



EPIDEMIOLOGY AND TREATMENT OF CARDIOVASCULAR EMERGENCIES IN URBAN VS. REMOTE AREAS

Andrea Semplicini

Medicina Interna 1

Ospedale SS. Giovanni e Paolo - Venezia

Azienda ULSS 12 Veneziana

Dipartimento Medicina Clinica e Sperimentale

Università di Padova



azienda Ulss 12 veneziana



AMBULANZA

AMBULANZA

EMERGENCY
118

BUZZONE

REDUCTION OF CV MORTALITY

- Primary and secondary prevention
- On-site resuscitation
- Rapid administration of the most appropriate treatment

REDUCTION OF CV MORTALITY

- Primary and secondary prevention
- On-site resuscitation
- Rapid administration of the most appropriate treatment

EUROPE

European Resuscitation Council Guidelines for Resuscitation 2010

Sudden cardiac arrest: > 60% of adult deaths from CAD.

Annual incidence of EMS-treated out-of-hospital cardiopulmonary arrests: 38 per 100,000.

Annual incidence of EMS treated ventricular fibrillation (VF) arrest: 17 per 100,000

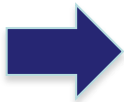
Survival to hospital discharge: 11% for all-rhythm and 21% for VF cardiac arrest.

USA

Sudden Cardiac Arrest; Fact Sheet *As of April 26, 2010; AHA*

EMS treats about 300,000 out-of hospital cardiac arrest each year in the U.S.

8% of people who suffer cardiac arrest outside the hospital survive

 **about 92% of sudden cardiac arrest die outside the hospital**

Chain of survival



Chain of survival



TRAINING

Cardiopulmonary Resuscitation (CPR)

- **Less than one-third of out-of-hospital sudden cardiac arrest victims receive bystander CPR.**
- **Effective bystander CPR, provided immediately after sudden cardiac arrest, can double or triple a victim's chance of survival.**
- **AHA trains more than 12 million people in CPR annually, including healthcare professionals and general public.**

Chain of survival



PRESENCE OF AED

Universal ILCOR signage to indicate presence of an AED (automated external defibrillator).

Automated External Defibrillators (AEDs)

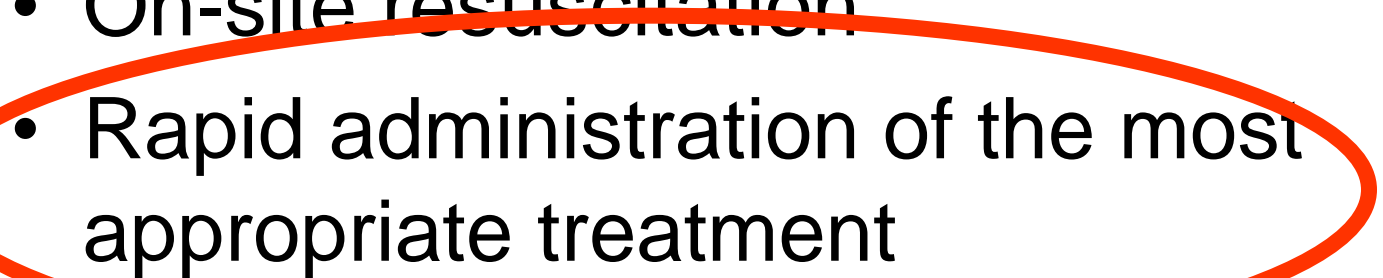
- Resuscitation unsuccessful unless CPR and defibrillation are provided within minutes.
- **Defibrillation with AED required to stop abnormal rhythm and restore normal rhythm even if CPR is performed.**
- AEDs simple and user-friendly. Clear audio and visual cues tell what to do. Shock only if needed.
- **AEDs widely available in public places such as schools, airports and workplaces.**

Chain of survival

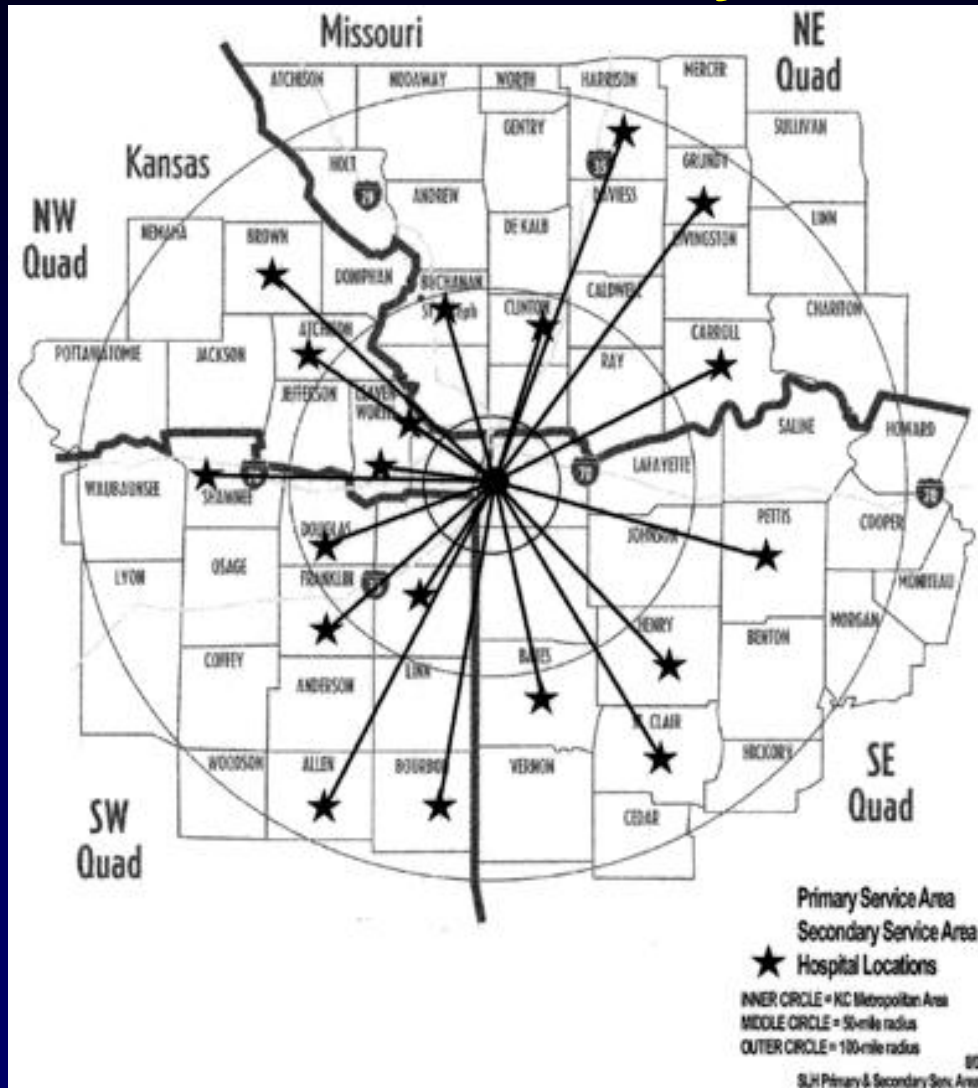


DISPATCH AND
DELIVERY

REDUCTION OF CV MORTALITY

- Primary and secondary prevention
 - On-site resuscitation
 - Rapid administration of the most appropriate treatment
- 

Regional Hospital Stroke Referral Network surrounding Saint Luke's Hospital Stroke Center Kansas City



ADULT STROKE:

2010 AHA Guidelines for CPR and Emergency Cardiovascular Care

- Detection: Rapid recognition of stroke symptoms
- Dispatch: Early activation and dispatch of emergency medical services (EMS) system by calling 911
- Delivery: Rapid EMS identification, management, and transport
- Door: Appropriate triage to stroke center
- Data: Rapid triage, evaluation, and management within the emergency department (ED)
- Decision: Stroke expertise and therapy selection
- Drug: Fibrinolytic therapy, intra-arterial strategies
- Disposition: Rapid admission to stroke unit, critical-care unit

Critical factors for i.v. thrombolysis in acute ischemic stroke

- Symptoms to door

- Patient, family, GP, EMS (118 / 911), distance

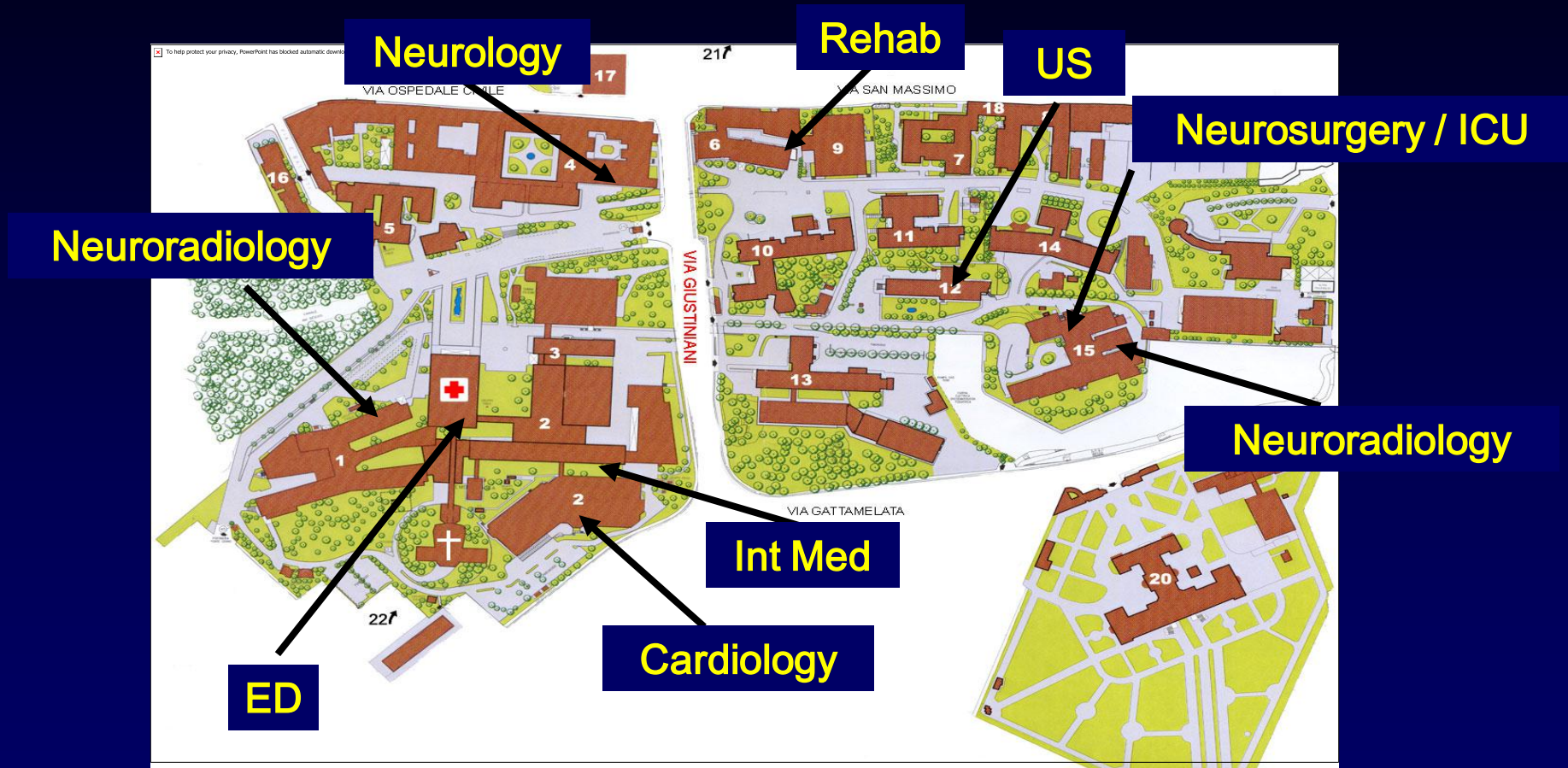
3 hrs. Door to CT

- Triage, ER physician

- CT to needle

- Stroke team

University Hospital of Padova



ADULT STROKE:

2010 AHA Guidelines for CPR and Emergency Cardiovascular Care

- Detection: Rapid recognition of stroke symptoms
- Dispatch: Early activation and dispatch of emergency medical services (EMS) system by calling 911
- Delivery: Rapid EMS identification, management, and transport
- Door: Appropriate triage to stroke center
- Data: Rapid triage, evaluation, and management within the emergency department (ED)
- Decision: Stroke expertise and therapy selection
- Drug: Fibrinolytic therapy, intra-arterial strategies
- Disposition: Rapid admission to stroke unit, critical-care unit

Stroke Team management

(Semplicini et al., Emergency Medicine J, 2008)

Emergency Department

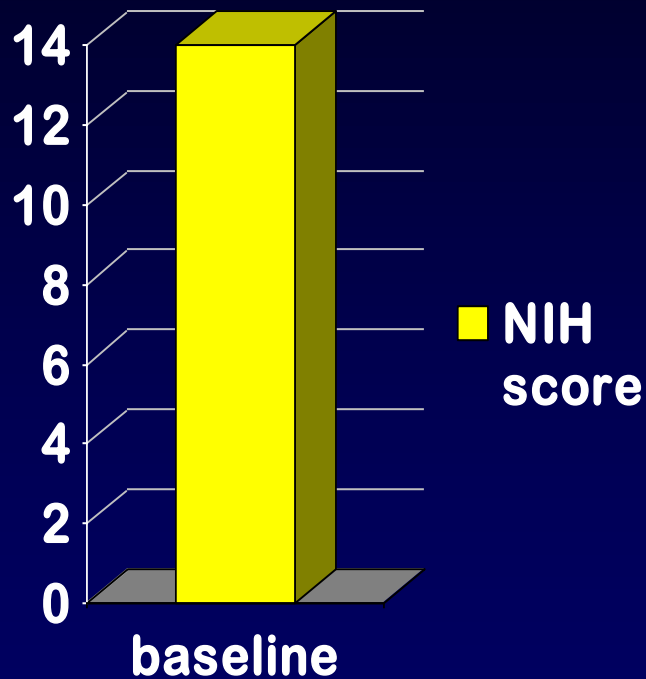
- Contact Stroke Code Team (single pager)
- Obtain CT scan urgently
- Laboratory tests
- Locate family members
- Obtain iv line / BP measurement
- Mix / administer rtPA

Stroke Team

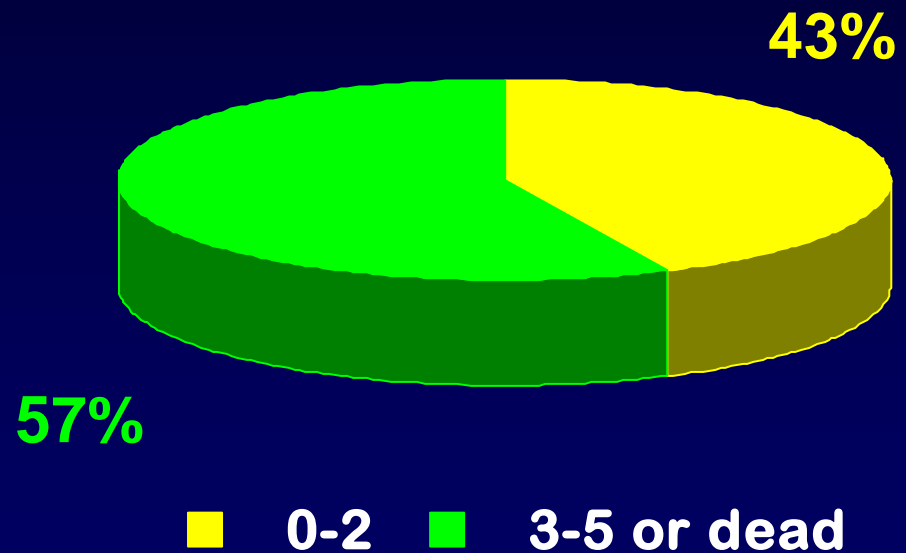
- Clinical assessment
- Inclusion / exclusion criteria
- Obtain informed consent
- Patient monitoring
- Admission / follow up in SU

Thrombolysis with i.v. rTPA

(Semplicini et al., Emergency Medicine J, 2008)



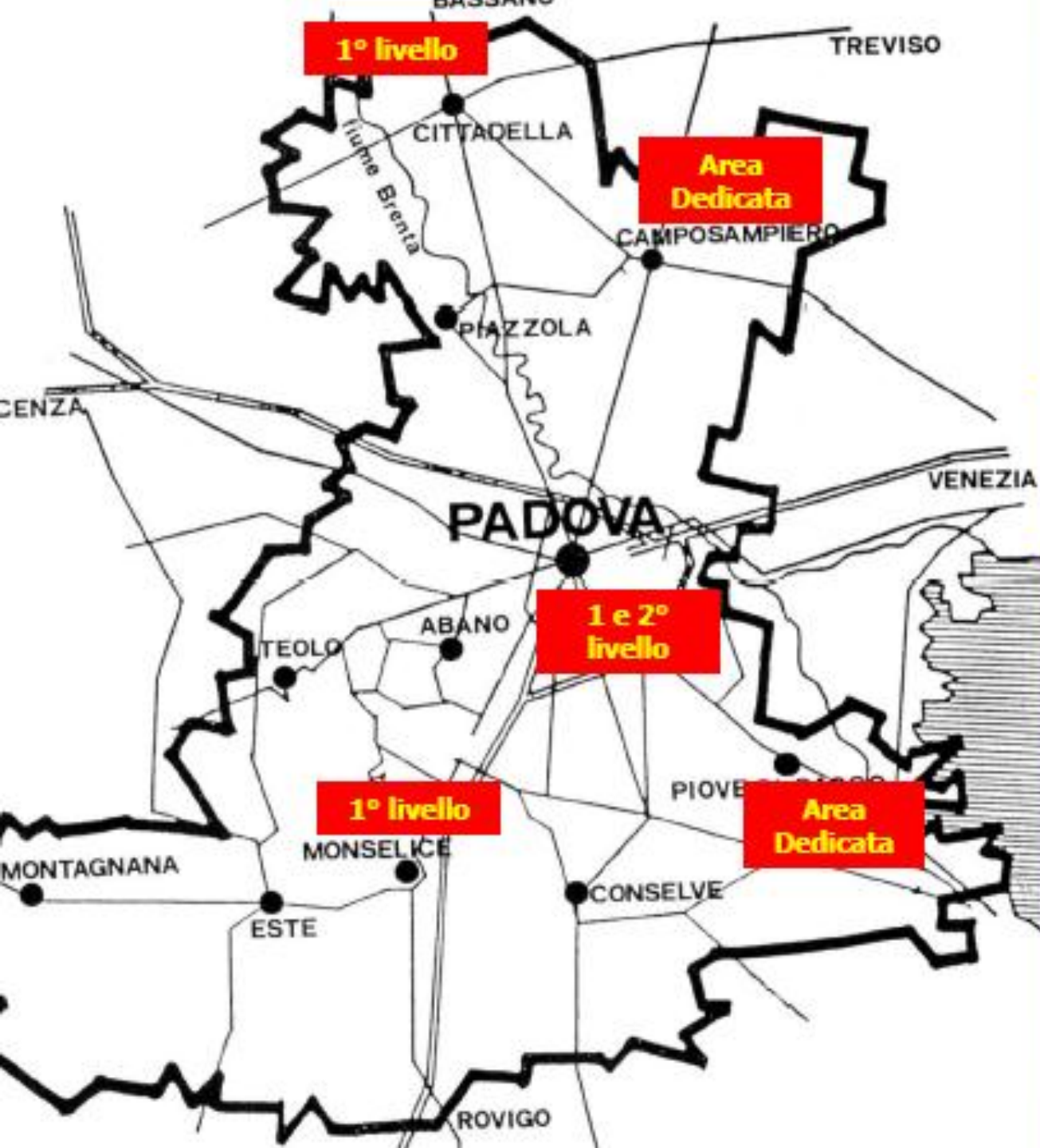
Rankin (3 months)



Intravenous thrombolysis in the emergency department for the treatment of acute ischaemic stroke

A Semplicini,¹ V Benetton,¹ L Macchini,¹ A Realdi,¹ R Manara,² C Carollo,² E Parotto,¹ V Mascagna,¹ M Leoni,¹ L A Calò,¹ A C Pessina,¹ F Tosato³

information. On the basis of the results of our study, we propose that thrombolysis is performed in the ED of first level outlying hospitals, with the optional support of a stroke team located in third level hospitals (less numerous and more specialised) through televideo consultation. After the procedure, patients can be moved safely to third level referral hospitals to continue specialised treatment. This “drip and ship” approach will offer an extended and effective treatment of stroke, probably at lower costs than if SU were more numerous and spread over a wide territory.



Provincia di
Padova

DGRV 4198/2008

Telephone evaluation



Stroke suspected



Vital signs altered

Vital signs unaltered



ALS ambulance dispatch

BLS ambulance dispatch

Prehospital evaluation:
Vital signs
Cincinnati Prehospital Stroke Scale

unstable

ICU

stable

Thrombolysis?

yes

ER
alert

Stroke unit alert

Delivery to stroke unit

no

Delivery
to stroke
network
hospital



EPIDEMIOLOGY AND TREATMENT OF CARDIOVASCULAR EMERGENCIES IN URBAN VS. REMOTE AREAS

Andrea Semplicini

Medicina Interna 1

Ospedale SS. Giovanni e Paolo - Venezia

Azienda ULSS 12 Veneziana

Dipartimento Medicina Clinica e Sperimentale

Università di Padova