

응급신경학의 benchmark과 향후 방향

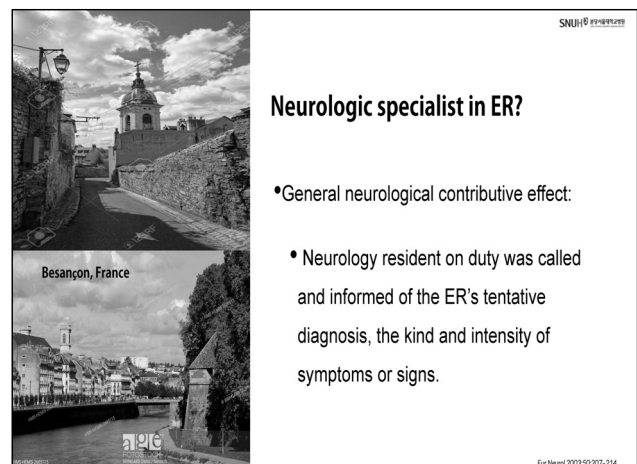
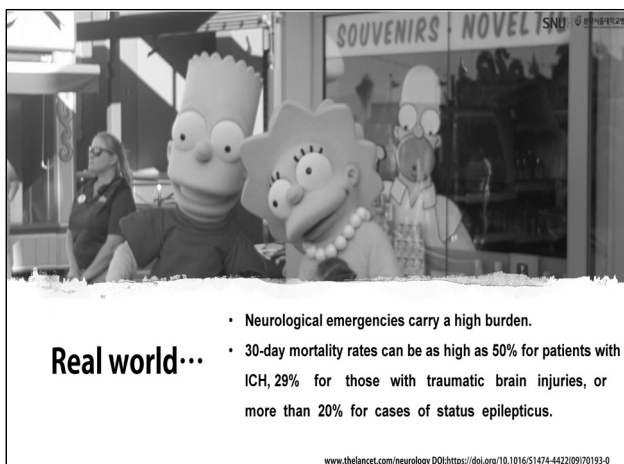


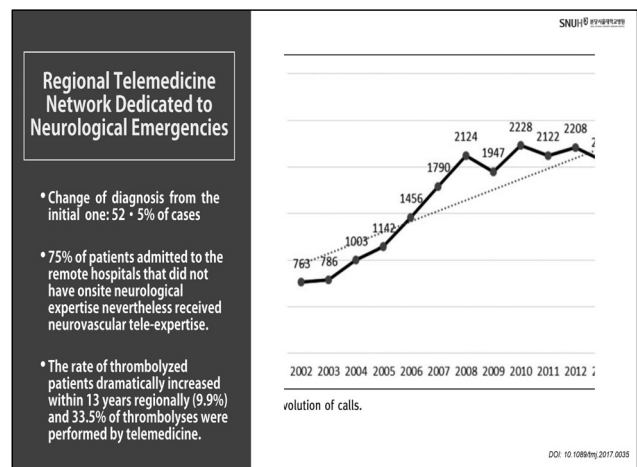
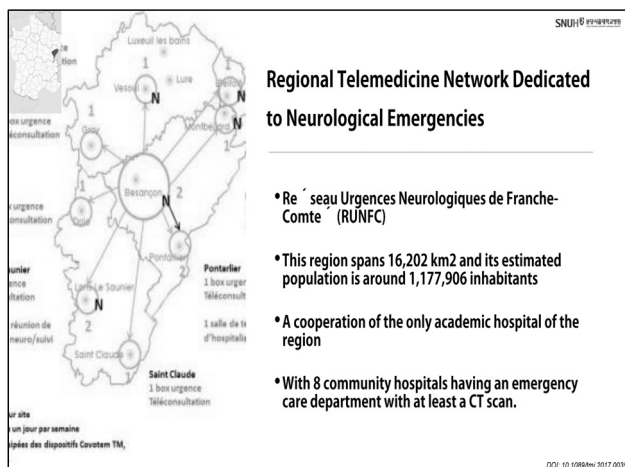
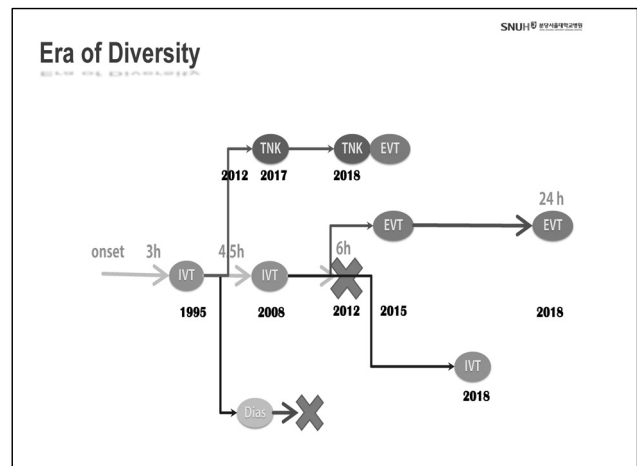
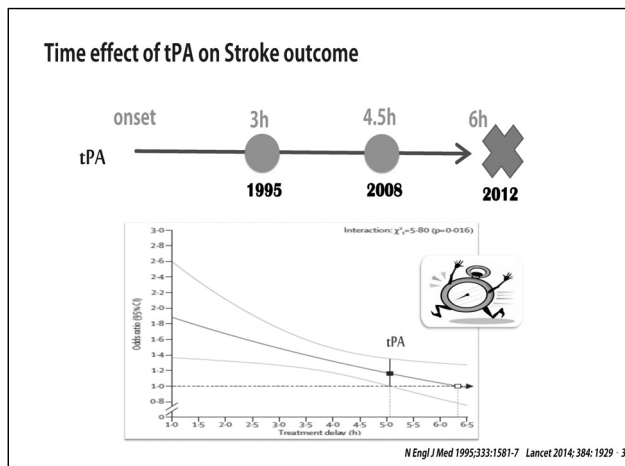
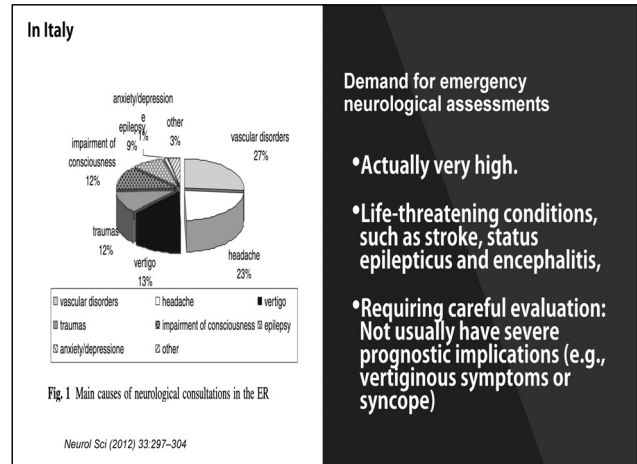
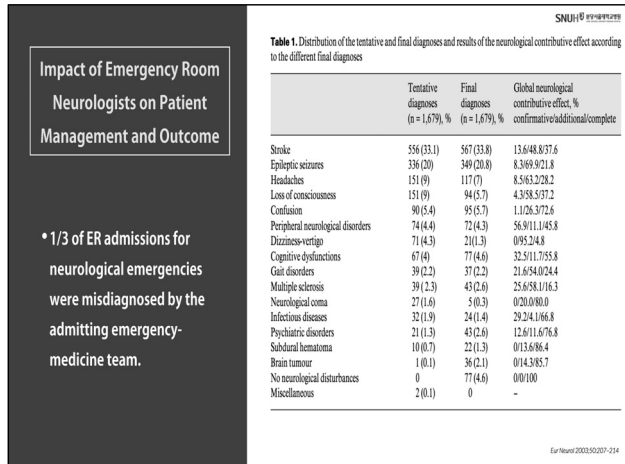
강 지 훈
서울의대

Emergency Neurology: Benchmark and Future direction


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Recommended procedure in ER



- Patients with a clear neurological emergency,
- Should be sent directly to the reference hospital for neurology when via EMS.
- Patients with the above profile presenting spontaneously should be sent, by the ER, directly to the reference hospital for neurology.
- These hospitals should in any case be linked, both in the traditional way (telephone and through consultations) and through telemedicine, with the hospital of reference.

Neurol Sci (2012) 33:297–304

<https://www.soctelemed.com>

We Are the Largest Provider of teleNeurology Services and Solutions to US Hospitals

USA, Telemedicine

- Specialists On Call (SOC), a private US provider of emergency neurology consultations by telemedicine, announced that it would add ten more states to its coverage area in 2009.

SOC teleNeurology Solutions BY THE NUMBERS	450,000+ teleConsultations	500+ Hospitals
Nationwide Telemedicine Coverage	98% TV Consults by Video	10+ Avg. SOC Physician Experience (in years)
As low as 37 Door-to-Needle Time (in minutes)	1.94% sICH Rate (Symptomatic Intracranial Hemorrhage Rate)	11.25 Median Time to Video (in minutes for Emergency Neurology)
		20% Average Hospital (ACHS) Utilization Post-Stroke

Kentucky, robot telemedicine network



- Patients can see and speak with the neurologist via a computer screen, which is placed where the robot's head might be

Ky.gov An Official Website of the Commonwealth of Kentucky
CHFS Cabinet for Health and Family Services
CHFS • Agencies • Office of Health Data and Analytics • Telehealth Program
OFFICE OF HEALTH DATA AND ANALYTICS
Telehealth Program
<https://chfs.ky.gov/agencies/ohda/pages/telehealth.aspx>



Health services in Finland - Helsinki Region

Information obtained from recent visit and PERFECT stroke program


Health services in Finland



- Public hospitals form backbone of services
- Hospitals are run by health districts
 - Health districts (n=21) based on geographic areas
 - Owned and managed by commune
 - Funded with tax money
 - Perform acute stroke care and most of rehabilitation
- Private sector is small, has no emergency services and mainly exists due to public sector waiting lists

Scheme of regional based hospital system

- 권역: 1개의 University hospital + Central hospital (kesussairaala)
- Central hospital: Outpatient clinic 업무 (+ primary care ER)
- University hospital: 대부분의 응급 상황 (모든 acute recanalization therapy 포함).



Harmonized organization for neurological disease of designated region

• Helsinki

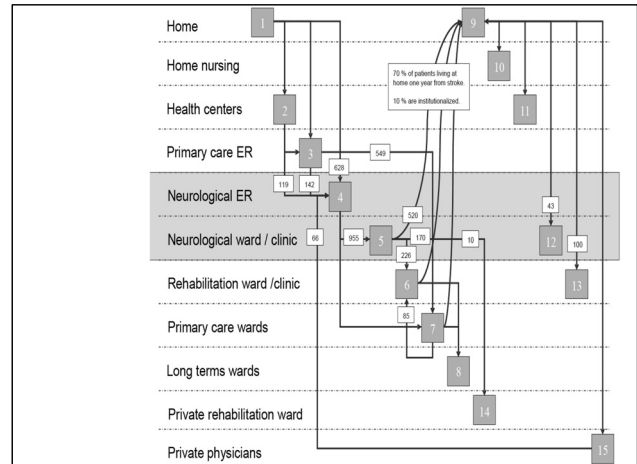
• One Tertiary hospital + 3 site Central hospitals

• 4 hospitals 전체 인력 구성

• Total staffs: 54 neurologists, ~ 30 therapeutics, ~ 200 nurses

• Helsinki University Hospital: 28 neurologists + 14 neurology residents + 6 neuro-interventionists

• Central hospitals: daytime and outpatient clinic and primary care ER/ acute stroke care 등이 필요한 경우 consulting (전화)으로 연결



Helsinki University Hospital Neurology

• Organization

• Emergency Neurology center

• Stroke Unit

• Neuro-ICU

• Parkinson Disease Center

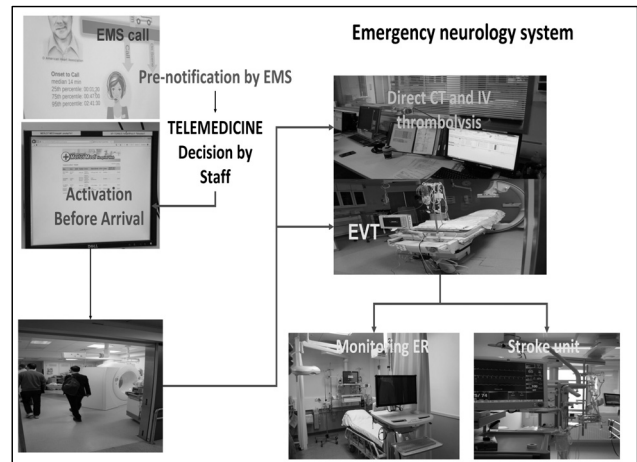
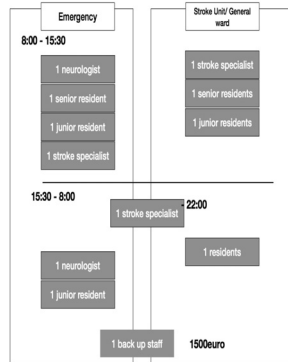
• OPD

• Indications for Emergency Neurology

• Seizure

• Stroke

• Unconsciousness



Neurology	6 t	29 min
Siektäudit	7 t	32 min
Kirurgia	6 t	45 min
Neurologia	6 t	45 min

Patients are admitted to the Emergency Department based on a physician's referral or, in emergencies, without a referral, round the clock. The Emergency Department provides internal medicine, surgical and neurological specialized medical care for patients over 16 years who have been taken acutely and seriously ill and need immediate care. Patients are treated based on their urgency, which is why waiting times may become long.

Stroke unit

• Facilitation

– 10 Beds for 2 million population

• Staffs

– On-duty time: 2 Residents + 1 stroke specialist

– 1 nurse/ 1 bed

• Services

– Comprehensive medical treatments including respiration support (ventilator) and intensive monitoring






Rehabilitation Clinic

- Specialized clinic located near the acute care university hospital
- Early and intensive rehabilitation therapy – language, physical, social and high cognitive dimension
- Strict regulation for admission and discharge

Access to Prompt Facility

Triage and health care system

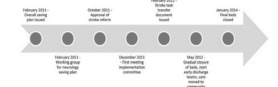


Prehospital Triage

집중화

Effects of centralizing acute stroke services

A prospective cohort study



전문화

AHA/ASA Systematic Review


Accuracy of Prediction Instruments for Diagnosing Large Vessel Occlusion in Individuals With Suspected Stroke

A Systematic Review for the 2018 Guidelines for the Early Management of Patients With Acute Ischemic Stroke

Access to Prompt Facility

Centralizing acute stroke services

Central Denmark Region



• 22,141 stroke cases

Centralized acute stroke care designated SU with 7-day outpatient clinics **6 → 2**

	May 2011 to April 2012		May 2013 to April 2014		
	Before	After			RR (95% CI)
Performance measures, % (95% CI), cases/total^a					
All-or-none^b					
Unadjusted	50.6 (48.5–52.6)	62.3 (60.3–64.3)	1.23 (1.01–1.51)		
Acute treatment % (95% CI), cases/total					
Admission ≤ 5 h of all strokes					
Unadjusted	33.7 (31.7–35.6)	45.4 (43.3–47.4)	1.35 (0.86–2.12)		
Thrombolysis within 1 h					
Unadjusted	64.4 (58.8–69.9)	84.2 (80.5–88.0)	1.31 (1.19–1.43)		
Thrombolysis of all ischemic strokes^c					
Unadjusted	14.9 (13.3–16.5)	17.8 (16.2–19.5)	1.20 (0.95–2.58)		