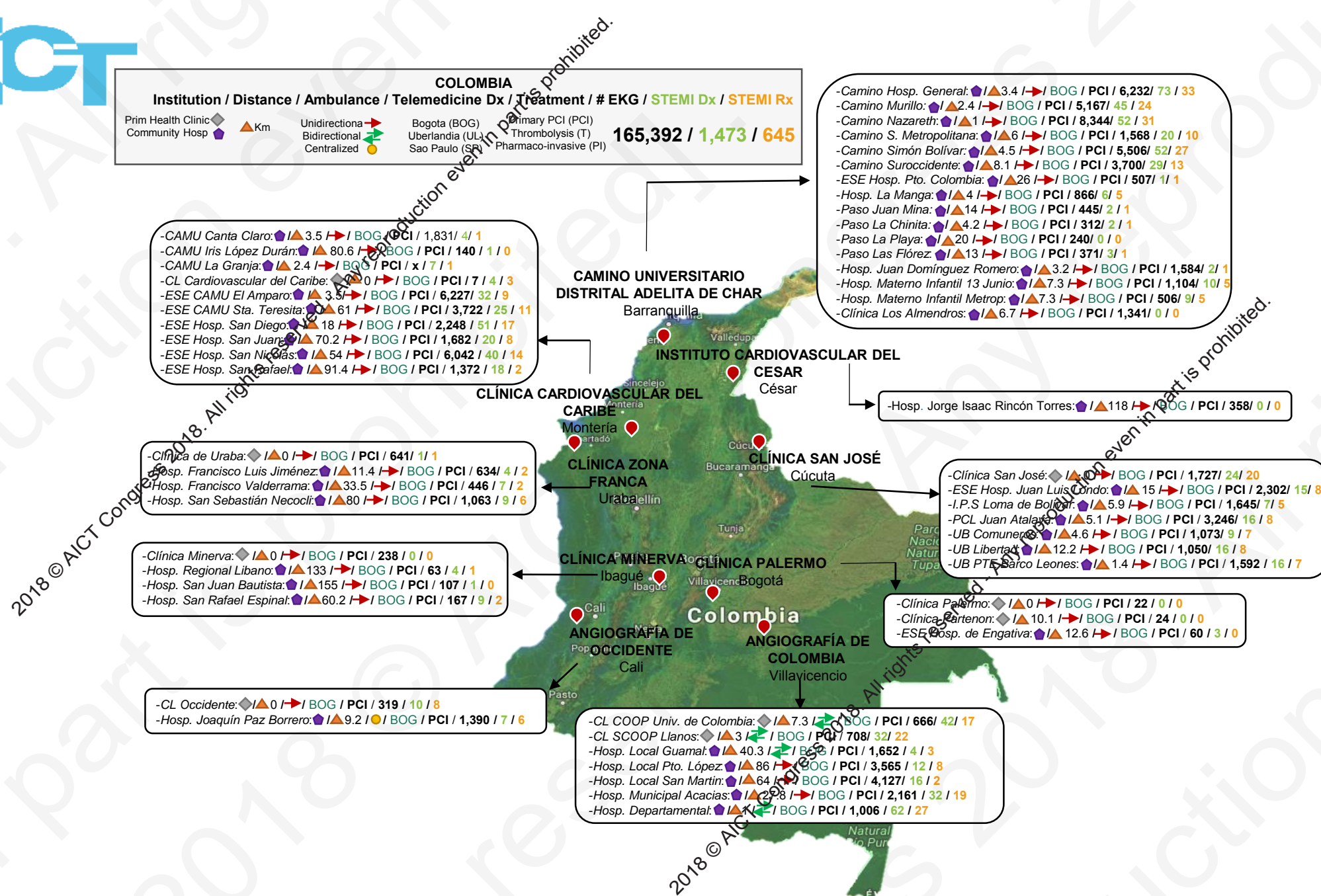
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- Clínica Partenon: 10.1 / BOG / PCI / 24 / 0 / 0
- ESE Hosp. de Engativa: 12.6 / BOG / PCI / 60 / 3 / 0

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**ANGIOGRAFÍA DE
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- Hosp. Municipal Acacias: 28 / BOG / PCI / 2,161 / 32 / 19
- Hosp. Departamental: 7 / BOG / PCI / 1,006 / 62 / 27



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Institution / Distance / Ambulance / Treatment		Medicine Dx / Treatment / # EKG / STEMI Dx / STEMI Rx			
Prim Health Clinic	▲ Km	Unidirectiona	Bogota (BOG)	Primary PCI (PCI)	17,010 / 317 / 96
Community Hosp		Bidirectional	Uberlandia (UL)	Thrombolysis (T)	
		Centralized	Sao Paulo (SP)	Pharmaco-invasive (PI)	

#EKGs / STEMI Dx / STEMI Rx / Treatment

- ✓ Ambulancia Cruz Roja / 73 / 0 / 0
- ✓ Ambulancia Med Care 1 / 22 / 0 / 0
- ✓ Ambulancia Med Care 2 / 50 / 0 / 0
- ✓ Ambulancia Med Care 3 / 60 / 0 / 0
- ✓ Centro de Especialidades Médicas de Celaya / 260 / 3 / 1 / PCI
- ✓ Clínica Universitaria Sta. Bárbara UAQ / 139 / 2 / 1
- ✓ Hosp. Cocasmi San Juan del Río / 131 / 4 / 1 / PCI
- ✓ Hosp. Sagrado Corazón / 125 / 2 / 1
- ✓ Hosp. Tequisquiapan / 98 / 0 / 0
- ✓ Unimed Health System San Miguel de Allende / 261 / 0 / 0

#EKGs / STEMI Dx / STEMI Rx / Treatment

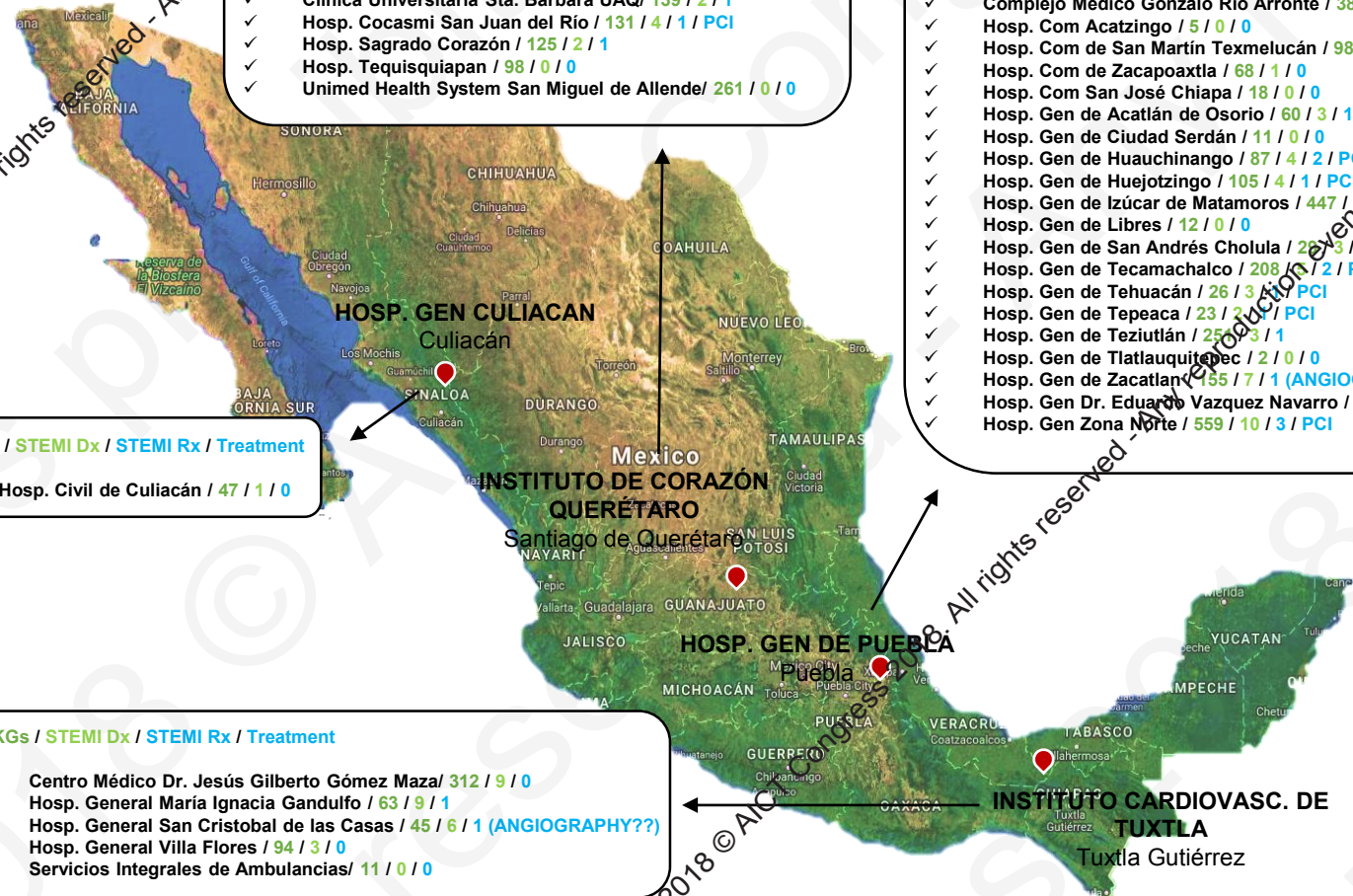
- ✓ Complejo Médico Gonzalo Rio Arronte / 38 / 0 / 0
- ✓ Hosp. Com Acatzingo / 5 / 0 / 0
- ✓ Hosp. Com de San Martín Texmelucán / 98 / 1 / 0
- ✓ Hosp. Com de Zacapoaxtla / 68 / 1 / 0
- ✓ Hosp. Com San José Chiapa / 18 / 0 / 0
- ✓ Hosp. Gen de Acatlán de Osorio / 60 / 3 / 1 / PCI
- ✓ Hosp. Gen de Ciudad Serdán / 11 / 0 / 0
- ✓ Hosp. Gen de Huauchinango / 87 / 4 / 2 / PCI
- ✓ Hosp. Gen de Huejotzingo / 105 / 4 / 1 / PCI
- ✓ Hosp. Gen de Izúcar de Matamoros / 447 / 1 / 4 / PCI
- ✓ Hosp. Gen de Libres / 12 / 0 / 0
- ✓ Hosp. Gen de San Andrés Cholula / 28 / 3 / 2
- ✓ Hosp. Gen de Tecamachalco / 208 / 1 / 2 / PCI
- ✓ Hosp. Gen de Tehuacán / 26 / 3 / 1 / PCI
- ✓ Hosp. Gen de Tepeaca / 23 / 2 / 0 / PCI
- ✓ Hosp. Gen de Teziutlán / 25 / 3 / 1
- ✓ Hosp. Gen de Tlatlauquitepec / 2 / 0 / 0
- ✓ Hosp. Gen de Zacatlán / 155 / 7 / 1 (ANGIOGRAPHY?)
- ✓ Hosp. Gen Dr. Eduardo Vazquez Navarro / 50 / 7 / 1
- ✓ Hosp. Gen Zona Norte / 559 / 10 / 3 / PCI

#EKGs / STEMI Dx / STEMI Rx / Treatment

- ✓ Hosp. Civil de Culiacán / 47 / 1 / 0

#EKGs / STEMI Dx / STEMI Rx / Treatment

- ✓ Centro Médico Dr. Jesús Gilberto Gómez Maza / 312 / 9 / 0
- ✓ Hosp. General María Ignacia Gandulfo / 63 / 9 / 1
- ✓ Hosp. General San Cristobal de las Casas / 45 / 6 / 1 (ANGIOGRAPHY??)
- ✓ Hosp. General Villa Flores / 94 / 3 / 0
- ✓ Servicios Integrales de Ambulancias / 11 / 0 / 0



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Parameter	Total	Brazil	Colombia	México
Hubs	3	20	16	7
Spokes	294	119	102	73
Patients	676,797	494,395 (73.05%)	165,393 (24.44%)	17,010 (2.51%)
STEMI (Remote Diagnosis)	7,397 (1.1%)	5,601 (1.13%)	1,473 (0.89%)	317 (1.86%)
STEMI (Treated)	3,346 (45.23%)	2,605 (46.51%)	645 (43.79%)	96 (29.28%)
a. Thrombolysis	57 (1.7%)	31 (1.19%)	20 (3.1%)	6 (6.25%)
b. Pharmaco-invasive	74 (2.21%)	61 (2.34%)	6 (0.93%)	7 (7.29%)
c. Primary PCI	2,581 (77.14%)	2,066 (79.3%)	446 (69.14%)	69 (71.87%)
d. CABG	88 (2.63%)	53 (2.03%)	30 (4.65%)	5 (5.2%)
e. Angiography	546 (16.32%)	394 (15.12%)	143 (22.17%)	9 (9.37%)
Door to needle time - min (D2N)	109	107	88	160
Door to balloon time - min (D2B)	46	74	61	93
Door in door out - min (DIDO)	106	100	121	151
Mean transfer time (min)	58	49	85	72
Time to telemedicine diagnosis – min (TTD)	4.8	4.3	4	6
Mortality (%)	399 (5.4%)	316 (11.5%)	83 (5.3%)	23 (7.3%)

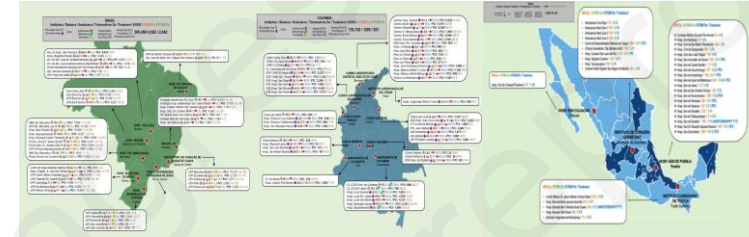
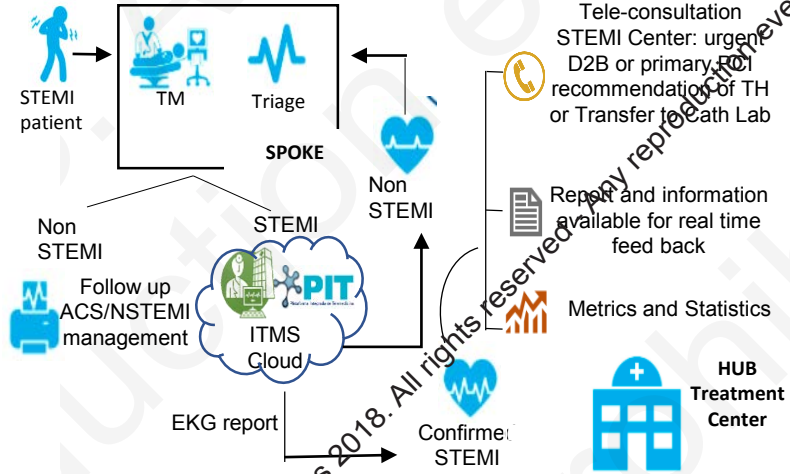
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Telemedicine

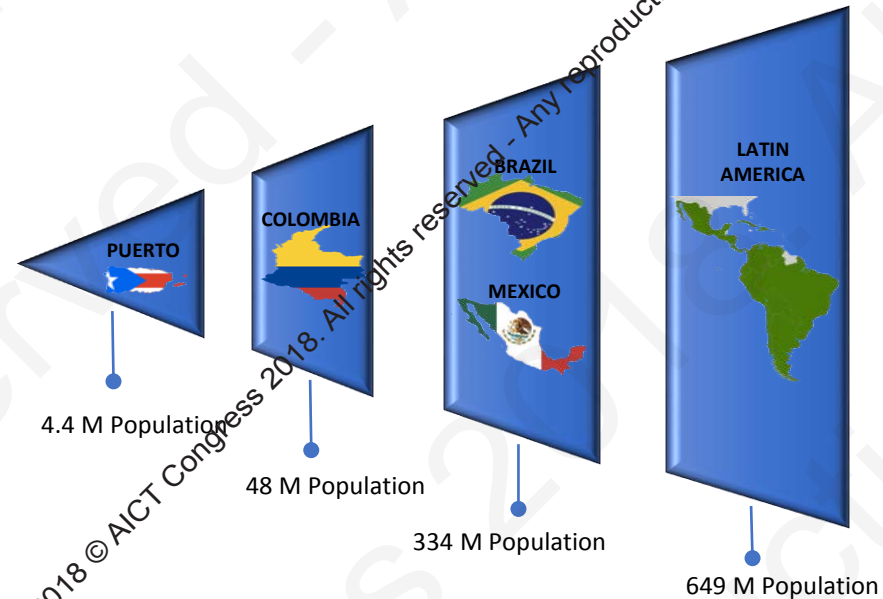
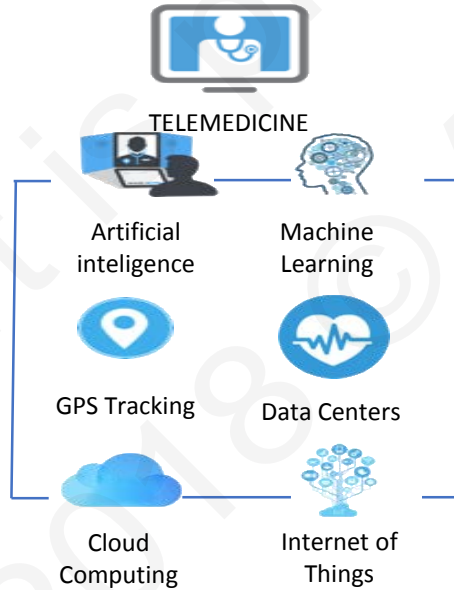


STEMI Systems of Care



- Economic publications
- Partnership with societies
- Stakeholder expansion
- Press and Media

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The Future of LATIN

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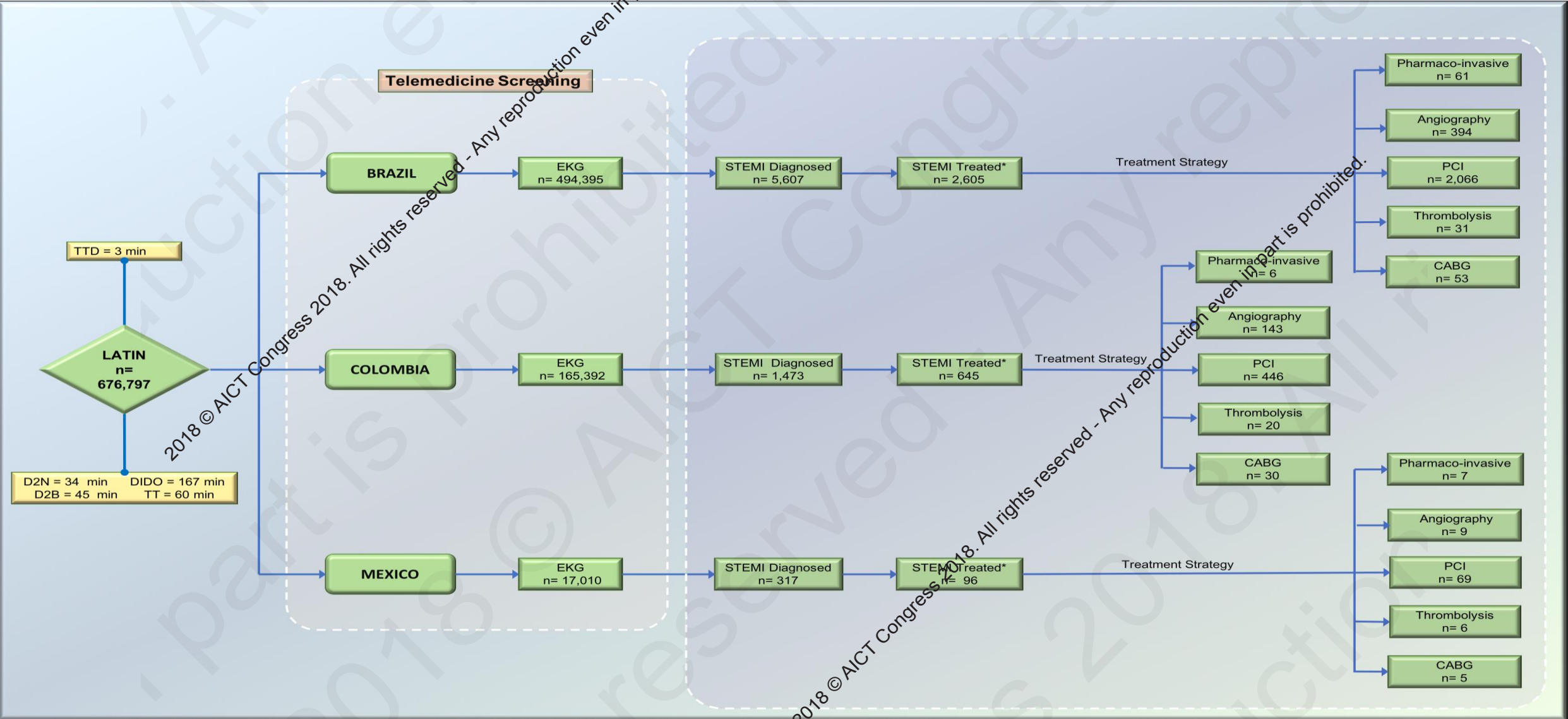
Conclusions

- LATIN is a scalable, cost-effective, population-based and telemedicine guided platform for providing AMI management for developing countries
- LATIN template can serve as an extremely effective model to guide AMI management in poorer regions of the world in **SE Asia, Middle East and Africa**

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PATIENT AT SPOKE

TRIAGE (10 min)

-  Nurse evaluation
-  Immediate EKG
-  Transmit using TM software

TELEMEDICINE (10 min)

1.  Target TTD < 5 min





-  STEMI (= 85%)
-  NSTEMI
-  Not Sure

STEMI ALERT

-  SMS to Hub
-  SMS to Spoke

 Speak to TC

TRANSPORT (10 min)

-  Call ambulance
-  Prepare patient for transport
-  If delay > 30 min repeat EKG → LATIN telemedicine
-  SMS to Hub

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7 - 9th September 2018

Hong Kong

Convention and Exhibition Centre (HKCEC)

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