LA RETE DELLO STROKE

XIII congresso nazionale

simeu

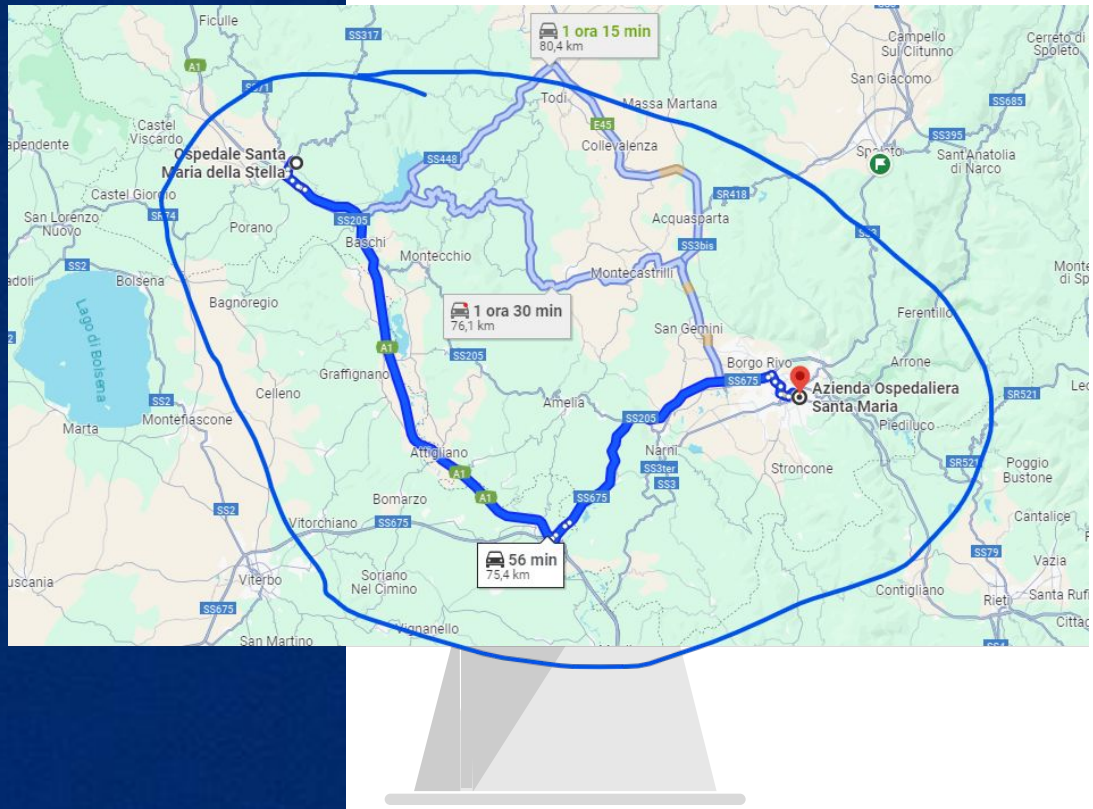
GENOVA 30 MAG - 1 GIU 2024

DENSITA' ABITATIVA IN UMBRIA: CIRCA 104 PERSONE PER KMQ
(META' DEL VALORE MEDIO NAZIONALE)
POPOLAZIONE UMBRIA:
Al 1° gennaio 2024 la popolazione residente in Umbria è pari a 854.378 mila

Politiche

Risorse

Eventi naturali



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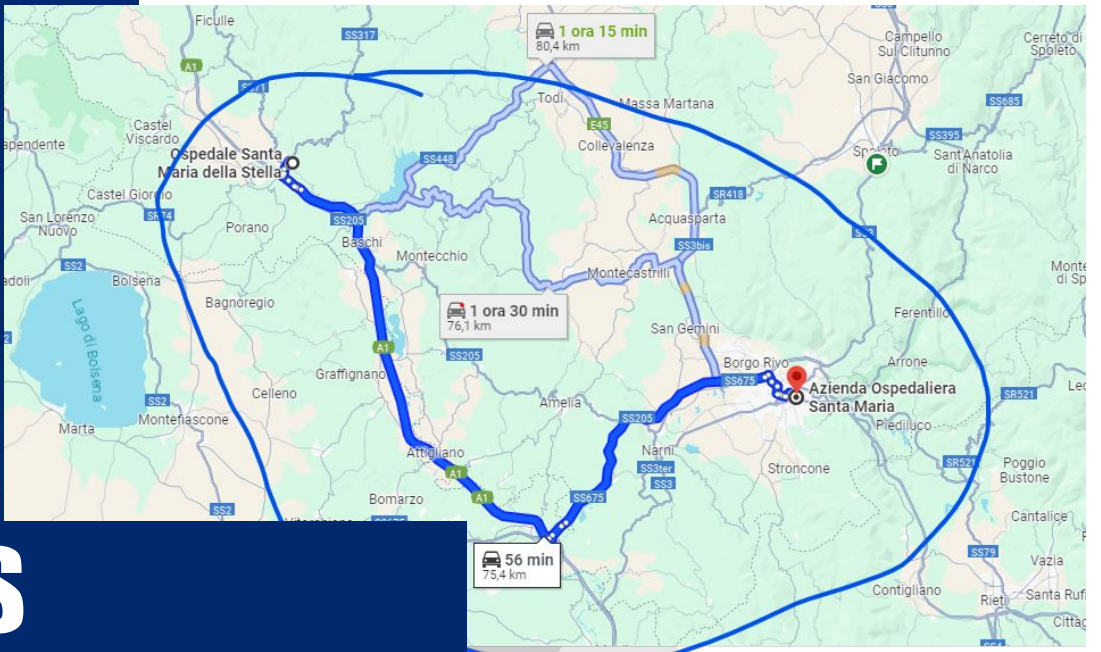

PAZIENTI CON ICTUS ISCHEMICO CHE HANNO BENEFICIATO DELLA TROMBOLISI FINO AL 2017: 0%

SENSIBILIZZAZIONE DELLA POPOLAZIONE
ORGANIZZAZIONE OSPEDALIERA
SISTEMA DI TELEMEDICINA


Guideline
EUROPEAN STROKE JOURNAL
Recommendations on telestroke in Europe
Gordian J Hubert[1], Gustavo Santo[2], Geert Vanhooren[3], Bojana Zvan[4], Silvia Tur Campos[5], Andrey Alasheev[6], Sònia Abilleira[7], Francesco Corea[8], on behalf of the Telestroke Committee of the European Stroke Organization
European Stroke Journal
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Table 2. Professional and structural requirements for TSC and spoke hospital types involved in telestroke networks.

Resources	TSC	TSU	TSRH
Emergency department	✓	✓	✓
24-h/day laboratory	✓	✓	✓
24-h/day head CT (plain)	✓	✓	✓
24-h/day head CT angiography	✓	✓	✓/×
24-h/day CT perfusion	✓	×	×
Acute stroke unit (semi-intensive dedicated beds, stroke nurses)	✓	✓	×
Intensive care unit	✓	✓/×	×
General neurology ward	✓	×	×
24-h/day stroke physician	✓	×	×
24-h/day neuroradiologist and neurosurgeon on call	✓	×	×
Early physiotherapy	✓	✓	×
Early rehab assessment and establishment of rehab goals	✓	✓	×
Early swallowing assessment	✓	✓	✓
Angiography suite	✓	×	×
Vascular surgery	✓	×	×
Doppler sonography	✓	✓	×

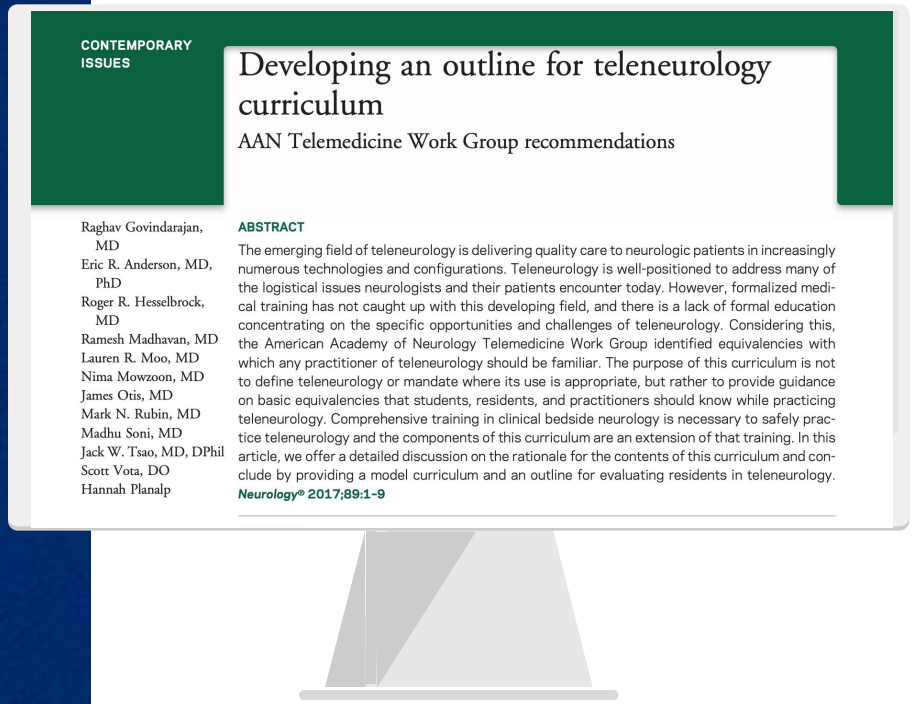
TSC: telemedicine Stroke Centre; TSRH: Telemedicine-assisted Stroke Ready Hospital; TSU: Telemedicine-assisted Stroke Unit; CT: Computertomography.

Table 1. Key features of the three telemedicine units in a stroke network.

	TSC	TSU	TSRH
Stroke care	All structural elements identified in the ESO criteria for stroke centres	All infrastructural elements identified in the ESO Stroke Unit category, except for onsite 24 h/7 d availability of stroke physician. Expert assessment and treatment of acute stroke patients provided onsite at least part time.	Embedded in a hospital with 24 h ED, 24 h CT scanning and 24 h laboratory. Expert assessment and treatment of acute stroke patients based on teleconsultation.
Teleconsultation	Provides teleconsultations service with videoconference and imaging transfer; teleconsultants are specialised in stroke care teleconsultantations are readily available (<3 min).	Sufficiently staffed to manage acute stroke patients with telemedicine support.	Sufficiently staffed to manage acute stroke patients with telemedicine support.
SOPs	Provides written standard operating procedures for: • Prehospital care; • Hyperacute in-hospital care at the Emergency Departments; • Multidisciplinary follow-up management on stroke unit.	Implements SOPs of TSC for: • Prehospital care; • Hyperacute in-hospital care at the Emergency Department; • Multidisciplinary follow-up management on stroke unit.	Implements SOPs of TSC for: • Prehospital care; • Hyperacute in-hospital care at the Emergency Department.
Training	Offers regular multidisciplinary training for all spoke hospitals.	Participates in TSC training.	Participates in TSC training.
Quality improvement	Provides or is involved in a quality improvement initiative (registry).	Participates in quality improvement initiative of TSC.	Participates in quality improvement initiative of TSC.

Elementi costitutivi

Tipologia



CONTEMPORARY ISSUES

Developing an outline for teleneurology curriculum

AAN Telemedicine Work Group recommendations

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ABSTRACT

The emerging field of teleneurology is delivering quality care to neurologic patients in increasingly numerous technologies and configurations. Teleneurology is well-positioned to address many of the logistical issues neurologists and their patients encounter today. However, formalized medical training has not caught up with this developing field, and there is a lack of formal education concentrating on the specific opportunities and challenges of teleneurology. Considering this, the American Academy of Neurology Telemedicine Work Group identified equivalencies with which any practitioner of teleneurology should be familiar. The purpose of this curriculum is not to define teleneurology or mandate where its use is appropriate, but rather to provide guidance on basic equivalencies that students, residents, and practitioners should know while practicing teleneurology. Comprehensive training in clinical bedside neurology is necessary to safely practice teleneurology and the components of this curriculum are an extension of that training. In this article, we offer a detailed discussion on the rationale for the contents of this curriculum and conclude by providing a model curriculum and an outline for evaluating residents in teleneurology.

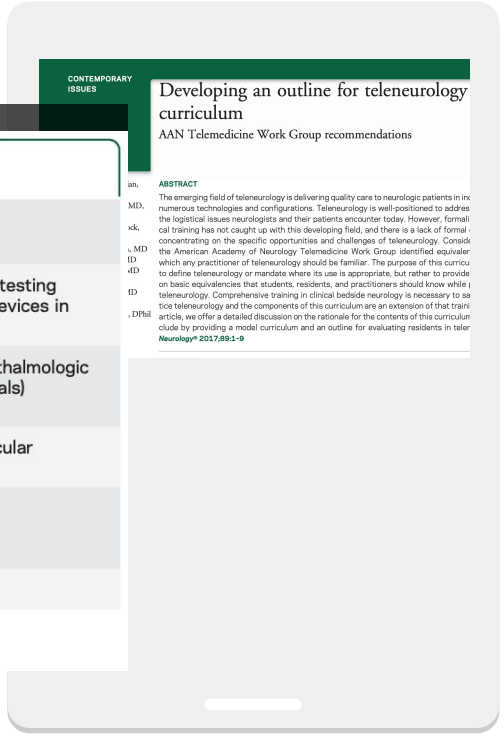
Neurology® 2017;89:1–9

Semeiotica

Table 5 Components appropriate for teleneurology

Appropriate for teleneurology[26]	Difficult but possible via teleneurology (variable and dependent on telepresenter)	Likely not appropriate via teleneurology
Functional strength testing and sensory examination (spinothalamic tests and vibration with the help of a telepresenter)	Detailed motor testing (reliant on the telepresenter to determine tone and specific grades of Medical Research Council grading scale)	Comprehensive vestibular testing (given current peripheral devices in existence)
Cerebellar and gait testing (movement disorders physicians have been some of the earlier and most successful adopters of telemedicine)	Muscle stretch reflexes testing	Comprehensive neuro-ophthalmologic (without requisite peripherals)
Mental status examination including MoCA or other cognitive measures	Proprioception	Comprehensive neuromuscular examination
Cranial nerve examination (the funduscopic examination currently requires peripheral devices that are not always available)	Functional testing for positive psychogenic examination components	Brain death examination
Various measurement scales including the NIHSS and UPDRS		

Abbreviations: MoCA = Montreal Cognitive Assessment; NIHSS = NIH Stroke Scale; UPDRS = Unified Parkinson's Disease Rating Scale.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Neurology® 2017;89:1-9

Casi Clinici

Table 2 Teleneurology clinical vignettes

Clinical vignette	Encounter type	Setting	Skills demonstrated
Teleneurology history and examination	Initial visit	Outpatient	Interaction with telepresenter
			Limitations of history/examination
			Dos and don'ts of documentation
Technology troubleshooting during teleneurology interview	Initial visit	Outpatient	Technology basics, telemedicine terminologies, teleneurology limitations, artifacts, and errors
Good and bad behavior during teleneurology interview	Initial visit	Outpatient	Informed consent, patient privacy, webside manners, disclosures
Right hemibody weakness (stroke)	Initial visit	Emergency	Telestroke history and examination, NIH scale
	Subsequent follow-up	Outpatient	Documentation in telestroke
			Medicolegal liability
Sudden-onset dizziness (benign paroxysmal positional vertigo)	Initial visit	Emergency	Teleneurology history and examination
Traumatic brain injury (concussion evaluation)	Initial visit	Emergency	Teleneurology history and examination
New-onset headache (migraine)	Initial visit	Outpatient	Teleneurology history and examination including limitations
	Subsequent follow-up		
Progressive cognitive decline (Alzheimer disease)	Initial visit	Outpatient	Teleneurology history and examination including MMSE
	Subsequent follow-up		Discussion of plan with patient and family
			Advanced care planning with the family
Progressive gait difficulties and tremor (Parkinson disease)	Initial visit	Outpatient	Teleneurology history and examination
	Subsequent follow-up		Discussion of plan with patient and family
Episodes of alteration of awareness (epilepsy)	Initial visit	Outpatient	Teleneurology history and examination
	Subsequent follow-up		Discussion of the plan with patient/family

Abbreviations: MMSE = Mini-Mental State Examination.

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AAN = American Academy of Neurology; ACGME = Accreditation Council for Graduate Medical Education; FSMB = Federation of State Medical Boards.

Tipologia di prestazioni

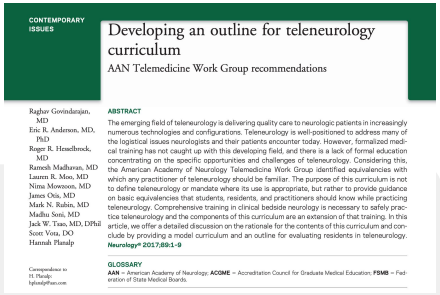

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Table 3 Teleneurology delivery models

Delivery model	Description	Technological model	Financial model
Teleconsultation	Videoconferencing to provide remote and direct patient care	Two-way, interactive, real-time video sessions at a bandwidth sufficient to allow for synchronous patient care	Supported by Medicare and Medicaid (in most states) and major private third-party payers
Store-and-forward	Services delivered remotely but not requiring the patient to be present during implementation	Data obtained/recorded and stored for review at a later date	Supported by Medicare and major private third-party payers; not supported by Medicaid in most states
Mobile health	Applications on personal computing devices designed to collect health information, provide personal health guidance, and facilitate interactions with remote providers	Personal smartphone connected to application server, with information available through authenticated web portal access or exported to an electronic or personal health record	Wide variability in terms of coverage; most third-party payers do not cover
Multisite comanagement	Videoconferencing systems are used to connect a live, multisite meeting between specialists and providers to discuss complex patients but patients may not necessarily be seen	Group of specialists at university medical center connect with primary care providers in rural or underserved area or correctional facilities to discuss care	Grant-funded
Remote patient monitoring	The remote management of chronic conditions using serial or continuous data collection	Data collected through various sensors or self-entry and data trends are monitored in real time	Some Medicaid and third-party coverage; not currently covered by Medicare

for centres and TSC hospitals:

secure and durable hard and software components -> 24/7 service (-> 24/7 technical support)

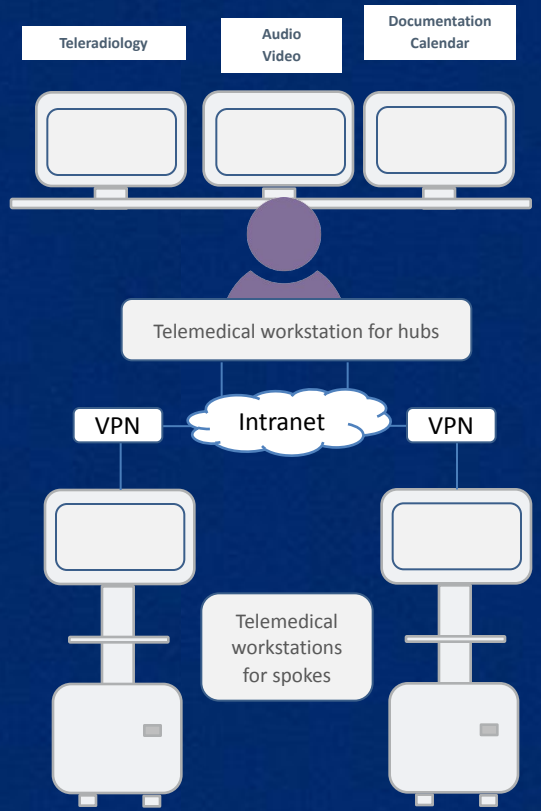
dedicated, symmetrical connections -> performant work

networking of different sites via secured net-structures/components -> data security/integrity

integrated teleradiology approach -> fast transmission and diagnosis of CT/MRI images/sequences (DICOM)

consultation, remote controlled HD-camera -> visualize patient and its acute status

adapted documentation and other databases -> complete documentation (records, medical imaging, lab results, etc.)



components with higher environment tolerances

hardened computer technology

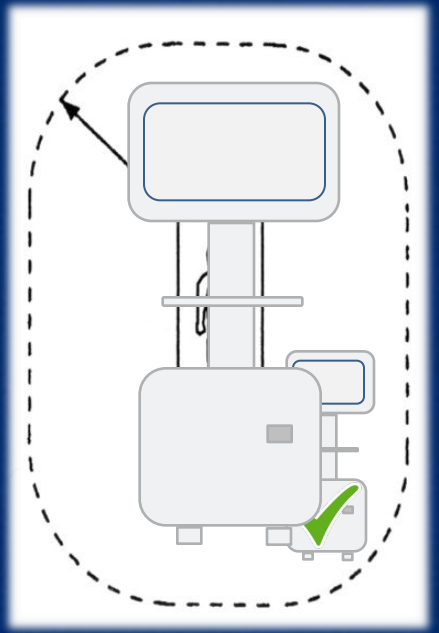
selection of suppliers for critical components

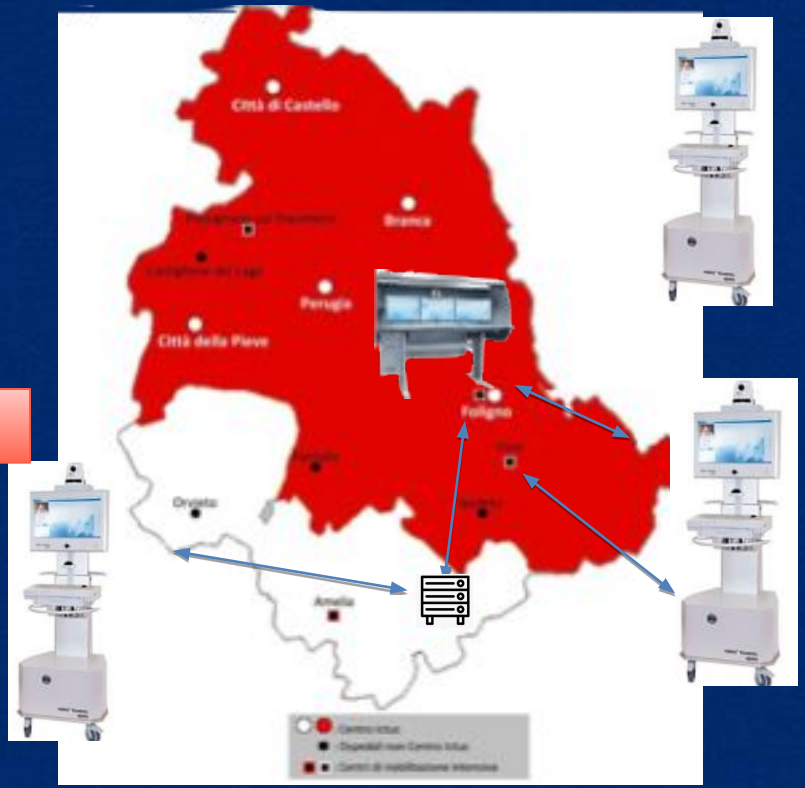
medical environment -> devices nearby patients, development according to medical device standards as IEC 60601-1 and IEC 60601-1-2

basic safety of a medical device
galvanic decoupling of connections

ergonomic design -> adjustable components/systems

availability of technical support 24/7 (acute emergency cases)

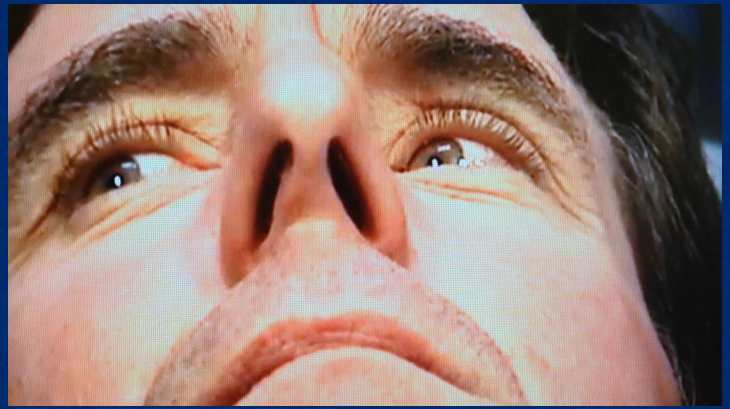


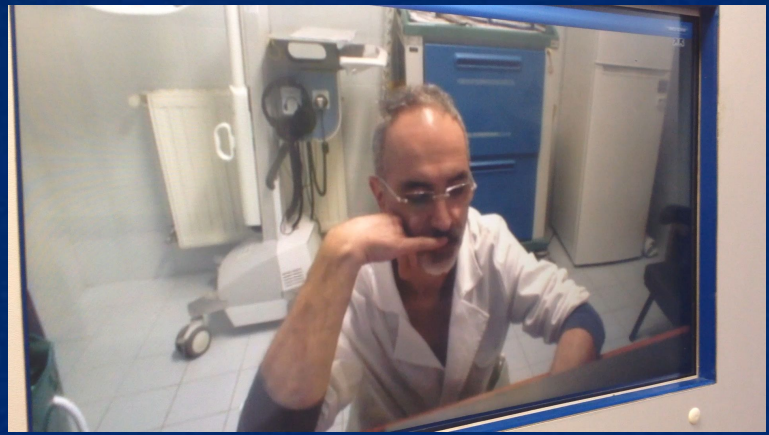


Norcia

Orvieto

Spoleto





Primo intervento in Umbria di telemedicina: orvietana trattata con un'assistenza remota da Foligno

Paziente colpita da ictus curata a "distanza"

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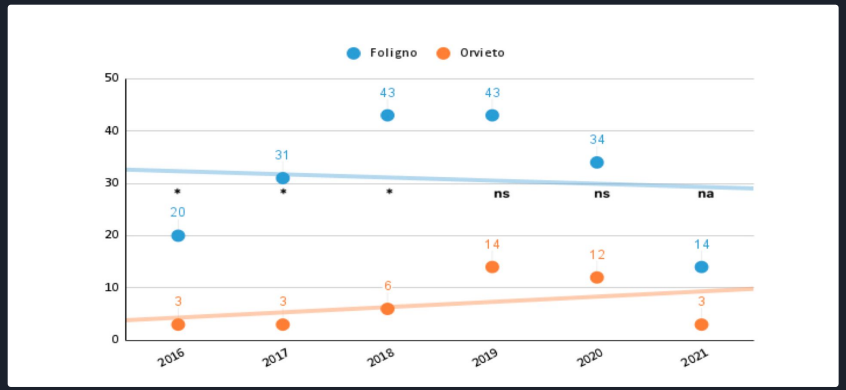
ATTUALITÀ, FOLIGNO, ORVIETO

Primo intervento di telemedicina in Umbria: tandem Orvieto-Foligno salva la vita a donna colpita da ictus

2 Febbraio 2017



Trend trombolisi USL Umbria 2

neurology international

MDPI

Communication

Extending Thrombolysis in Acute Ischemic Stroke to Primary Care: Early Experiences with a Network-Based Teleneurology Approach

Francesco Corea [1,*], Monica Acciarresi [1], Laura Bernetti [1], Pierluigi Brustenghi [1], Arianna Guidubaldi [1], Mariangela Maiotti [1], Sara Micheli [1], Vilma Pierini [1], Alessio Gamboni [2], Giuseppe Calabrò [2], Chiara Busti [2], Cesare Magistrato [3], Gianluca Proietti-Silvestri [4], Massimo Bracaccia [5], Valeria Caso [6] and Mauro Zampolini [1]

The role of telemedicine in acute stroke treatment in times of pandemic

Gordian J. Hubert[a], Francesco Corea[b], and Felix Schlachetzki[c]

Table 1. Telemedicine solutions in times of pandemics or civilian/military disasters before the coronavirus disease 2019 pandemic

Pandemic/disaster	Year	Solution
Earthquake Mexico City	1985	Satellite provided voice communication
Earthquakes in Armenia	1988	Satellite voice and unilateral videocommunication
Hurricane Hugo, Virgin Islands	1990	Digital image transmission
Persian Gulf War	1991	Digital image transmission and telephone consultation to mobile health units in the dessert
Civil War Somalia	1993	Digital image transmission and voice messages
Balkan Wars	1993–1999	Satellite provided real time voice and video and digital image transmission
H1N1 Pandemic, Taiwan	2009	Home-based videoconferencing
Ebola virus disease outbreaks		
Liberia, Sierra Leone, Guinea		Telephone hotline
Sierra Leone, Guinea Sierra		Text messaging service for medical concerns
Leone, Guinea		Contact tracing application software
Nigeria	2014	Application software for case management and follow-up
MERS infection, Korea	2015	Teleprescription for patients in quarantine
Dengue fever outbreaks, Sri Lanka	2017	Application app for detection of outbreaks

MERS, Middle East respiratory syndrome.

The role of telemedicine in acute stroke treatment in times of pandemic

Gordian J. Hubert[a], Francesco Corea[b], and Felix Schlachetzki[c]

Table 2. Telemedical solutions, their potential advantages and effects on the pandemic

Solutions	Potential advantages during COVID-19 pandemic	Effect
Videoconference	Reduction of contact Reduction of protective gear	Avoiding spreading disease Quarantined staff able to work remotely Preventing shortage of supply
Telemedical-supported decision-making on endovascular treatments	Reduction of unnecessary secondary transfers	Avoiding spreading infectious disease to several teams Reducing workload for overloaded emergency medical service
Telemedical ward rounds and didactics	Reduction of contact	Avoid spreading disease among medical staff

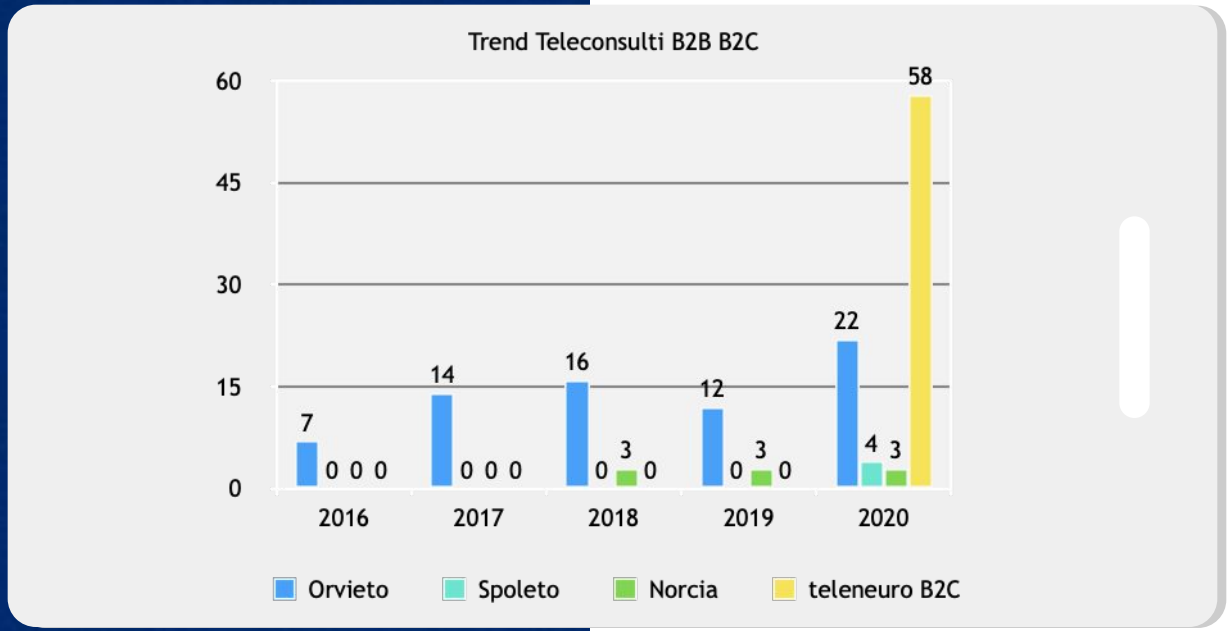
COVID-19, coronavirus disease 2019.

- spazi adeguati al numero di accessi degli utenti nelle sale di attesa degli ambulatori, in particolare laddove siano comuni a più ambulatori;
- la delocalizzazione degli ambulatori, verificando anche la possibilità di utilizzare spazi normalmente non usati, in particolare nel fine settimana, quali quelli presenti nei distretti;
- l'uso di **strumenti e modalità di gestione delle prestazioni a distanza e di telemedicina**, laddove non è richiesto un contatto fisico o comunque ravvicinato tra il paziente ed il medico;
- la riorganizzazione delle attività correlate alla prestazione con espletamento telefonico di ogni attività di anamnesi e di informazione (sia precedente che successiva alla prestazione stessa).

Nel rispetto di quanto sopra indicato, ciascuna Azienda sanitaria dovrà provvedere ad una nuova pianificazione delle attività in rapporto alla capacità di offerta attuale, definendo:

• la propria domanda di lista di attesa;
• la capacità produttiva disponibile in termini di spazi e risorse.

A distanza di un mese dal riavvio dell'erogazione delle prestazioni la Regione effettuerà un monitoraggio dell'andamento della ripresa delle attività e valuterà l'opportunità di intraprendere ulteriori eventuali azioni che si rendessero necessarie anche in relazione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Orvieto
Spoleto
Norcia
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frontiers in Neurology

OPINION
published: 14 September 2021
doi: 10.3389/fneur.2021.689191

Telestroke: Barriers to the Transition

*Chiara Busti[1], Alessio Gamboni[1], Giuseppe Calabrò[1], Mauro Zampolini[2], Marialuisa Zedde[3], Valeria Caso[4] and Francesco Corea[2]**

Stakeholder	Barrier	Needs and potential benefits
Medical school curricula	Lack training & education	Physicians and trainees need to acquire basic skills.
Medical societies	Lack of visibility for Telestroke and lack of SOPs*	The Scientific community needs to offer a governance to the digitalization of medicine. Supporting the transition with specific CME and offering visibility to careers investing in digital health.
Industry planning	No integration between Pharma industry and digital devices/ telemedicine.	Integrated Digital health will support the capacity of hospitals and the safety of medical treatment.
Patients associations	Customers perception	On the whole, citizens seem ready to use digital services for healthcare. This will save time and money.
Digitalization	Infrastructure outdated	Increase the accessibility for citizens to digital healthcare.
Insurance coverage	Lack of Reimbursement for the service from public or private insurers	Any procedure using digital devices needs to be recognized by authorities.
Medical Union	Resistance in the working market	Growth of potential activities and certainty of salary increase.

SOPs, standard operating procedures.

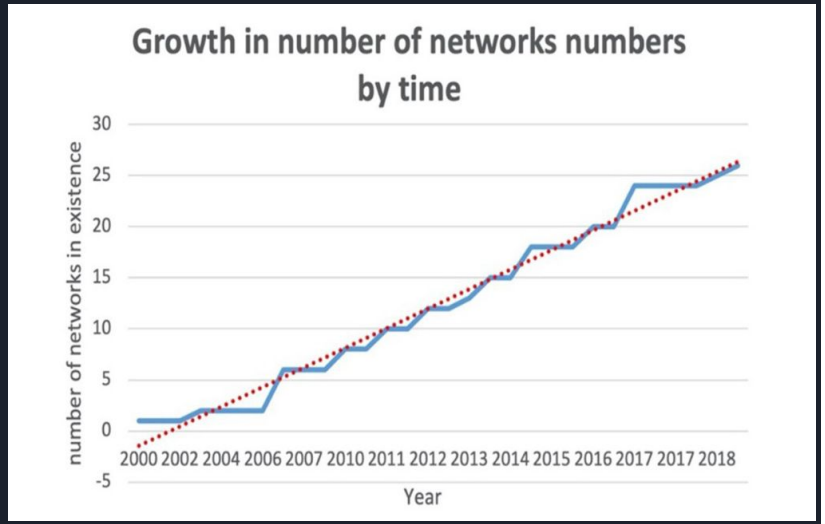

TABLE 1 Characteristics of telemedicine networks in Europe.

Description	*N*
Telemedicine networks	25
Number of countries	10
Number of hubs per network, mean (range)	1.6 (1–6)
Number of spokes per network, mean (range)	9 (2–24)
Distance from hub site to spoke site, km median (IQR)	70 (55)
Telemedicine consultations per year, mean (*SD*) [range]	2310 (*SD*) [25–10,240]
Telemedicine consultations per spoke per year, mean (*SD*) [range]	197 (164) [20–468]
Strokes per year in all spoke sites in the network, median (IQR)	2107 (2,049)
Strokes per year per site, median (IQR)	175 (192)
Interventions per year in all sites in the network, median (IQR)	255 (210)
Interventions per year per site, median (IQR)	15 (24)
Intervention rate, median % (IQR)	9.6 (15)
Primary use of telemedicine service	
Emergency room consultation, %	24 (96)
TIA clinic, %	1 (4)
Audio-visual both sides, %	25 (100)
Maintenance of a register	
Single register for all sites, %	14 (56)
Spokes maintain their own register, %	5 (20)
No register, %	7 (28)