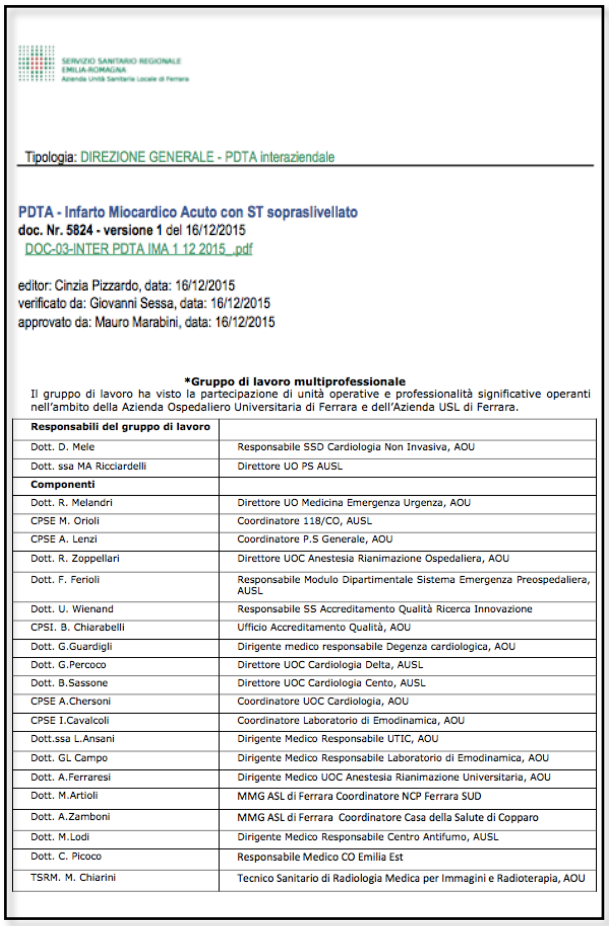

SERVIZIO SANITARIO REGIONALE
EMILIA-ROMAGNA
Azienda Unità Sanitaria Locale di Ferrara

Tipologia: DIREZIONE GENERALE - PDTA interaziendale

PDTA - Infarto Miocardico Acuto con ST sopraslivellato
doc. Nr. 5824 - versione 1 del 16/12/2015
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editor: Cinzia Pizzardo, data: 16/12/2015
verificato da: Giovanni Sessa, data: 16/12/2015
approvato da: Mauro Marabini, data: 16/12/2015

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Il gruppo di lavoro ha visto la partecipazione di unità operative e professionalità significative operanti nell'ambito della Azienda Ospedaliero Universitaria di Ferrara e dell'Azienda USL di Ferrara.

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Ruolo delle Cardiologie *spoke*

B. Sassone

UUOO di Cardiologia
Osp. SS.ma Annunziata - Cento
Osp. del Delta - Lagosanto
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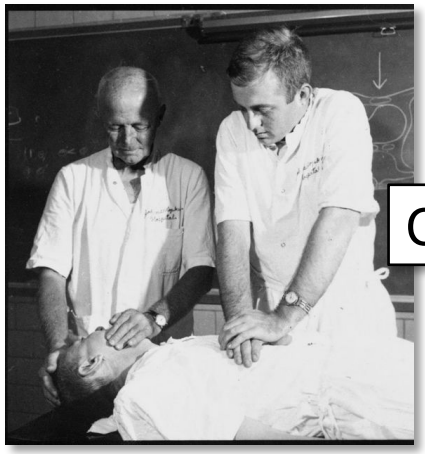
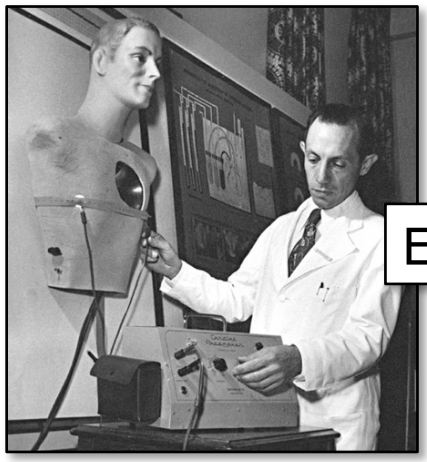
From genesis…..(1956-1960)



Closed chest cardiac compression

Dr. James Jude, at Johns Hopkins



External defibrillator

Dr. Paul Zoll, at Harvard

The Effects of External Electric Currents on the Heart

Control of Cardiac Rhythm and Induction and Termination of Cardiac Arrhythmias

By Paul M. Zoll, M.D., Milton H. Paul, M.D., Arthur J. Linenthal, M.D., Leona R. Norman M.D., and William Gibson, M.D.

Summario in Interlingua

Stimulos electric, applicate externemente a transverso le non-aperte thorace, produceva efficace pulsos cardiac e controlava le rhythmo cardiac in canes, porcos, e humanos. Tachycardia e fibrillation supraventricular e ventricular esseva promptemente inducite per le rapidissime electrostimulation externe (plus que 500 per minuta) in porcos con previemente effectuate ligationes del arteria coronari. Le choc contrari effectuate per le application externe de currente electric terminava instantaneemente omne iste arrhythmias. Le resuscitation de patientes ab arresto ventricular e ab fibrillation ventricular esseva effectuate per medio de iste technicas externe.

Circulation, Volume XIV, November 1956

…to revelation (1961-1962)

THE LANCET

840 OCTOBER 14, 1961 ORIGINAL ARTICLES THE LANCET

generally recognised that in prolonged pregnancy the mother who has been gaining weight steadily throughout her pregnancy will cease to gain weight and then begin to lose weight. The abdominal girth may diminish, and about this time the fœtus is in danger. Similarly, in essential hypertension cessation of maternal weight-gain and decrease in girth are often followed by intra-uterine fœtal death. In pre-eclampsia the picture of maternal weight-gain is often distorted by the development of œdema, but the similarity of the reduction of maternal placental blood-flow in these two conditions leaves little doubt that if the effect of œdema could be eliminated there would be a similar loss of weight in the pre-eclamptic woman. It seems, therefore, that determination of the volume of liquor by a method such as that described above could give timely warning of the necessity to terminate the pregnancy so as to rescue the fœtus from an increasingly anoxic environment.

Summary

A method of determining liquor volume by means of a dye-dilution technique using 'Coomassie Blue' is described and the use of coomassie blue for this purpose is compared with that of congo red.

In healthy women the liquor volume is maximal at 38 weeks, averaging then 1000 ml., and declines thereafter at a rate of 145 ml. per week until by 43 weeks it is about 250 ml. In pre-eclampsia and essential hypertension the peak volume is reached before 37 weeks, and is about half that in normal pregnancy. A similar decline in volume occurs in succeeding weeks, the lowest volumes being reached earlier than 43 weeks.

The placental weight influences the liquor volume in normal pregnancy, larger volumes occurring with very large or very small placentæ. This effect is not clearly evident in pre-eclamptic or hypertensive women.

Birth-weight also has an effect on liquor volume in normal pregnancy. This effect is the reverse of that of placental weight and is not so distinct.

Increasing age and parity appear to diminish the liquor volume. Multiparity is especially associated with decrease in liquor volume in essential hypertension.

Placental insufficiency, often suggested clinically by maternal loss of weight and diminution in girth, might be confirmed by finding that the liquor volume is low.

Statistical Appendix

Examination of the data by computer showed that the variables would be expressed by the following equations:

Equation 1 (normal pregnancy):
$V = 955{\cdot}8 + 7417\,(x - 0{\cdot}713)^2 - 430\,(y - 3{\cdot}782)^2 - 144{\cdot}7\,(x - 38)$

Equation 2 (pre-eclampsia):
$V = 6360 - 11{\cdot}16u + 297{\cdot}3y - 167{\cdot}7z$

Equation 3 (essential hypertension):
$V = 539 - 53{\cdot}88v + 376\,(y - 3{\cdot}04)^2 - 102{\cdot}5\,(x - 38)$

where V = liquor volume (ml.), x = placental weight (kg.), y = birth-weight (kg.), z = gestation period (weeks), u = age of mother (yr.), and v = parity in single units.

TABLE VII—THE EFFECTS AND THEIR STANDARD ERRORS ON VOLUME OF LIQUOR

Factor	Normal	Pre-eclampsia	Ess. hypertension
Age	Not significant	−11·2 ± 8·0 (doubtful significance)	Not significant
Parity	Not significant	Not significant	−53·9 ± 25·8
Placental weight	7417 (x − 0·713)² (7417 ± 1779)*	Not significant	Not significant
Birth-weight	−430 (y − 3·78)² (−430 ± 173)*	297 ± 116	376 (y − 3·04)² (376 ± 168)*
Gestation period	−144·7 ± 26·7	−167·7 ± 38·3	−102·5 ± 22·8

Where the variable (x or y) is not squared, the effect is linear. The quantities expressed thus * below the quadratic terms represent the coefficients and their standard errors.

TABLE VIII—MEAN, RANGE, AND STANDARD DEVIATION OF THE VARIABLES

Factor	Normal			Pre-eclampsia			Ess. hypertension		
	Mean	Range	S.D.	Mean	Range	S.D.	Mean	Range	S.D.
Age (A)	26·6	17–42	5·3	24·8	17–39	5·5	31·3	20–43	6·1
Parity (B)	1·0	0–5	1·2	0·7	0–3	1·6	1·1	0–4	1·3
Placental weight (C)	0·67	0·40–1·08	0·15	0·63	0·40–0·91	0·11	0·66	0·43–0·96	0·13
Baby weight (E)	3·4	2·8–4·9	0·47	3·2	2·4–4·2	0·45	3·3	2·6–4·2	0·37
Gestation period (G)	40·5	38–43	1·6	39·0	37–41	1·4	39·2	37–41	1·4

Significant correlations: AB = 0·291, CE = 0·743, AG = 0·449, AE = 0·569, CE = 0·705, CG = 0·484, EG = 0·566, AB = 0·681, AC = 0·452, BC = 0·604, CE = 0·579.

We gratefully acknowledge the advice of Prof. J. C. McClure Browne and Mr. W. G. MacGregor, and the help of the midwifery staff at Hammersmith Hospital, of Mr. E. Simmons (chief technician, Institute of Obstetrics and Gynæcology, Hammersmith Hospital), and of I.C.I. Ltd. who provided the 'Coomassie Blue'. Our thanks are due also to Dr. O. L. Davies, of I.C.I. Ltd., Pharmaceuticals Division, Macclesfield, Cheshire, who carried out the statistical analyses, to Miss S. Swallow who prepared the diagrams, and to Miss J. A. Lunt who typed the manuscript. One of us (P.M.H.) was financed in part by a grant from the Postgraduate Medical Foundation of the University of Sydney, New South Wales, Australia.

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TREATMENT OF CARDIAC ARREST IN ACUTE MYOCARDIAL ISCHÆMIA AND INFARCTION*

DESMOND G. JULIAN
M.A., M.D. Cantab., M.R.C.P.
SENIOR MEDICAL REGISTRAR, ROYAL INFIRMARY, EDINBURGH †

IN acute myocardial ischæmia and infarction sudden death is often due to cardiac arrest, which may be defined as "a sudden and unexpected failure of the heart to maintain the circulation" (Reid et al. 1958) describes the treatment of five such cases—th massage through the open chest and two b chest technique of Kouwenhoven et al. (196 In the twelve months ended last April, patients were admitted to two wards of Edi Infirmary with acute myocardial ischæmia confirmed by electrocardiographic, enzymati evidence. Of these, eleven died suddenly without previous signs of shock or gross cardiac failure. In six of these, resuscitation was not attempted; and, though two were found to have cardiac rupture, the other four probably died from ventricular fibrillation or asystole. In the remaining five cardiac massage was given.

* The substance of this paper was reported to the Thoracic Society at its Harrogate meeting on July 15, 1961.
† Now cardiologist at Sydney Hospital, New South Wales, Australia.

The first description of the CCU was presented by Julian to the British Thoracic Society in 1961

Lancet 1961;2:840-4

CCU: Impact on Mortality

Treatment of Myocardial Infarction in a Coronary Care Unit

A Two Year Experience with 250 Patients*

THOMAS KILLIP III, M.D., F.A.C.C. *and* JOHN T. KIMBALL, M.D.
New York, New York

IN 1963 Day[1] and Brown et al.[2] reported their initial experiences with the clustering of patients with acute myocardial infarction in special care areas designed for continuous monitoring of the electrocardiogram. Early recognition of cardiac arrest with prompt initiation of resuscitative measures was emphasized. A decrease in mortality of the monitored patients was attributed to improved treatment of serious arrhythmias and cardiac arrest during the first three to five days after acute infarction.

As a result of these encouraging reports, in January 1965 a study of specialized care for myocardial infarction was begun at The New York Hospital-Cornell Medical Center.[3] This communication details a two year experience with 250 patients with objectively proved acute myocardial infarction treated in a specially designed, equipped and staffed coronary care unit in a voluntary teaching hospital.[4]

DESCRIPTION OF CORONARY CARE UNIT

DESIGN AND EQUIPMENT

A four bed coronary care unit (CCU) was constructed in a 39 by 19 ft. room on a general medical ward. The equipment includes narrow, stretcher-type beds, central oxygen and suction outlets, multiple electrical outlets with appropriate grounding, a cardiac arrest alarm system and four bedside units suitable for monitoring the electrocardiogram and arterial or venous pressure. Only the electrocardiogram has been monitored routinely. Each bedside oscilloscope is connected to a central console in the nursing station and consists of four oscilloscopes and an alarm system sensitive to changes in heart rate. Four patients and their individual electrocardiographic patterns are under observation simultaneously. A defibri
gency drugs, equip
ventilators and a dire
immediately availab
autonomous, self-suff
teaching pavilion.

STAFFING

The Nursing Staff: At least one specially trained registered nurse is present in the unit at all times. Each has completed
sented by the physici
prior to working a
emphasizes recogniti
heart failure and ca
tion of the nursing st
view sessions and frequent analysis of experiences in the unit. Practical experience in the administration of precordial shock is provided by experiments in the dog laboratory and by having the nurses assist during elective "cardioversions."

Physicians: At lea
house staff, consistin
resident physician, i
adjacent medical floo
Daily rounds in the
officers under the dir
ber of the cardiology staff who is also available for consultation at other times. Each new group of house officers rotating through the CCU receives special lectures and demonstrations on recognition of arrhythmias, therap
all aspects of cardiac
The private docto
mains the physician
as he would on priva
house officers are per
cations are managed
ogy staff according to established therapeutic routines. In practice, management of all patients in the

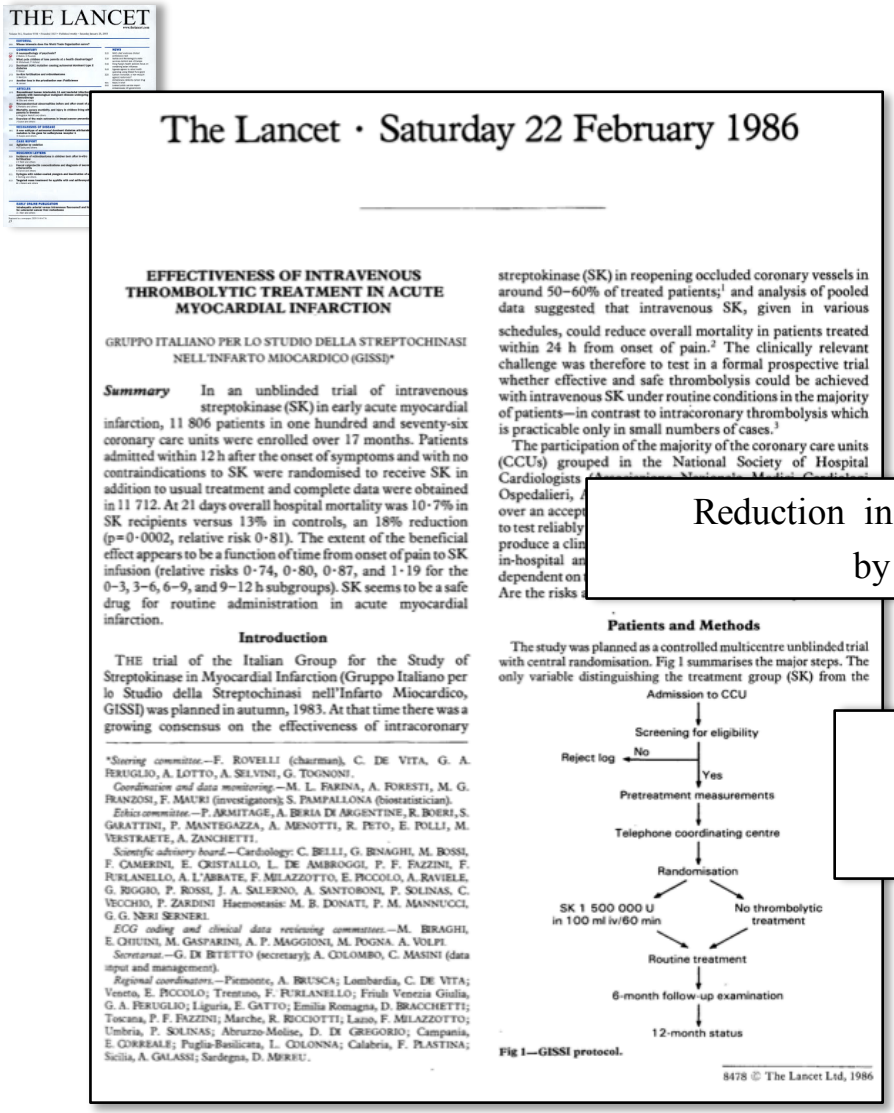
* From the Department of Medicine, Cornell University Medical College, New York, N. Y. This study was supported by Contract No. PH 108-65-09 with the U. S. Public Health Service, Department of Health, Education, and Welfare.

- Mortality rate decreased from **26%** (regular ward) to **7%** (CCU)
- Continuous telemetry monitor with an alarm system allowing for prompt attention to significant arrhythmias
- Immediate treatment of life-threatening arrhythmias
- Nurses were authorized to apply precordial shock if a physician was not available within 60 sec

Am J Cardiol 1967;20:457– 64

Thrombolytic Era: Kick-off

Gruppo Italiano per lo Studio della Sopravvivenza nell'Infarto-1 (GISSI-1) study



THE LANCET

The Lancet · Saturday 22 February 1986

EFFECTIVENESS OF INTRAVENOUS THROMBOLYTIC TREATMENT IN ACUTE MYOCARDIAL INFARCTION

GRUPPO ITALIANO PER LO STUDIO DELLA STREPTOCHINASI NELL'INFARTO MIOCARDICO (GISSI)*

Summary In an unblinded trial of intravenous streptokinase (SK) in early acute myocardial infarction, 11 806 patients in one hundred and seventy-six coronary care units were enrolled over 17 months. Patients admitted within 12 h after the onset of symptoms and with no contraindications to SK were randomised to receive SK in addition to usual treatment and complete data were obtained in 11 712. At 21 days overall hospital mortality was 10·7% in SK recipients versus 13% in controls, an 18% reduction (p=0·0002, relative risk 0·81). The extent of the beneficial effect appears to be a function of time from onset of pain to SK infusion (relative risks 0·74, 0·80, 0·87, and 1·19 for the 0–3, 3–6, 6–9, and 9–12 h subgroups). SK seems to be a safe drug for routine administration in acute myocardial infarction.

Introduction

THE trial of the Italian Group for the Study of Streptokinase in Myocardial Infarction (Gruppo Italiano per lo Studio della Streptochinasi nell'Infarto Miocardico, GISSI) was planned in autumn, 1983. At that time there was a growing consensus on the effectiveness of intracoronary streptokinase (SK) in reopening occluded coronary vessels in around 50–60% of treated patients;[1] and analysis of pooled data suggested that intravenous SK, given in various schedules, could reduce overall mortality in patients treated within 24 h from onset of pain.[2] The clinically relevant challenge was therefore to test in a formal prospective trial whether effective and safe thrombolysis could be achieved with intravenous SK under routine conditions in the majority of patients—in contrast to intracoronary thrombolysis which is practicable only in small numbers of cases.[3]

The participation of the majority of the coronary care units (CCUs) grouped in the National Society of Hospital Cardiologists [illegible] Ospedalieri, [illegible] over an accep[illegible] to test reliably [illegible] produce a clin[illegible] in-hospital ar[illegible] dependent on [illegible] Are the risks [illegible]

Patients and Methods

The study was planned as a controlled multicentre unblinded trial with central randomisation. Fig 1 summarises the major steps. The only variable distinguishing the treatment group (SK) from the

Fig 1—GISSI protocol.

Steering committee.—F. ROVELLI (chairman), C. DE VITA, G. A. FERUGLIO, A. LOTTO, A. SELVINI, G. TOGNONI.

Coordination and data monitoring.—M. L. FARINA, A. FORESTI, M. G. FRANZOSI, F. MAURI (investigators); S. PAMPALLONA (biostatistician).

Ethics committee.—P. ARMITAGE, A. BERIA DI ARGENTINE, R. BOERI, S. GARATTINI, P. MANTEGAZZA, A. MENOTTI, R. PETO, E. POLLI, M. VERSTRAETE, A. ZANCHETTI.

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ECG coding and clinical data reviewing committees.—M. BIRAGHI, E. CHIUINI, M. GASPARINI, A. P. MAGGIONI, M. POGNA, A. VOLPI.

Secretariat.—G. DI BITETTO (secretary); A. COLOMBO, C. MASINI (data input and management).

Regional coordinators.—Piemonte, A. BRUSCA; Lombardia, C. DE VITA; Veneto, E. PICCOLO; Trentino, F. FURLANELLO; Friuli Venezia Giulia, G. A. FERUGLIO; Liguria, E. GATTO; Emilia Romagna, D. BRACCHETTI; Toscana, P. F. FAZZINI; Marche, R. RICCIOTTI; Lazio, F. MILAZZOTTO; Umbria, P. SOLINAS; Abruzzo-Molise, D. DI GREGORIO; Campania, E. CORREALE; Puglia-Basilicata, L. COLONNA; Calabria, F. PLASTINA; Sicilia, A. GALASSI; Sardegna, D. MEREU.

Reduction in overall in-hospital mortality by **18%** (p=0.0002)

Within 1 hour by **47%** (p=0.0001)

Lancet 1986 Feb 22;1(8478):397-402

Long-term Benefit of Thrombolysis

Clinical Investigation and Reports

Ten-Year Follow-Up of the First Megatrial Testing Thrombolytic Therapy in Patients With Acute Myocardial Infarction

Results of the Gruppo Italiano per lo Studio della Sopravvivenza nell'Infarto-1 Study

Maria Grazia Franzosi, PhD; Eugenio Santoro, MS; Claudio De Vita, MD; Enrico Geraci, MD; Antonio Lotto, MD; Aldo P. Maggioni, MD; Francesco Mauri, MD; Fausto Rovelli, MD; Luigi Santoro, MS; Luigi Tavazzi, MD; Gianni Tognoni, MD; on behalf of the GISSI Investigators*

Background—We conducted a 10-year follow-up of the 11 712 patients with acute myocardial infarction randomized in the Gruppo Italiano per lo Studio della Sopravvivenza nell'Infarto-1 study, the first large trial assessing thrombolytic therapy.

Methods and Results—Information on survival at 10 years was obtained for the 93% of all randomized patients through the census offices of their towns of residence. The difference in survival produced by streptokinase and sustained up to 1 year was still significant at 10 years (log-rank test, P=0.02), with the absolute benefit of 19 (95% CI 1 to 37) lives saved per 1000 patients treated. The time dependence of the extent of the benefit was confirmed, as the higher mortality rate reductions found in patients treated earlier were still present at 10 years. In the overall population, most of the benefit was obtained before hospital discharge (RR 0.81, 95% CI 0.72 to 0.90), since no difference in survival between thrombolyzed and control patients discharged alive was found at 10 years (RR 0.98, 95% CI 0.90 to 1.06). However, a slight albeit nonsignificant divergence of the survival curves of patients randomized within the first hour was observed [90 (95% CI 34 to 146) lives saved per 1000 at 10 years versus 72 (95% CI 37 to 107) lives saved at hospital discharge].

Conclusions—The benefits of a single intravenous infusion of 1.5 million units of streptokinase in prolonging survival of patients with acute myocardial infarction is sustained up to 10 years, with a still-evident trend in favor of the patients admitted earlier. (***Circulation***. **1998;98:2659-2665.**)

Key Words: myocardial infarction ■ trials ■ thrombolysis

The presentation of the Gruppo Italiano per lo Studio della Sopravvivenza nell'Infarto-1 (GISSI-1) study results in late 1985 and their publication in early 1986[1] have been widely recognized as the opening of the thrombolytic era.[2] This large randomized trial, conducted between February 1984 and June 1985 in 11 712 patients with acute myocardial infarction (MI) to assess the efficacy of streptokinase (SK) with respect to standard therapy, showed a statistically significant 18% relative reduction of overall in-hospital mortality rate in patients treated with SK within 12 hours from the onset of symptoms. The extent of the benefit was time dependent, with relative reductions of in-hospital mortality rates of 47% and 23% in patients treated within 1 and 3 hours from the onset of symptoms, respectively. From the

See p 2649

GISSI group came also the first report documenting that the advantage provided by the acute infusion of 1.5 million units of SK was sustained for at least 1 year.[3] Thrombolytic trials, with their short- and long-term follow-up, have since become plentiful,[4–12] with the most comprehensive review provided by the Fibrinolytic Therapy Trialists' (FTT) Collaborative Group.[13] The key message of the original GISSI-1 results could not have had a better confirmation, both with respect to the time to treatment and to its implications on the time dependence of survival advantage. To assess the effect of SK on long-term survival after MI, we conducted a 10-year follow-up of the original

Received May 12, 1998; revision received August 18, 1998; accepted August 31, 1998.
From the GISSI Coordinating Center (M.G.F., E.S., A.P.M., A.L., F.R., L.S., G.T.), Milano and Ospedale Niguarda Cà Granda (C.D.V.), Milano and Ospedale Cervello (E.G.), Palermo, and Ospedale L. Mandic (F.M.), Merate, and Policlinico San Matteo (L.T.), Pavia, Italy.
*A complete list of GISSI-1 study committees, collaborators, and participating centers was published in *The Lancet* (1986;1:397–402).
Presented in part at the 70th Scientific Sessions of the American Heart Association, Orlando, Fla, November 9–12, 1997, and previously published in abstract form (*Circulation*. 1997;96:I-718).
Correspondence to Dr Maria Grazia Franzosi, GISSI Coordinating Centre, Department of Cardiovascular Research, Istituto di Ricerche Farmacologiche "Mario Negri," Via Eritrea 62, 20157 Milano, Italy. E-mail franzosi@irfmn.mnegri.it

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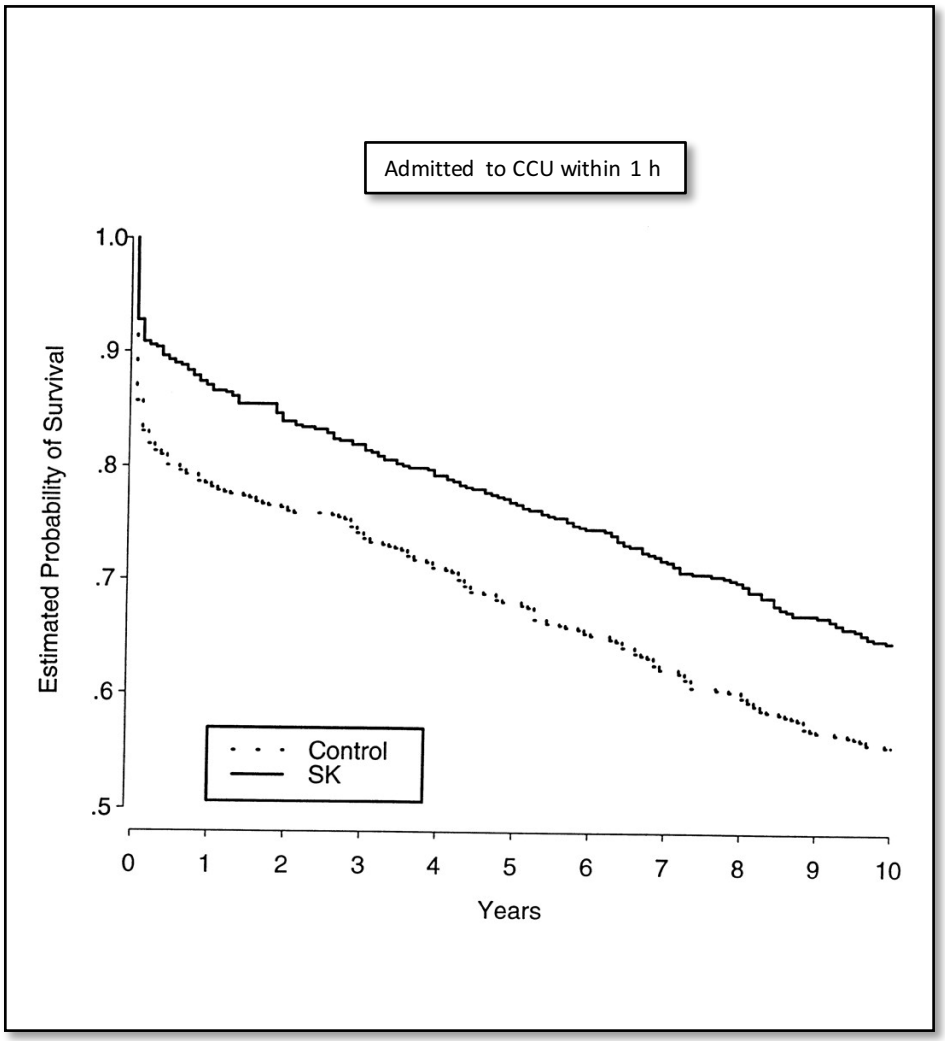

Circulation 1998;98:2659-65

Pre-hospital Thrombolysis

RIKS-HIA Registry

European Heart Journal (2006) 27, 1146–1152
doi:10.1093/eurheartj/ehl886

Clinical research
Coronary heart disease

Pre-hospital thrombolysis delivered by paramedics is associated with reduced time delay and mortality in ambulance-transported real-life patients with ST-elevation myocardial infarction

Erik Björklund[1]*, Ulf Stenestrand[2], Johan Lindbäck[3], Leif Svensson[4], Lars Wallentin[3], and Bertil Lindahl[1] on behalf of the RIKS-HIA Investigators

[1]*Department of Cardiology, University Hospital of Uppsala, 751 85 Uppsala, Sweden;* [2]*Department of Cardiology, University Hospital of Linköping, Stockholm, Sweden;* [3]*Uppsala Clinical Research Center, University Hospital of Uppsala, Uppsala, Sweden; and* [4]*Department of Cardiology, South Hospital, Stockholm, Sweden*

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See page 1131 for the editorial comment on this article (doi:10.1093/eurheartj/ehl740)

KEYWORDS
Acute myocardial infarction;
Pre-hospital thrombolysis;
Treatment delay;
Mortality

Aims There are sparse data on the impact of pre-hospital thrombolys
therefore evaluated treatment delays and outcome in a large cohort o
patients with ST-elevation myocardial infarction (STEMI) according to PHT delivered by paramedics or in-hospital thrombolysis.
Methods and results Prospective cohort study used data from the Swedish Register of Cardiac intensive care on patients admitted to the coronary care units of 75 Swedish ho
transported thrombolytic-treated patients younger than age 80 with
infarction were included. Patients with PHT ($n = 1690$) were your
co-morbid conditions, fewer complications, and a higher ejection frac
patients ($n = 3685$). Median time from symptom onset to treatment wa
in-hospital thrombolysis. One-year mortality was 7.2 vs. 11.8% for PHT and in-hospital thrombolysis, respectively. In a multivariable analysis, after adjusting for baseline characteristics and rescue angioplasty, PHT was associated with lower 1-year mortality (odds ratio 0.71, 0.55–0.92, $P = 0.008$).
Conclusion When compared with regular in-hospital thrombolysis, pre
lysis with trained paramedics in the ambulances are associated with
almost 1 h and reduced adjusted 1-year mortality by 30% in real-life S

- In-ambulance thrombolysis delivered by paramedics
- Reduced time to thrombolysis by almost 1 h
- Reduced adjusted long-term mortality by 30%

Introduction

Time to thrombolysis remains a key modifiable determinant of mortality in ST-elevation myocardial infarction (STEMI).[1,2] Despite many years of medical advances, the time from symptom onset to thrombolysis has remained at large unchanged, with a median of 2.5–3 h.[3] A pre-hospital treatment strategy when compared with in-hospital thrombolysis has been shown to reduce time to thrombolysis with around 1 h and in-hospital mortality by 17% in a meta-analysis of randomized trials.[4]

In a recent randomized trial comparing pre-hospital thrombolysis (PHT) with primary percutaneous coronary intervention (PCI), there was no statistical difference in 30-day mortality or re-infarction according to the treatment strategy.[5] In addition, in patients randomized within 2 h of symptom onset, PHT showed a tendency towards lower 30-day mortality when compared with primary PCI.[6]

There are sparse data on time delays and outcome in real-life patients treated with PHT delivered by paramedics when compared with in-hospital thrombolysis. One recent registry study in France[7] reported that PHT provided by physicians in the ambulances showed a tendency towards lower 1-year mortality when compared with in-hospital thrombolysis and primary PCI. However, there was no information on time from symptom onset to therapy, according to treatment modalities. In addition, one-third of the patients with in-hospital thrombolysis were admitted to the hospitals without ambulance transport and thus not directly comparable with the PHT-treated group of patients.

We therefore evaluated treatment delays and short- and long-term outcome in a large cohort of ambulance-transported real-life STEMI patients in Sweden in relation to PHT delivered by paramedics or regular in-hospital thrombolysis during 2001–2004.

*Corresponding author. Tel: +46 18 6114043; fax: +46 18 506638.
E-mail address: erik.bjorklund@akademiska.se

Eur Heart J 12006;27:1146-52

Primary PCI as Gold Standard

European Heart Journal (2003) 24, 28–66

ELSEVIER

EUROPEAN SOCIETY OF CARDIOLOGY

Task Force Report

Management of acute myocardial infarction in patients presenting with ST-segment elevation

The Task Force on the Management of Acute Myocardial Infarction of the European Society of Cardiology,

ACC/AHA PRACTICE GUIDELINES—FULL TEXT

ACC/AHA Guidelines for the Management of Patients With ST-Elevation Myocardial Infarction

A Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Committee to Revise the 1999 Guidelines for the Management of Patients With Acute Myocardial Infarction)

Developed in Collaboration With the Canadian Cardiovascular Society

Hub and Spoke theory

Piano Sanitario Regionale 1999-2001

Obiettivi specifici del PSR Emilia Romagna per le malattie cardiovascolari

Obiettivi specifici del Piano Sanitario Regionale Emilia Romagna per le malattie cardiovascolari.

In riferimento alla malattia cardiovascolare, il PSR 1999-2001 prevede:

- la ri-organizzazione secondo il modello di rete integrata dei servizi, orientata per livelli di prestazioni e gruppi di popolazione, secondo le responsabilità individuate Distretto, Azienda, Regione;
- la programmazione regionale dei servizi e delle prestazioni a valenza sovra-aziendale, ad alta complessità.

L'obiettivo della riprogrammazione funzionale del sistema dei servizi regionali è di operare la revisione dei modelli di distribuzione territoriale e la realizzazione dell'integrazione funzionale dei livelli di assistenza, al fine di:

- superare gestioni frammentarie dei servizi, che si qualificano tendenzialmente come aggiuntivi e raramente come sostitutivi;
- garantire dimensioni e composizione ottimali delle unità operative, dal punto di vista della funzionalità e della economicità;
- attivare processi di sussidiarietà fra i livelli d'intervento.

La programmazione funzionale secondo reti integrate di servizi è una logica generale dell'organizzazione, che privilegia l'attenzione sulle relazioni (le maglie) rispetto all'organizzazione interna delle unità operative (i nodi).

A qualsiasi livello di operatività, lo sviluppo di un'organizzazione per reti integrate richiede almeno 5 condizioni essenziali:

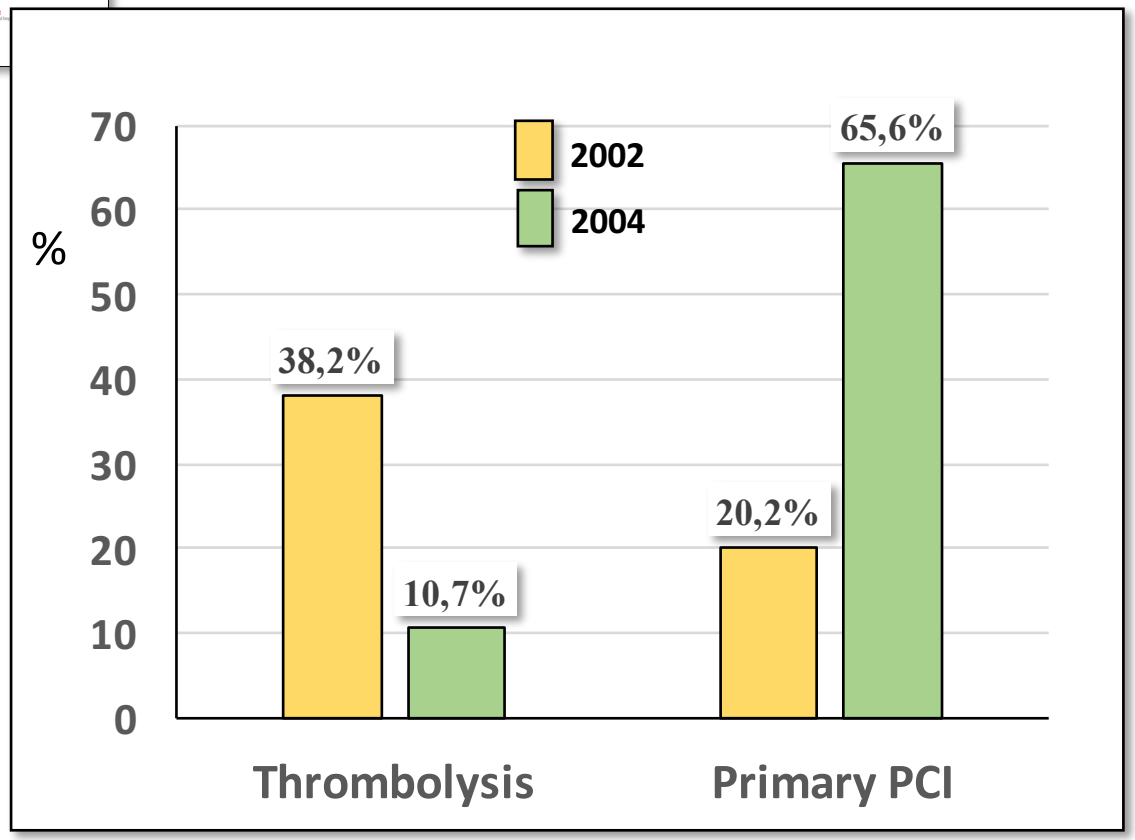
1. la definizione quantitativa della popolazione necessaria per sostenere una rete di servizi, individuando la centralità degli ambiti territoriali di autosufficienza, oltre i quali cessano di circolare i professionisti e cominciano a muoversi i pazienti;
2. la declinazione dei servizi che compongono il processo di cura, l'esplicitazione della loro reciprocità funzionale, e della loro collocazione in rete;
3. lo sviluppo delle conoscenze e degli skill necessari per costituire équipe multiprofessionali orientate a specifici obiettivi salute e al di fuori delle linee di autorità convenzionali;
4. lo sviluppo del sistema delle comunicazioni, logistiche e professionali, sia per l'archiviazione e la trasmissione a distanza delle informazioni cliniche necessarie per la gestione dell'assistenza, sia per la produzione e l'utilizzo condiviso di linee guida e di percorsi assistenziali;
5. la definizione del sistema di relazione centrato sulle autonomie e responsabilità, sia gestionali, sia tecnico-professionali.

Il PSR 1999-2001 riconferma il territorio provinciale come l'ambito cui riferire **di norma** la condizione di autosufficienza: all'ambito provinciale deve essere attribuita la responsabilità di soddisfare la domanda espressa dalla popolazione residente, con la rilevante eccezione dei servizi di alta specialità.

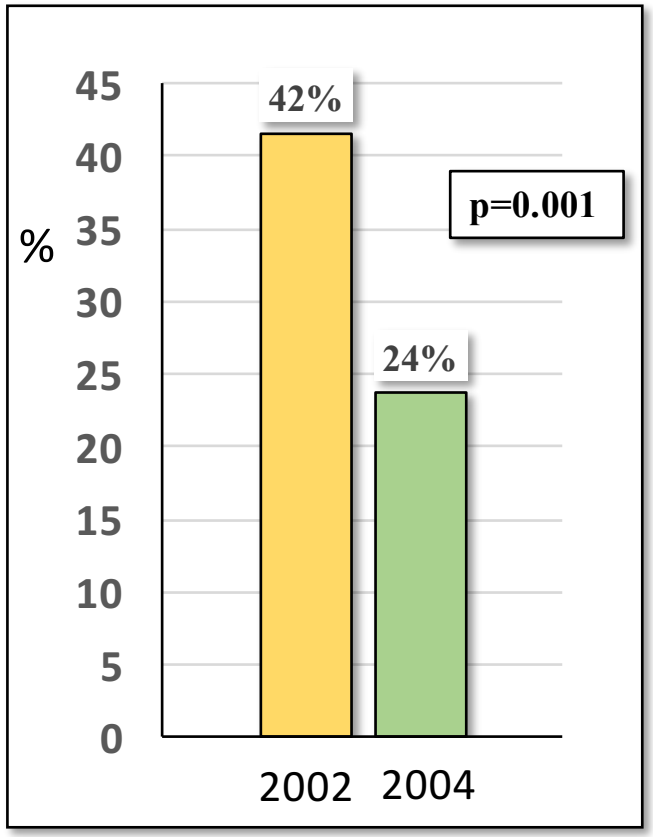
Progetto sull'Infarto Miocardico Acuto della Regione Emilia-Romagna (**PRIMA-RER**) 2003

Impact of a Territorial Network on Reperfusion Strategy

Reperfusion strategy



"Eligible" patients not undergoing reperfusion



Heart 2009;95:370–376

Impact of a Territorial Network On Mortality

Optimisation of therapeutic strategies for ST-segment elevation acute myocardial infarction: the impact of a territorial network on reperfusion therapy and mortality

F Saia,[1] C Marrozzini,[1] P Ortolani,[1] T Palmerini,[1] P Guastaroba,[2] P Cortesi,[1] P C Pavesi,[3] G Gordini,[4] L G Pancaldi,[5] N Taglieri,[1] G di Pasquale,[3] A Branzi,[1] A Marzocchi[1]

ABSTRACT

Objective: To assess the clinical impact of a regional network for the treatment of ST-segment elevation myocardial infarction (STEMI).

Methods: All patients with STEMI (n = 1823) admitted to any of the hospitals of an area with one million inhabitants during the year 2002 (n = 858)—that is, before the network was implemented, and in 2004 (n = 965), the year of full implementation of the network, were enrolled in this study. The primary evaluation was in-hospital mortality. Secondary outcomes included the incidence of major adverse cardiac and cerebrovascular events (MACCE), defined as death, myocardial infarction, stroke and coronary revascularisation procedures over 1-year follow-up.

Results: Between 2002 and 2004, there was a major change in reperfusion strategy: primary angioplasty increased from 20.2% to 65.6% (p<0.001), fibrinolytic therapy decreased from 38.2% to 10.7% (p<0.001) and the rate of patients not undergoing reperfusion was reduced from 41.6% to 23.7% (p<0.001). In-hospital mortality decreased from 17.0% to 12.3% (p = 0.005), and this reduction was sustained at 1-year follow-up (23.9% in 2002 and 18.8% in 2004, p = 0.009). Similarly, the 1-year incidence of all MACCE was reduced from 39.5% in 2002 to 34.3% in 2004 (p = 0.01).

Conclusions: Organisation of a territorial network for STEMI is associated with increased rates of reperfusion therapy and reduction of in-hospital and 1-year mortality.

Timely reperfusion therapy is the most important component of the treatment for ST-segment elevation acute myocardial infarction (STEMI), as it strongly influences short- and long-term clinical outcome.[1 2] The aim of this strategy is to achieve early and complete recanalisation of the infarct-related artery, in order to stop or reduce the progression of ischaemic myocardial damage.

As compared with fibrinolytic therapy (FT), primary percutaneous coronary intervention (pPCI) has been associated with reduction of death, reinfarction, intracranial bleeding, reocclusion of the infarct artery and recurrent ischaemia.[3] Therefore, pPCI should be considered the preferred reperfusion strategy when applicable without excessive delay, as opposed to FT. It should be performed by an expert interventional cardiologist, and when the patient shows well-defined, high-risk clinical characteristics or absolute contraindications to FT.[1 2] In daily practice, however, pPCI cannot be offered to all patients presenting with acute STEMI, primarily because of logistical constraints or long distances from the first available catheterisation laboratory. Hence, the choice of reperfusion treatment must take into account a number of patient

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and development of an interhospital network for patients with STEMI based on a hub-and-spoke model.[1 2]

The aim of this s

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METHODS

Organisation of the

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with STEMI by the European Society of Cardiology,[1] the Health Care Agency of the Italian region Emilia-Romagna (four million inhabitants) promoted the development of a territorial network for the treatment of STEMI. The regional project had to be gradually implemented at a provincial level (nine provinces) through the definition of new diagnostic and therapeutic pathways. The realisation of the project was delegated to provincial committees of experts, composed of cardiologists and 118 EMS operators, and was led by the Regional Cardiology Committee, which was a task force composed of cardiologists and health administrators.

In the province of Bologna (around one million inhabitants) there are 13 hospitals admitting patients with STEMI (fig 1), with one high-volume catheterisation laboratory available for 24 h 7 days a week, one catheterisation laboratory with 12-h pPCI facilities (only daytime, from 8 am to 8 pm,

Heart 2009;**95**:370–376. doi:10.1136/hrt.2008.145738

In-hospital mortality decreased from **17.0%** in 2002 to **12.3**% in 2004, (p= 0.005)

1-year mortality decreased from **24%** in 2002 to **19%** in 2004, (p=0.009)

Pre-hospital Thrombolysis in Italy

STUDIO OSSERVAZIONALE

La trombolisi preospedaliera nel trattamento dell'infarto miocardico con sopraslivellamento del tratto ST. Risultati di tre anni di attività in provincia di Foggia

Renato Michele Piancone, Giuseppe Abbenante, Fernando Antonio Accettulli-Bocola, Alfonso Bevere, Grazia Casavecchia, Armando Cervini, Massimiliano Ciavatta, Antonio De Luca, Pasquale De Luca, Barbara Ferrua, Salvatore Leccisotti, Matteo Marangi, Marisa Placentino, Vito Sollazzo, Lucia Tricarico

S.C. di Cardiologia-UTIC, Ospedale Masselli-Mascia - ASL FG, San Severo (FG)

Background. **Treatment for ST-elevation myocardial infarction (STEMI) is based on early reperfusion therapy (coronary angioplasty or fibrinolysis). Such treatment requires the adoption of healthcare models that allow to perform angioplasty within 90 min of first medical contact, or when this is not the case and in absence of any contraindications, prehospital thrombolysis.**

Methods. **This retrospective observational study was carried out in ing prehospital thrombolysis from June 2003 to December 2006. The by trained physicians of the emergency system on the basis of clinica with the support of telecardiology. Patient selection for fibrinolytic dance with international guidelines on STEMI. Thrombolysis was cons of an ST-segment elevation resolution >50% at 90 min following drug unchanged or poorly modified ST-segment elevation (<30%) at 60 mi ty for failure of thrombolysis. Coronary angiography was performed in whom thrombolysis was effective. All patients were followed up for**

Results. **The diagnosis of STEMI on this setting did not prove diffic was suitable. Total symptom-to-needle time was 78 min. Fifty-nine 100% ST-segment elevation resolution within 90 min of fibrinolytic ad bolysis, symptom worsening and/or hemodynamic impairment were who were submitted to rescue angioplasty. Neither cardiogenic shock complications developed in any patients. The survival rate was 94.1% tients).**

Conclusions. **This study confirms the feasibility, high effectivenes thrombolysis provided that therapy is undertaken by trained staff acco in the context of a well defined organized model.**

(G Ital Cardiol 2008; 9 (11): 763-769)

Introduzione

Nell'infarto miocardico acuto con sopraslivellamento del tratto ST (IMA-STE) un numero rilevante di decessi si verifica fuori dall'ospedale nel corso delle prime 2 h dall'inizio dei sintomi. Tale mortalità può essere ridotta solo portando i soggetti infartuati il più presto possibile a contatto con il sistema dell'emergenza e attuando rapidamente una terapia riperfusiva (angioplastica coronarica [PCI] o fibrinolisi) in modo da ridurre al minimo il tempo totale di ischemia (tempo dall'inizio dei sintomi all'inizio della terapia riperfusiva). La precocità dell'intervento terapeutico fa la differenza sia in termini di vite salvate che di quantità di miocardio preservato ("il tempo è muscolo").

La PCI primaria, se può essere effettuata entro 90 min dal primo contatto medico, è la terapia di prima scelta[1-3]. È stato calcolato che quando il ritardo per l'esecuzione della PCI rispetto al tempo per eseguire la trombolisi eccede i 60 min i vantaggi dell'intervento percutaneo si annullano[4]. Più recentemente, invece, anche in caso di ritardo, è stato evidenziato un vantaggio della PCI in termini di sopravvivenza a 30 giorni[5]. Inoltre tali vantaggi variano considerevolmente anche in rapporto ad alcuni fattori di rischio dipendenti dalle caratteristiche del paziente come l'età, il tempo dall'inizio dei sintomi, la sede dell'infarto, il

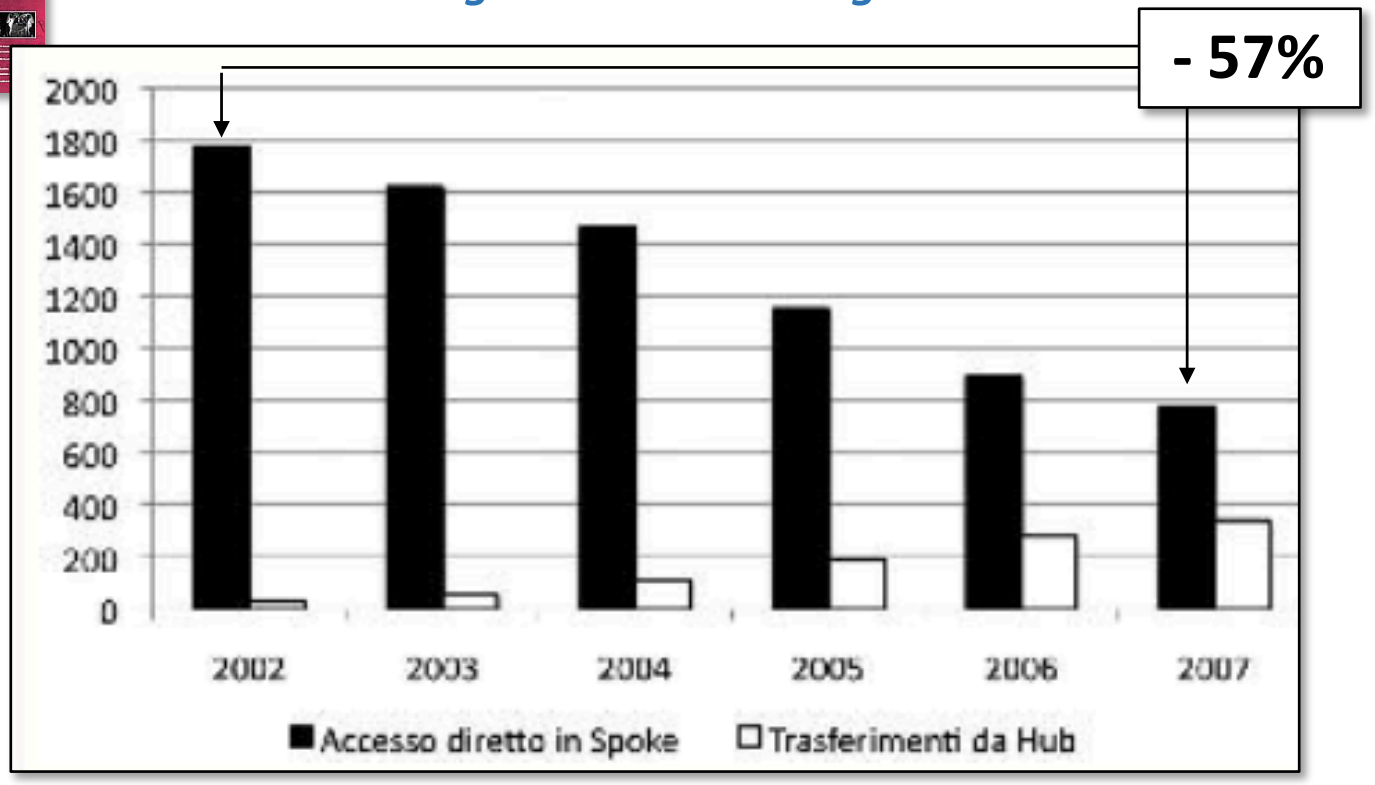
763

…. in provincia di Foggia, per le carenze strutturali e organizzative dei laboratori di emodinamica per la incostante copertura H24 7/7 giorni è stato attuato un programma di trombolisi pre-ospedaliera ….

G Ital Cardiol 2008;9(11):763-69

Ricoveri per STEMI in UTIC *spoke*

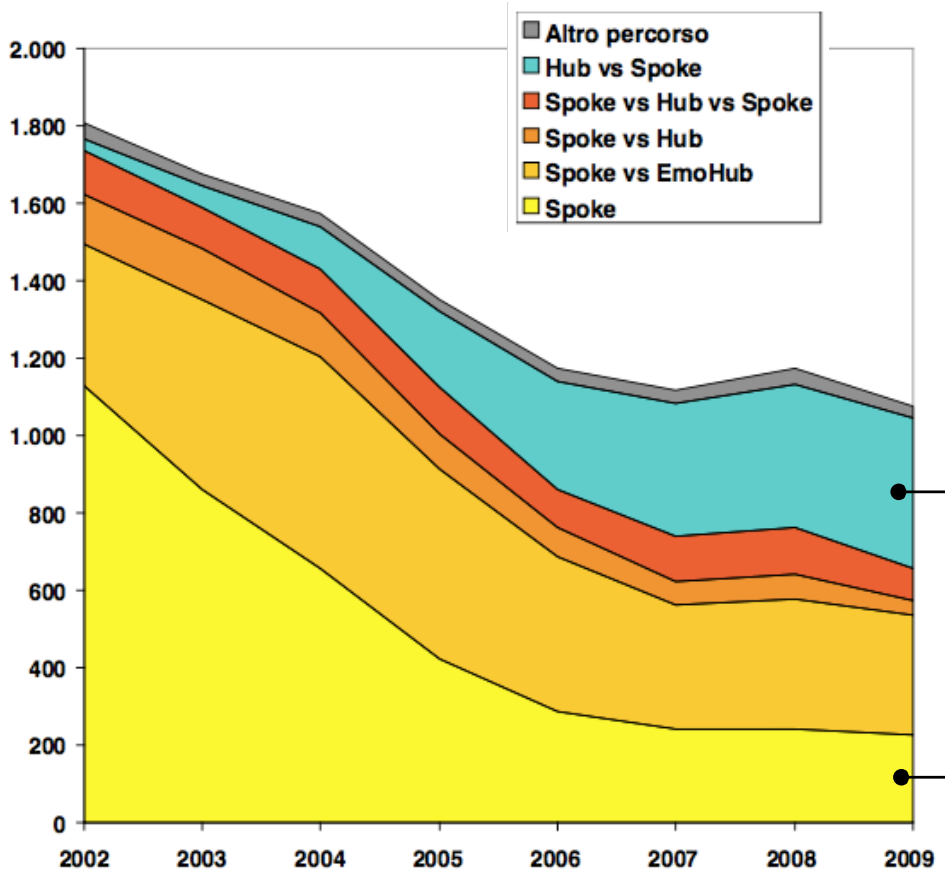
Regione Emilia Romagna



Anno **2002** → **2007**

G Ital Cardiol 2011;12(1):31-42

Percorso STEMI: Emilia-Romagna periodo 2002-2009



Trasferimento UTIC *hub* presso UTIC *spoke*

Unico ricovero presso UTIC *spoke*

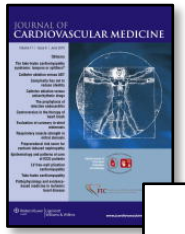
Recettività della TIM su STEMI area Cento (2014)

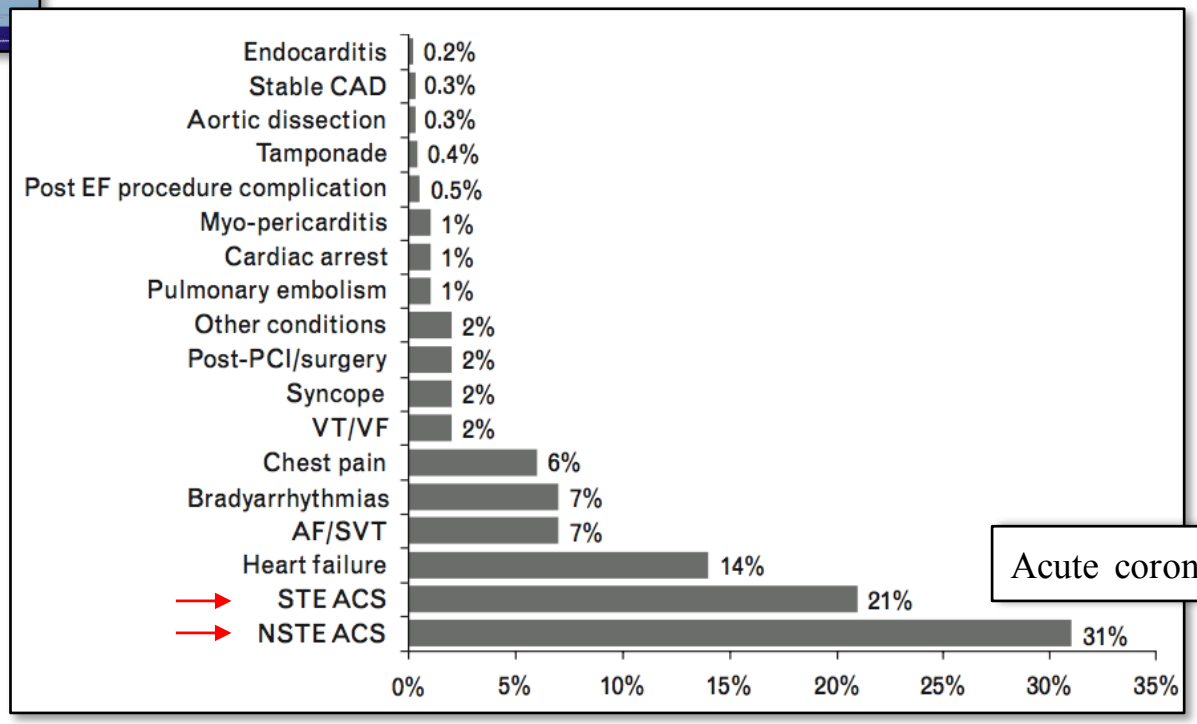
Centralizzati *hub*	**36**	
Decessi durante il trasporto	1	
PTCA	**35**	
Decessi intraprocedurali	2	6%
Dimessi direttamente da *hub*	7	20%
Trasferiti verso UTIC spoke	26	**74%**

Mean RER: 58%

UTIC: snapshot 2008

6.986 consecutive patients admitted to 81% of Italian ICCUs



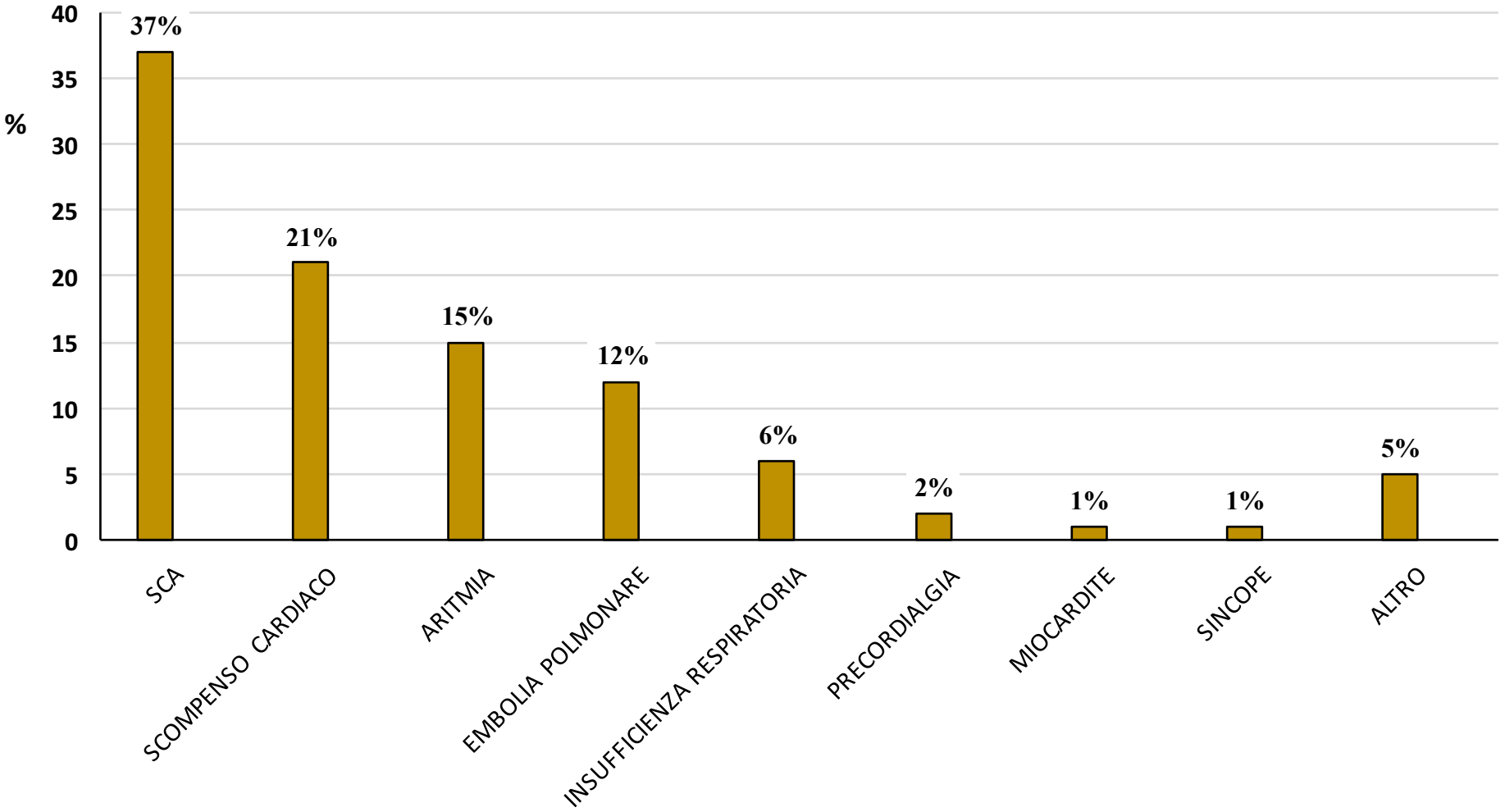


Acute coronary syndrome: **52%**

J Cardiovasc Med 2010;11: 450-61

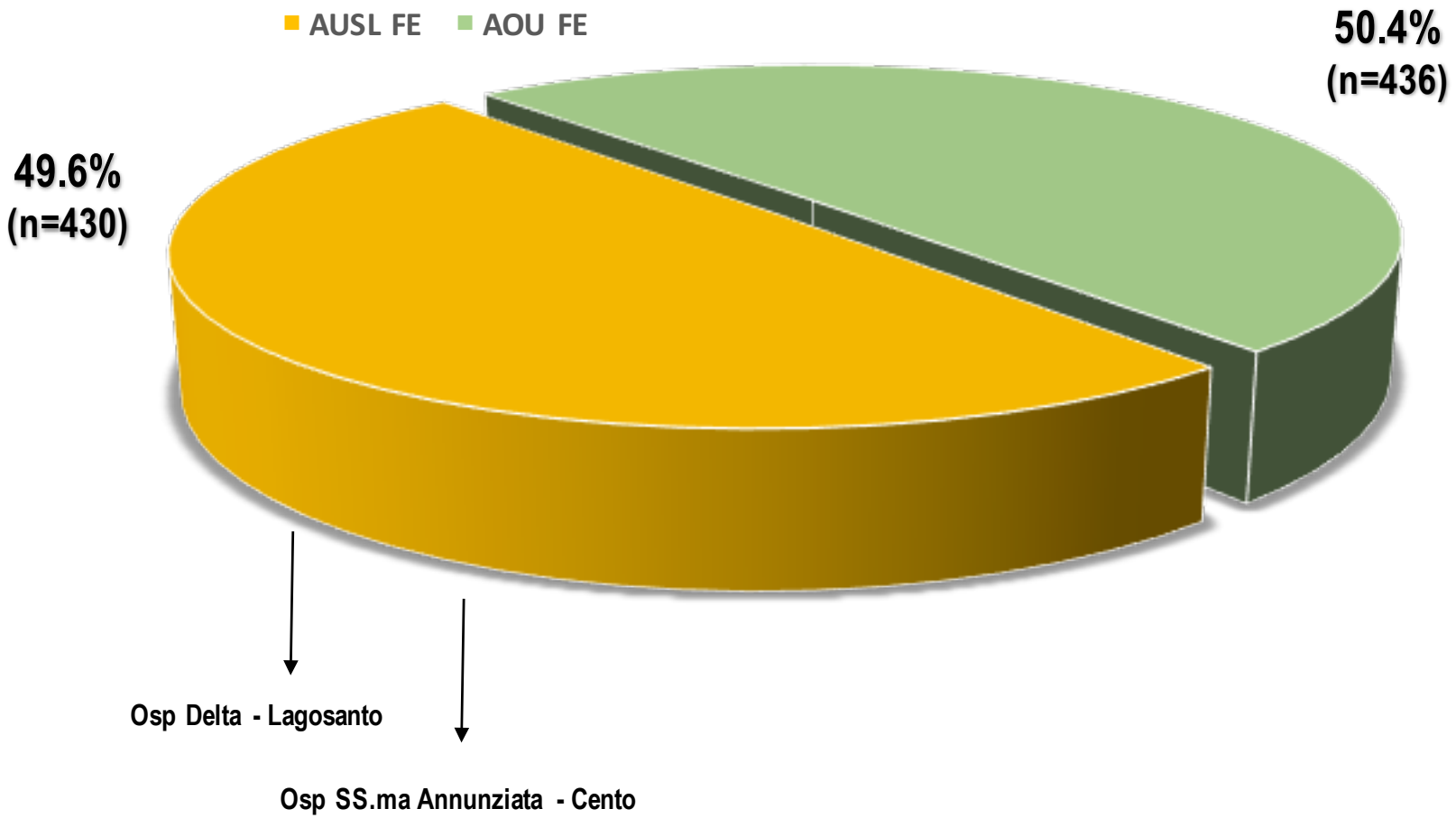
Fonte: banca dati SDO, Regione Emilia Romagna
Archivio scelto: SDO = 8 mesi 2014
Stabilimento: 08006806 Cento
Classificazione per: reparto di dimissione, patologia principale, reparto di ammissione
Percentuale

TIM Cento: CaseMix

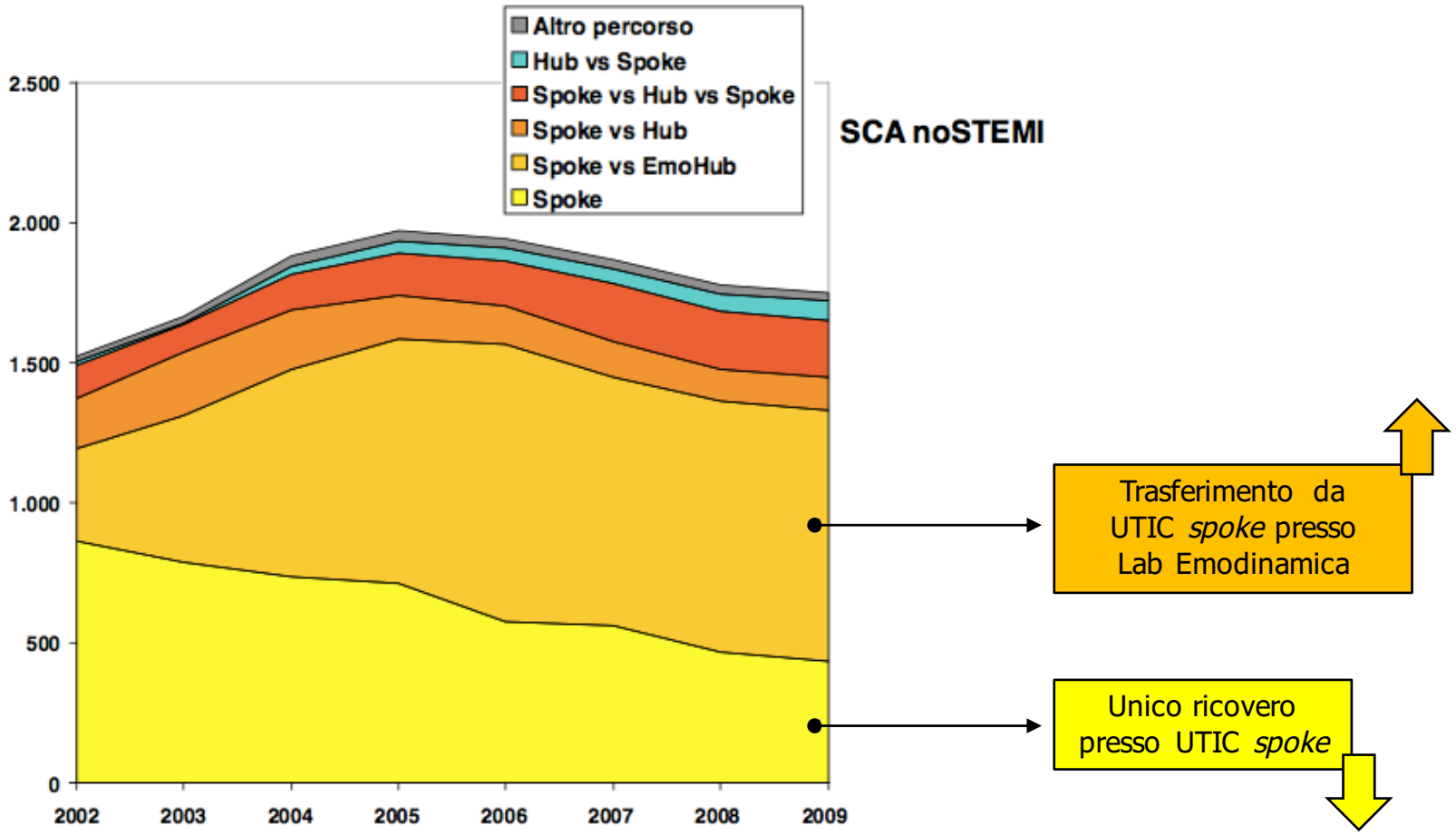


Attività Diagnostica per NSTE-ACS

- Anno 2015 -

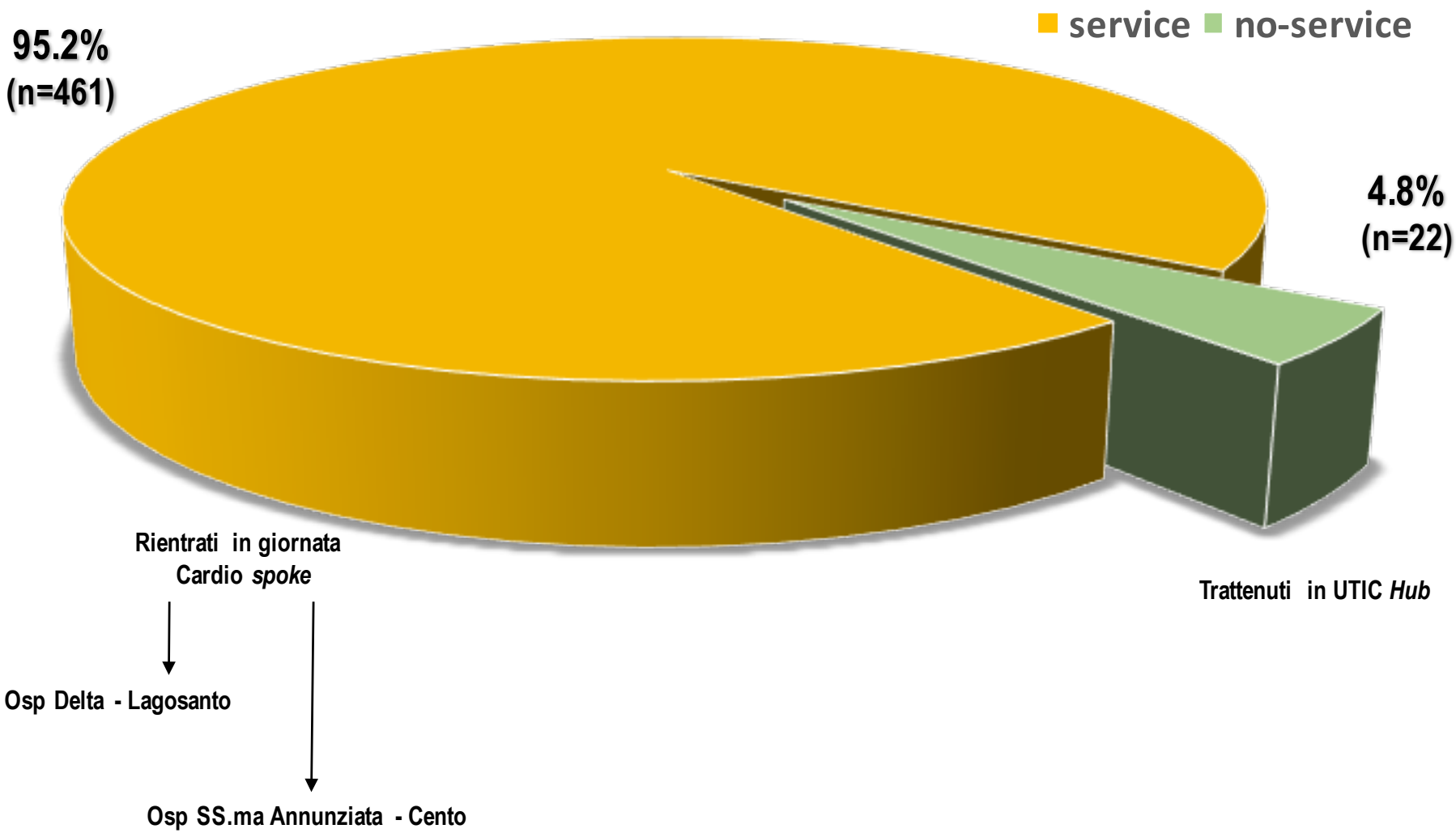


Percorso NSTEMI: Emilia-Romagna periodo 2002-2009



Diagnostica *in service* su NSTE-ACS dalla AUSL FE

- Anno 2016 -



Caratteristiche pazienti ricoverati per SCA NSTEMI

- 2014 -

		Obiettivo specifico
Età media (anni)	76±15	
Maschi	59%	
GRACE score	137±46	
Inviati al centro *hub*	79%	> 70%
Tempo alla CGF (gg)	1.7±2.2	
PTCA<72 ore	84%	> 70%
PTCA<24 ore	50%	> 40%
Non inviati alla CGF	21%	< 25%

Mean RER: 36.9%

Indice Comparativo di Performance

ICP per Azienda di ricovero, Stabilimento di ricovero e Reparto di dimissione
Anno di dimissione: 2016 (provvisorio)

Reparto	ICP
Cardiologia Cento	0.99
Cardiologia Delta	1.07

Obiettivo Aziendale USL FE
ICP <1.2

Fonte: Banca dati SDO, Regione Emilia-Romagna Ultimo aggiornamento: 11/01/2017

Per l'anno 2016 (provvisorio) i dati sono aggiornati a Novembre

L'Indice Comparativo di Performance (ICP), permette di valutare l'efficienza operativa dei reparti (o discipline) afferenti alle strutture di ricovero in termini di degenza media, standardizzata per il case-mix, rispetto a specifici valori di riferimento, ottenuti considerando l'intera casistica regionale suddivisa per disciplina di dimissione.