Azienda USL Toscana centro

Servizio Sanitario della Toscana

IX EDIZIONE - Giornate Mediche di Santa Maria Nuova 2017

"Gestione della sepsi in DEA: patologia tempo dipendente"

Mauro Pratesi

Pronto Soccorso e Medicina d'Urgenza

Ospedale Santa Maria Nuova Firenze

Catena della sopravvivenza

Trauma

Stroke

Arresto Cardiaco

Infarto miocardico

Sepsi

CHEST

Official publication of the American College of Chest Physicians

Definitions for sepsis and organ failure and guidelines for the use of innovative therapies in sepsis. The ACCP/SCCM Consensus Conference Committee. American College of Chest Physicians/Society of Critical Care Medicine.

R C Bone et al

Chest 1992;101;1644-1655

Clinical definition of sepsis

SIRS	Temperature >38.3°C or <36°C
	Heart rate >90 beats/min
	Respiratory rate >20 breaths/min or $PaCO_2$ <32 mmHg
	White blood cell count >12 × 10^9/l or <4 × 10^9/l, or >10% immature band forms
Sepsis	Systemic response to infection, manifested by two or more of the conditions mentioned under SIRS (SIRS + evidence of infection)
Severe sepsis	Sepsis associated with organ dysfunction, hypoperfusion, or hypotension including lactic acidosis, oliguria, or acute alteration in mental state
Septic shock	Sepsis-induced hypotension (e.g., systolic blood pressure <90 mmHg or a reduction of >40 mmHg from base line) despite adequate fluid resuscitation, along with the presence of perfusion abnormalities that may include lactic acidosis, oliguria, or an acute alteration in mental state. Vasopressor- or inotropic-treated patients may not be hypotensive at the time of measurement
MODS	The presence of altered organ function in an acutely ill patient such that homeostasis cannot be maintained without intervention

$PaCO_2$, arterial partial pressure of carbon dioxide; MODS, multiple organ dysfunction syndrome.

Crit Care Med 2007;35:1928

MEDS (Mortality in Emergency Department Sepsis)

3179 pazienti

9 variabili indipendentemente correlate con il rischio di morte in corso di sepsi

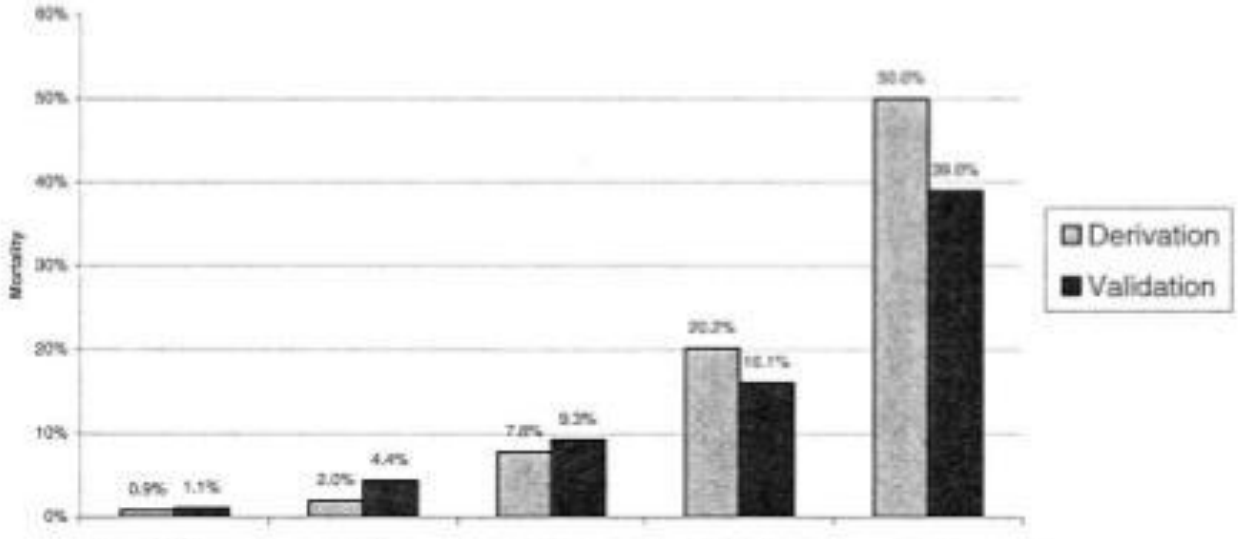
Table 3. Independent predictors identified by multivariate analysis

Variable	β	Odds Ratio	95% Confidence Interval	Points
Intercept	−5.45			
Terminal illness (<30 days)	1.8	6.1	3.6–10.2	6
Tachypnea or hypoxia	0.98	2.7	1.6–4.3	3
Septic shock	0.98	2.7	1.2–5.7	3
Platelets <150,000/mm^3	0.93	2.5	1.5–4.3	3
Bands >5%	0.82	2.3	1.5–3.5	3
Age >65	0.77	2.2	1.3–3.6	3
Lower respiratory infection	0.66	1.9	1.2–3.0	2
Nursing home resident	0.62	1.9	1.2–3.0	2
Altered mental status	0.50	1.6	1.0–2.6	2

Nathan I. Shapiro **Crit Care Med** 2003 Vol. 31, No. 3

MEDS (Mortality in Emergency Department Sepsis)

- La presenza di una malattia terminale è il predittore più statisticamente pesante
- Nelle variabili che fanno prognosi è presente sia la tachipnea che la polmonite: questo dimostra l'importanza del sistema respiratorio nella prognosi



Score	0-4	5-7	8-12	12-15	>15	
derivation	7/826	10/512	44/563	24/119	25/50	(died/total)
validation	5/456	12/273	28/301	9/56	9/23	(died/total)

Figure 2. Mortality rate according to Mortality in Emergency Department Sepsis (MEDS) group.

Nathan I. Shapiro **Crit Care Med** 2003 Vol. 31, No. 3

Special Article

Surviving Sepsis Campaign: International Guidelines for Management of Sepsis and Septic Shock: 2016

Critical Care Medicine March 2017 • Volume 45 • Number 3

Clinical Review & Education

Special Communication | CARING FOR THE CRITICALLY ILL PATIENT

The Third International Consensus Definitions for Sepsis and Septic Shock (Sepsis-3)

JAMA February23,2016Volume315,Number8

Definizione di sepsi e shock settico

Box 3. New Terms and Definitions

- Sepsis is defined as life-threatening organ dysfunction caused by a dysregulated host response to infection.
- Organ dysfunction can be identified as an acute change in total SOFA score ≥2 points consequent to the infection.
  - The baseline SOFA score can be assumed to be zero in patients not known to have preexisting organ dysfunction.
  - A SOFA score ≥2 reflects an overall mortality risk of approximately 10% in a general hospital population with suspected infection. Even patients presenting with modest dysfunction can deteriorate further, emphasizing the seriousness of this condition and the need for prompt and appropriate intervention, if not already being instituted.
- In lay terms, sepsis is a life-threatening condition that arises when the body's response to an infection injures its own tissues and organs.
- Patients with suspected infection who are likely to have a prolonged ICU stay or to die in the hospital can be promptly identified at the bedside with qSOFA, ie, alteration in mental status, systolic blood pressure ≤100 mm Hg, or respiratory rate ≥22/min.

mortalità attesa > 10%

- Septic shock is a subset of sepsis in which underlying circulatory and cellular/metabolic abnormalities are profound enough to substantially increase mortality.
- Patients with septic shock can be identified with a clinical construct of sepsis with persisting hypotension requiring vasopressors to maintain MAP ≥65 mm Hg and having a serum lactate level >2 mmol/L (18 mg/dL) despite adequate volume resuscitation. With these criteria, hospital mortality is in excess of 40%.

Abbreviations: MAP, mean arterial pressure; qSOFA, quick SOFA; SOFA: Sequential [Sepsis-related] Organ Failure Assessment.

mortalità attesa > 35-40%

Table 1. Sequential [Sepsis-Related] Organ Failure Assessment Score[a]

System	Score 0	1	2	3	4
Respiration					
Pao_2/Fio_2, mm Hg (kPa)	≥400 (53.3)	<400 (53.3)	<300 (40)	<200 (26.7) with respiratory support	<100 (13.3) with respiratory support
Coagulation					
Platelets, $\times 10^3/\mu L$	≥150	<150	<100	<50	<20
Liver					
Bilirubin, mg/dL (μmol/L)	<1.2 (20)	1.2-1.9 (20-32)	2.0-5.9 (33-101)	6.0-11.9 (102-204)	>12.0 (204)
Cardiovascular	MAP ≥70 mm Hg	MAP <70 mm Hg	Dopamine <5 or dobutamine (any dose)[b]	Dopamine 5.1-15 or epinephrine ≤0.1 or norepinephrine ≤0.1[b]	Dopamine >15 or epinephrine >0.1 or norepinephrine >0.1[b]
Central nervous system					
Glasgow Coma Scale score[c]	15	13-14	10-12	6-9	<6
Renal					
Creatinine, mg/dL (μmol/L)	<1.2 (110)	1.2-1.9 (110-170)	2.0-3.4 (171-299)	3.5-4.9 (300-440)	>5.0 (440)
Urine output, mL/d				<500	<200

Abbreviations: Fio_2, fraction of inspired oxygen; MAP, mean arterial pressure; Pao_2, partial pressure of oxygen.

[a] Adapted from Vincent et al.[27]

[b] Catecholamine doses are given as μg/kg/min for at least 1 hour.

[c] Glasgow Coma Scale scores range from 3-15; higher score indicates better neurological function.

CHEST

New Sepsis Criteria
A Change We Should Not Make

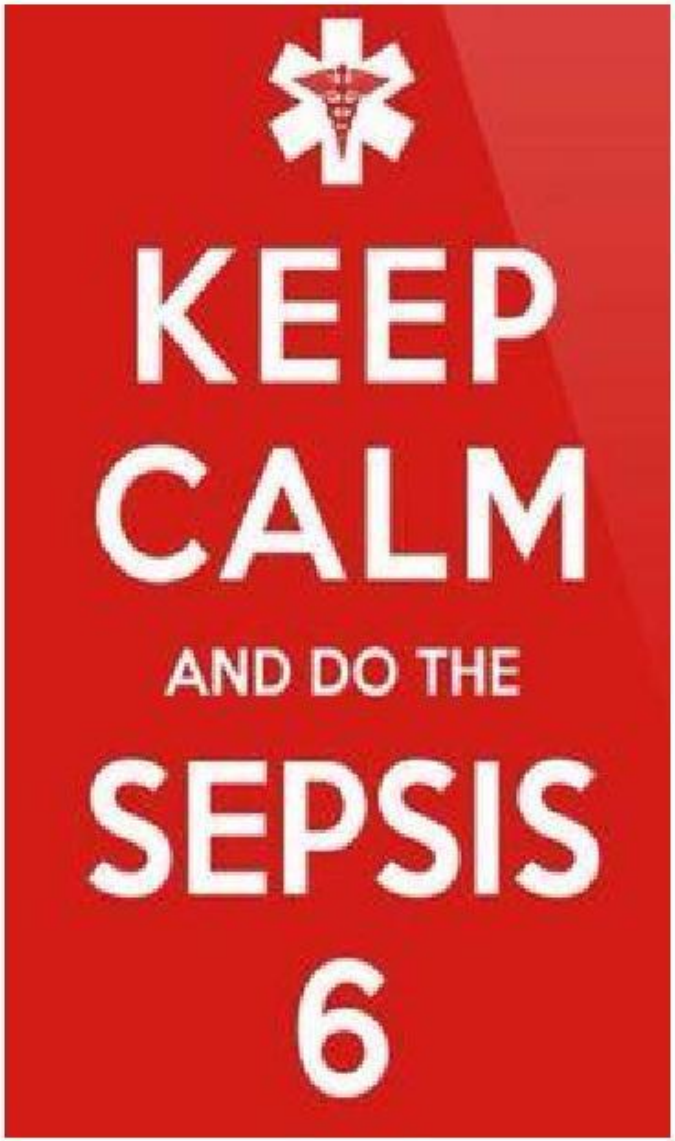
Steven Q. Simpson, MD, FCCP
Kansas City, KS

PODCAST

The Society of Critical Care Medicine and the European Society of Intensive Care Medicine recently released a

there is still no known precise pathophysiological feature that defines sepsis.

The end point of the proposed criteria is increased specificity for predicting mortality or ICU stay of ≥ 3 days. Because ideal outcomes for patients result from early recognition and intervention in potentially life-threatening infection, the revised criteria may lead to failure to recognize the signs of potentially lethal infection until the combination is significantly more likely to be deadly. The supporting paper by Seymour



The Sepsis Six

- O2 therapy to maintain target saturation
- Blood Cultures before abx
- IV antibiotics within 1 hour of identifying
- Blood for Haemoglobin and lactate
- IV fluids for fluid resuscitation
- Urinary Catheter and monitor urine output

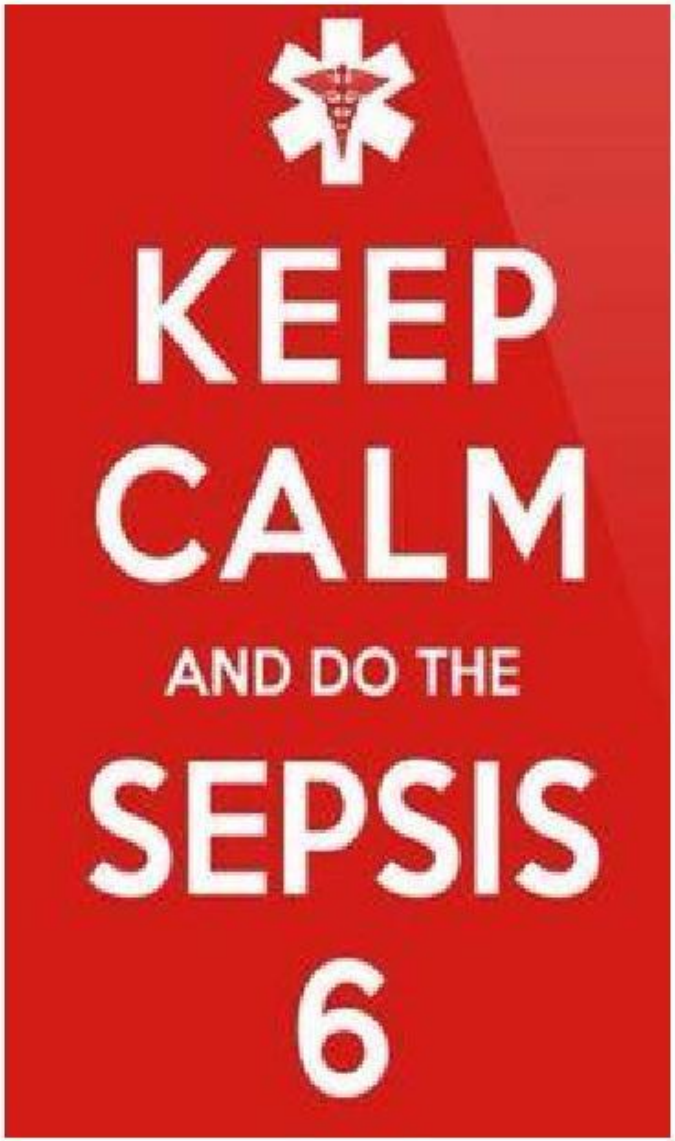
Rapid Diagnosis of Infection in the Critically Ill, a Multicenter Study of Molecular Detection in Bloodstream Infections, Pneumonia, and Sterile Site Infections*

Jean-Louis Vincent, MD, PhD, FCCM[1]; David Brealey, MD[2]; Nicolas Libert, MD[3];

TABLE 2. Bloodstream Infection Assay Performance

		Culture				
		+	−	Total	Sensitivity	81% (95% CI, 70–89%)
Polymerase chain reaction/ electrospray ionization-mass spectrometry	+	55	173	228	Specificity	69% (95% CI, 65–73%)
	−	13	384	397	Positive predictive value	24% (95% CI, 19–30%)
	Total	68	557	625	Negative predictive value	97% (95% CI, 94–98%)

Critical Care Medicine November 2015 Volume 43 Number 11, 2283



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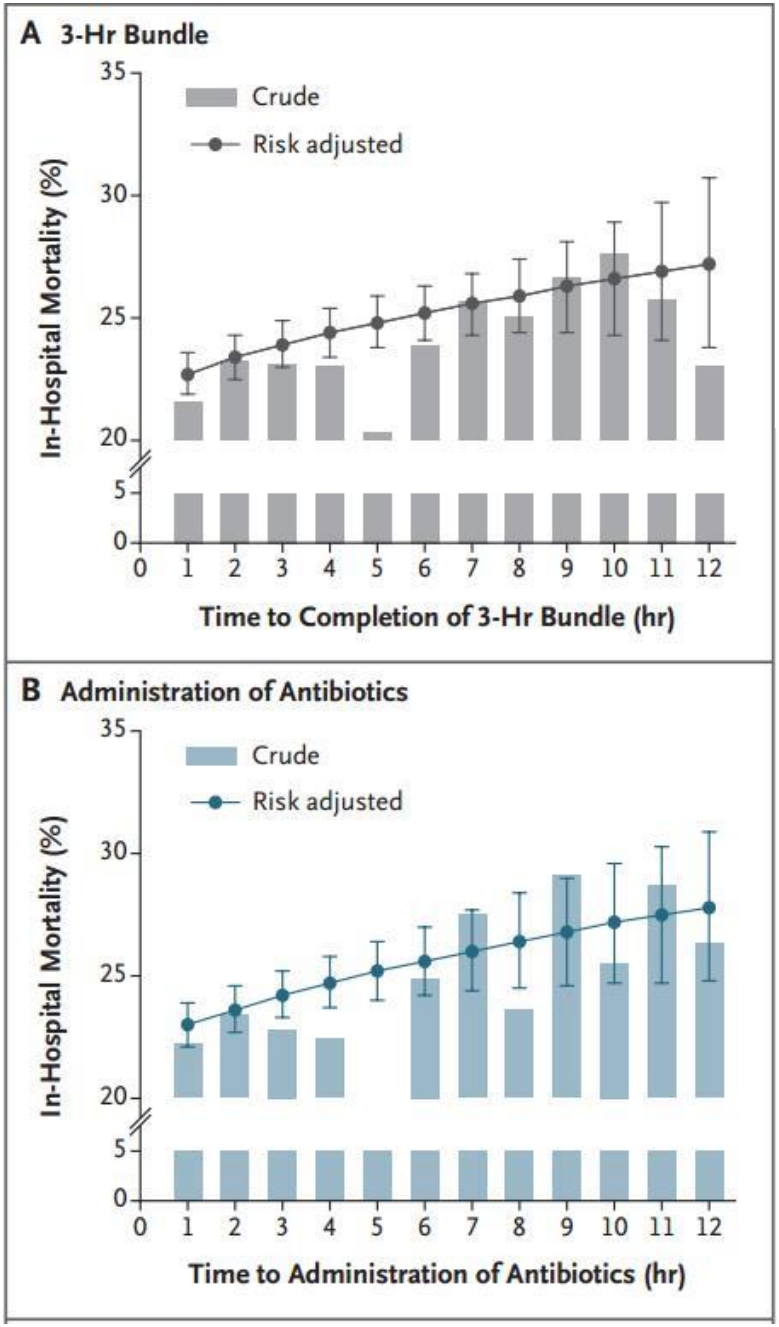


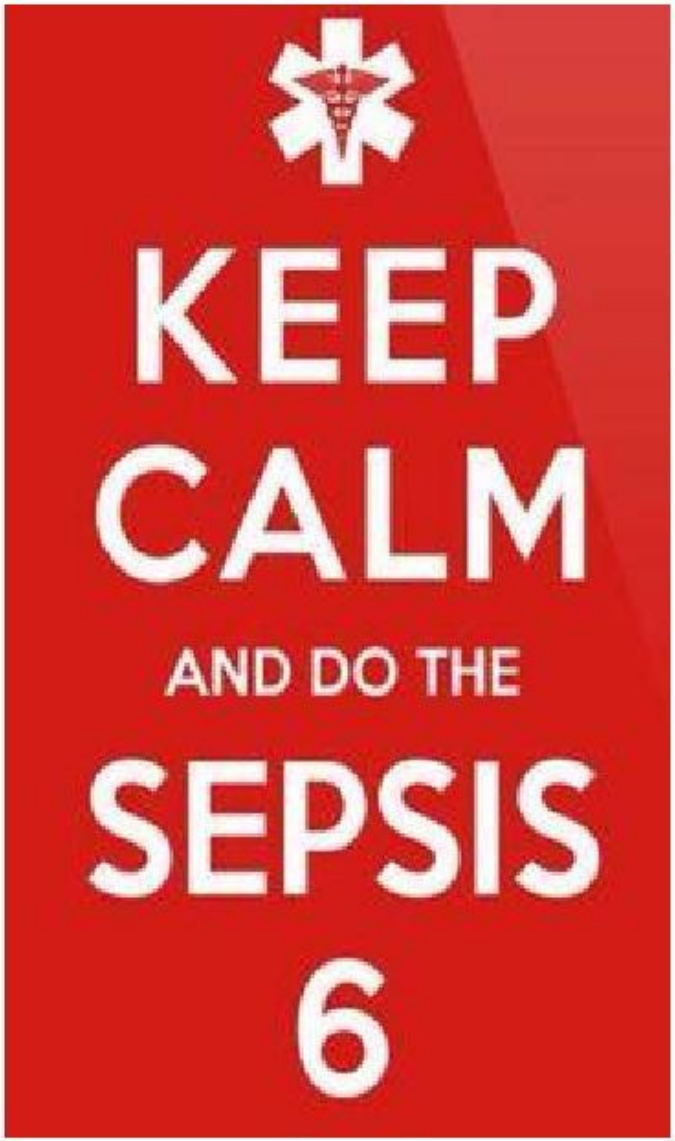
ORIGINAL ARTICLE

Time to Treatment and Mortality during Mandated Emergency Care for Sepsis

Christopher W. Seymour, M.D., Foster Gesten, M.D., Hallie C. Prescott, M.D., Marcus E. Friedrich, M.D., Theodore J. Iwashyna, M.D., Ph.D., Gary S. Phillips, M.A.S., Stanley Lemeshow, Ph.D., Tiffany Osborn, M.D., M.P.H., Kathleen M. Terry, Ph.D., and Mitchell M. Levy, M.D.

..Of the remaining 49,331 eligible patients in the emergency department at 149 hospitals, most (40,696 patients [82.5%]) had the 3-hour bundle completed within 3 hours….

NEJM 2017, 376(23);2235



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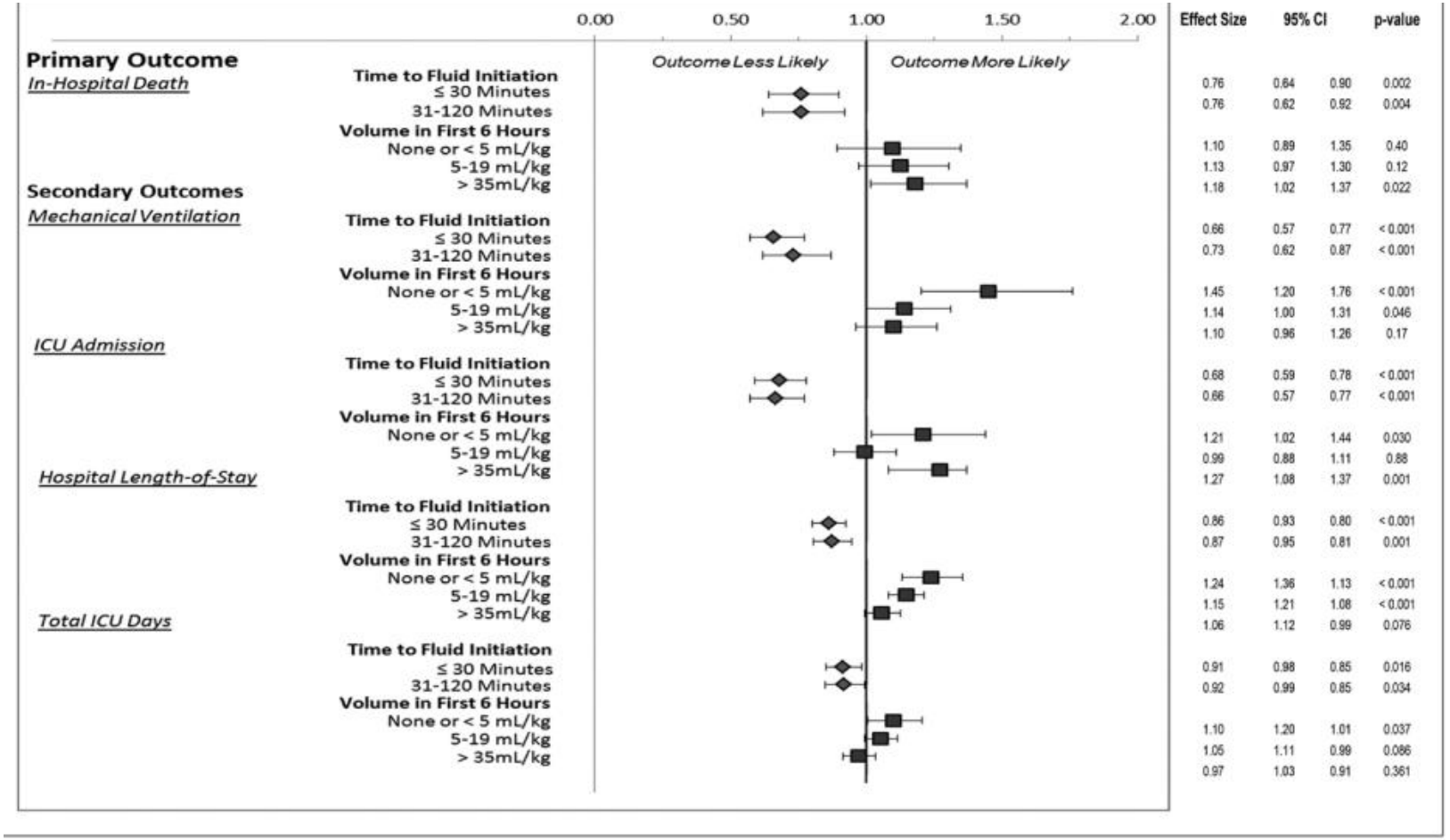
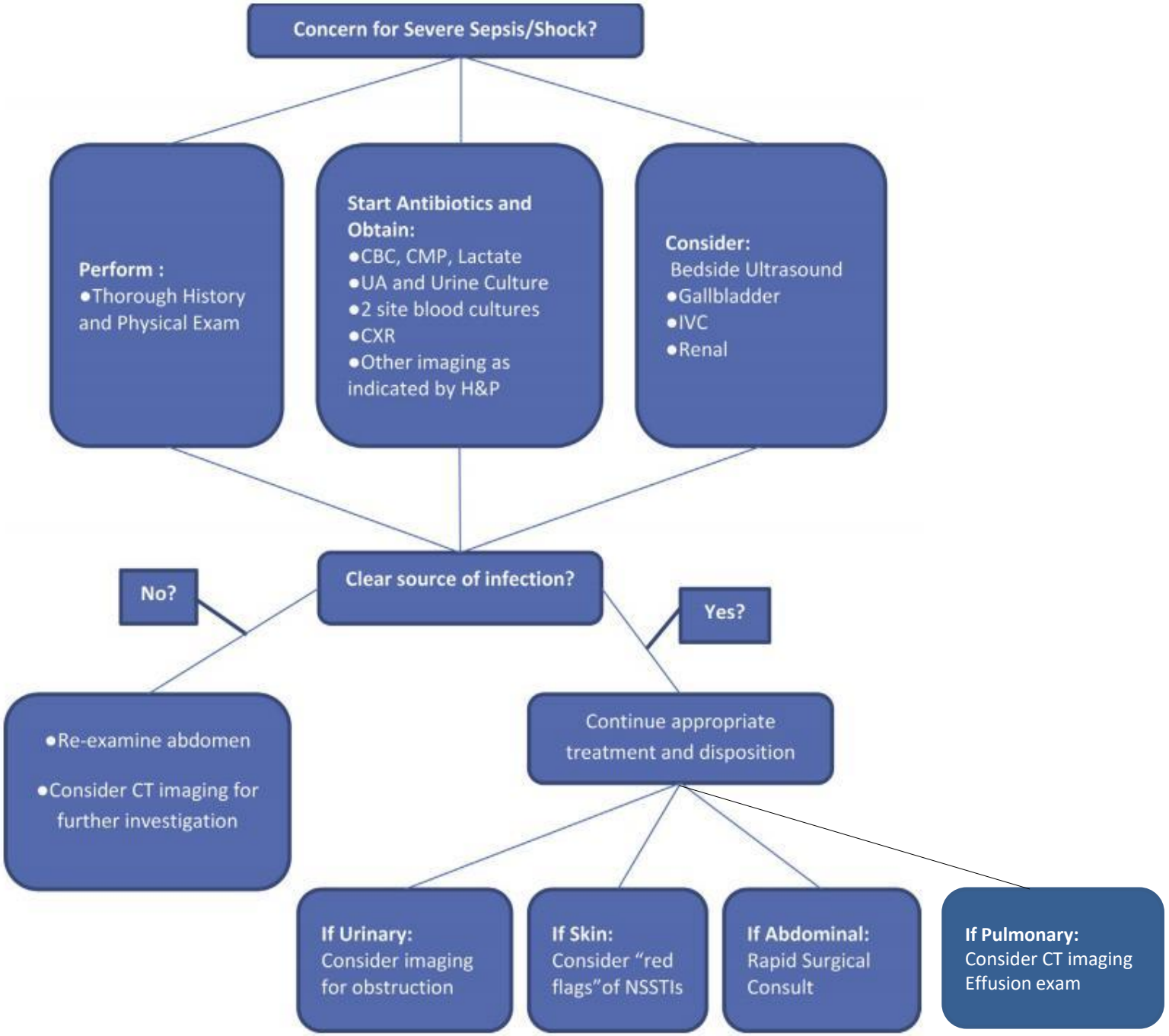
Patterns and Outcomes Associated With Timeliness of Initial Crystalloid Resuscitation in a Prospective Sepsis and Septic Shock Cohort*

Daniel E. Leisman, BS[1,2,3]; Chananya Goldman, MD[4]; Martin E. Doerfler, MD[4,5]; Kevin D. Masick, PhD[6]; Susan Dries, RN, PhD[6]; Eric Hamilton, BA[6]; Mangala Narasimhan, DO[7]; Gulrukh Zaidi, MD[7]; Jason A. D'Amore, MD[1]; John K. D'Angelo, MD[1,2]




Concern for Severe Sepsis/Shock?
Perform :
●Thorough History and Physical Exam
Start Antibiotics and Obtain:
●CBC, CMP, Lactate
●UA and Urine Culture
●2 site blood cultures
●CXR
●Other imaging as indicated by H&P
Consider:
Bedside Ultrasound
●Gallbladder
●IVC
●Renal
Clear source of infection?
No?
Yes?
●Re-examine abdomen
●Consider CT imaging for further investigation
Continue appropriate treatment and disposition
If Urinary:
Consider imaging for obstruction
If Skin:
Consider "red flags"of NSSTIs
If Abdominal:
Rapid Surgical Consult
If Pulmonary:
Consider CT imaging
Effusion exam

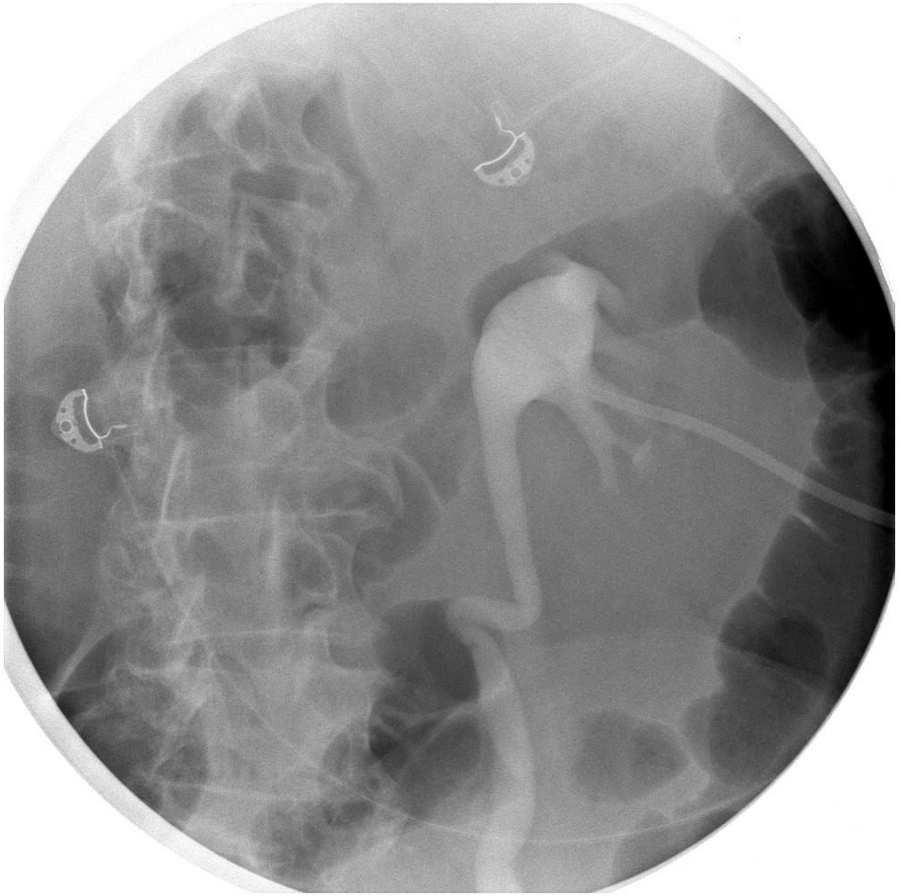
Identificazione della sorgente

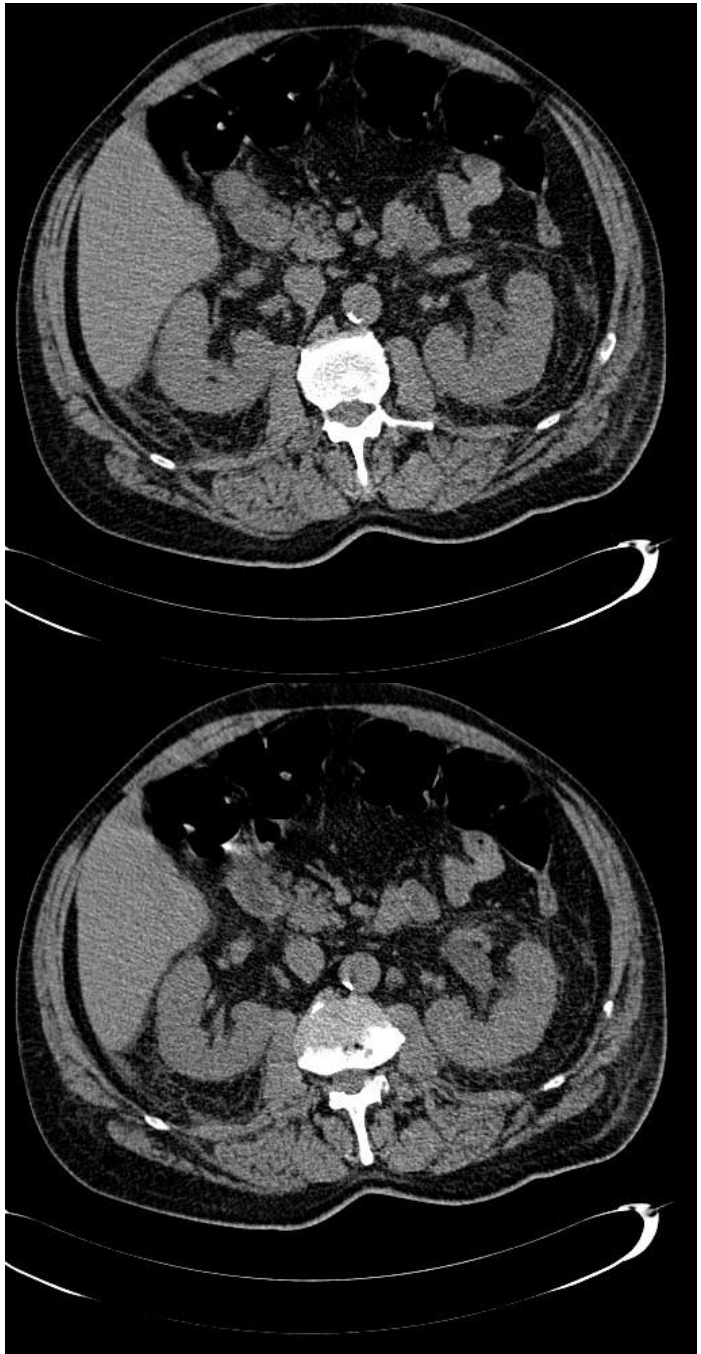
Table 2
Summary of sources and associated key points

Source	Key Points
Central nervous system	• Rare • High morbidity and mortality • Do not delay antibiotics for lumbar puncture
Pulmonary	• Pulmonary complaints are common • Chest radiograph frequently misleading • Most often culture negative
Abdominal	• Difficult diagnosis • Difficult source control • Consider if initial workup does not reveal a source
Genitourinary	• Common • Urinalysis frequently misleading • Maintain concern for obstruction
Skin and soft tissue	• Requires high index of clinical suspicion • Search for "red flags" of necrotizing skin and soft tissue infections • Requires urgent source control
Bloodstream/devices	• Difficult to narrow down to this as a cause • Take note of any devices on physical examination • Consider removing/changing devices
Viral	• Presents similar to bacterial sepsis • Increases risk of bacterial superinfections • Antivirals appropriate in patients in intensive care with influenza

Controllo della sorgente

- Pielonefrite acuta con ostruzione :



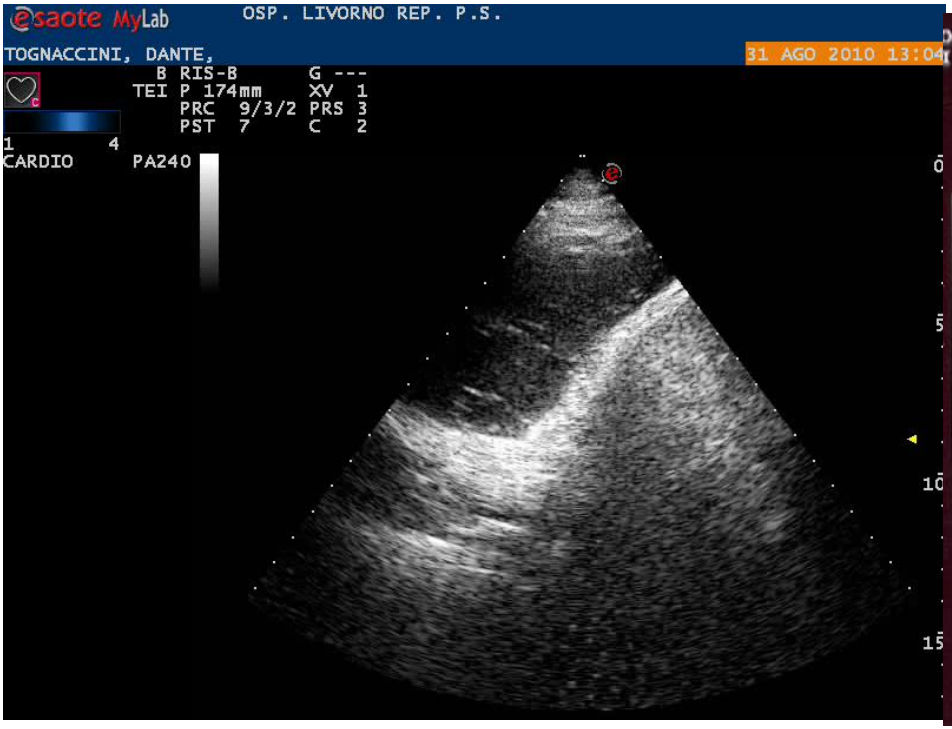


Controllo della sorgente

- Infezione necrotizzante della cute e dei tessuti molli

Controllo della sorgente

- Empiema pleurico



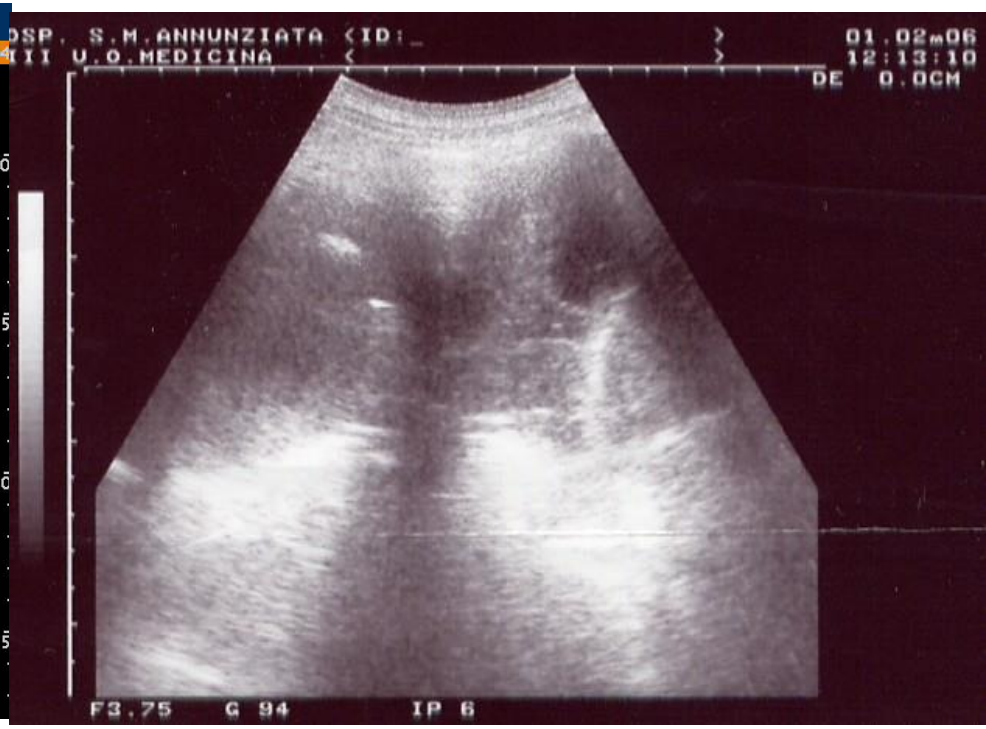
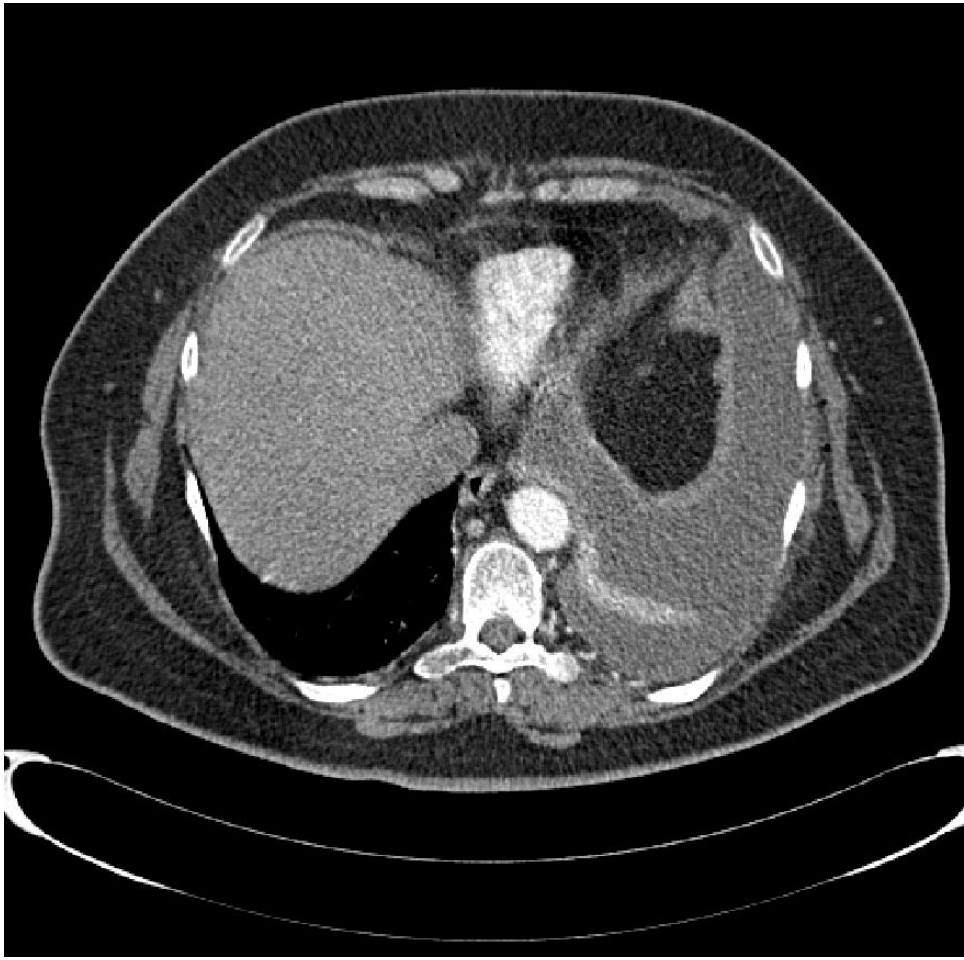


Table 1 Parapneumonic effusion classification

Anatomy	Bacteriology	Chemistry	Category	Drainage intervention
Very small to small free flowing effusion*	Unknown	Unknown	1	No
Small to moderate free flowing effusion*	Negative culture and Gram stain	Normal pH and glucose	2	No
Large effusion or loculation*	Positive culture or Gram stain	Low pH or glucose	3	Yes
Any size	Pus		4	Yes

*, small <10 mm on lateral decubitus; moderate less than half hemithorax; large greater than or equal to half hemithorax. Risk of poor outcome is very low to low for category 1 and 2; however category 3 and 4 have moderate to high risk.

Caso clinico C.P. donna 69 aa 27/04/2014



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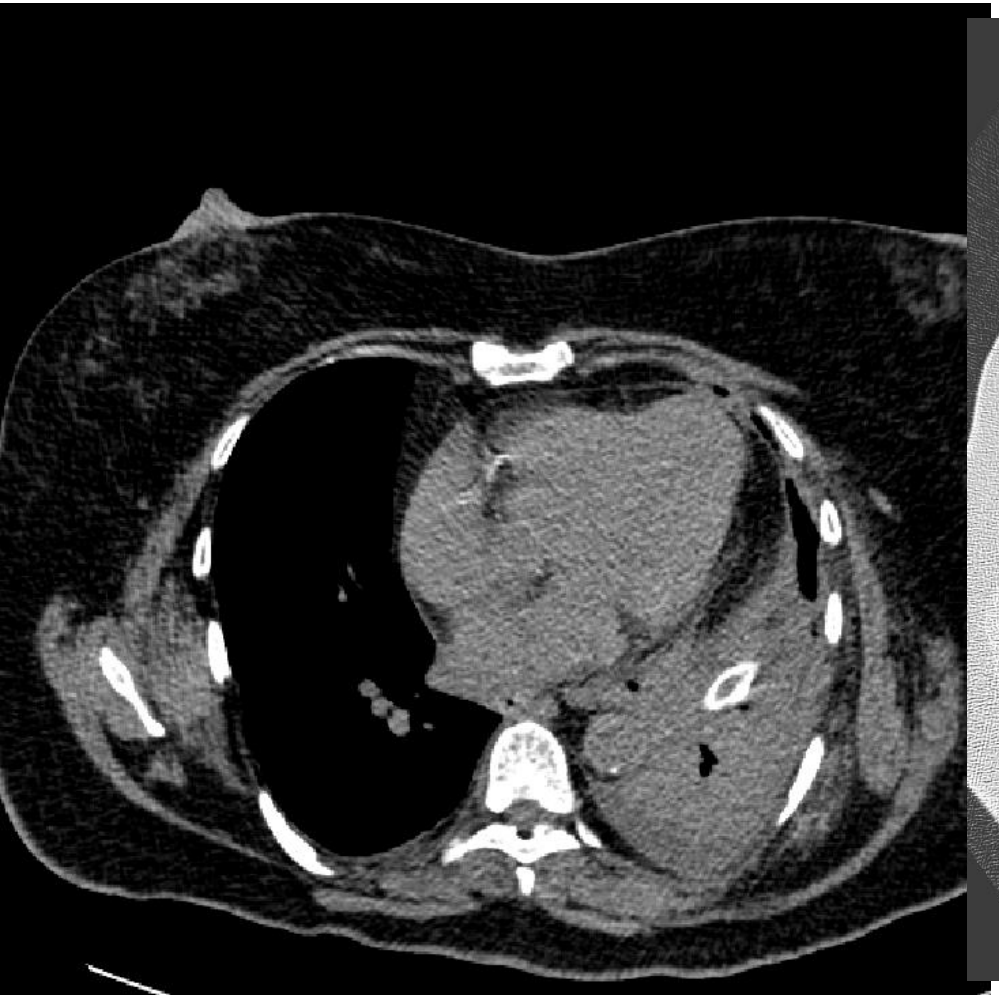

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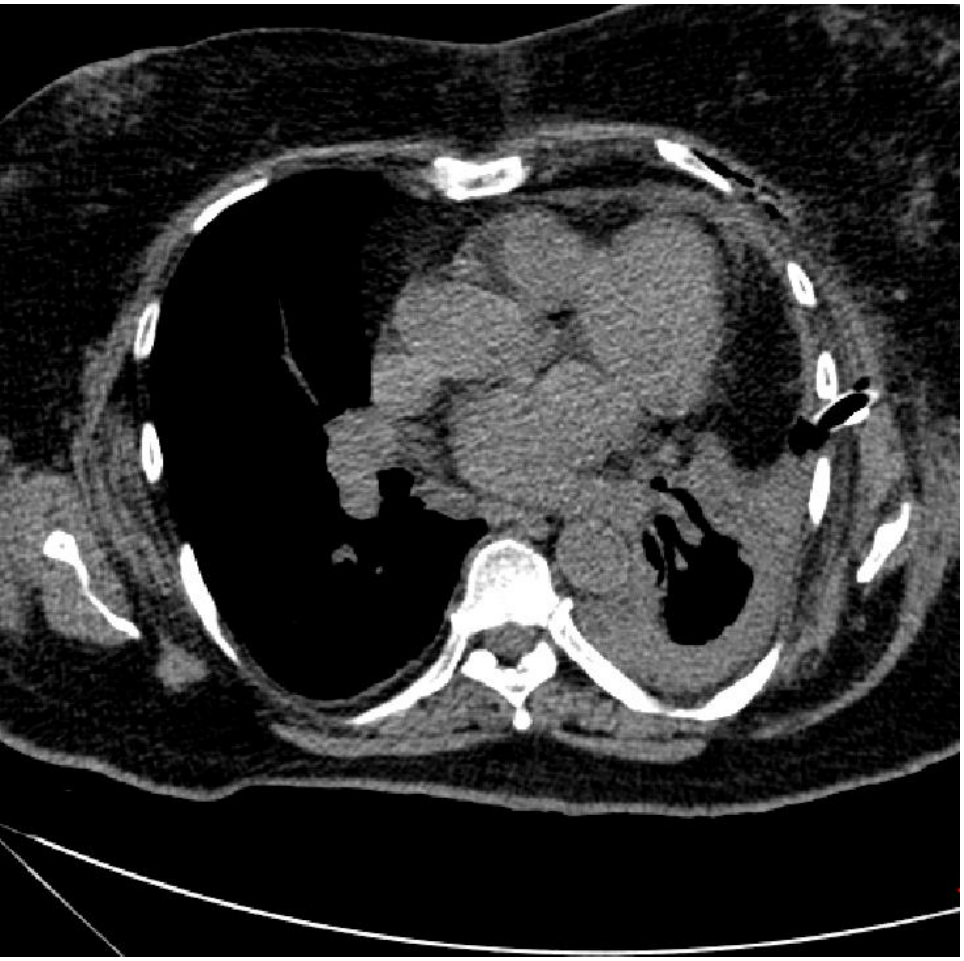

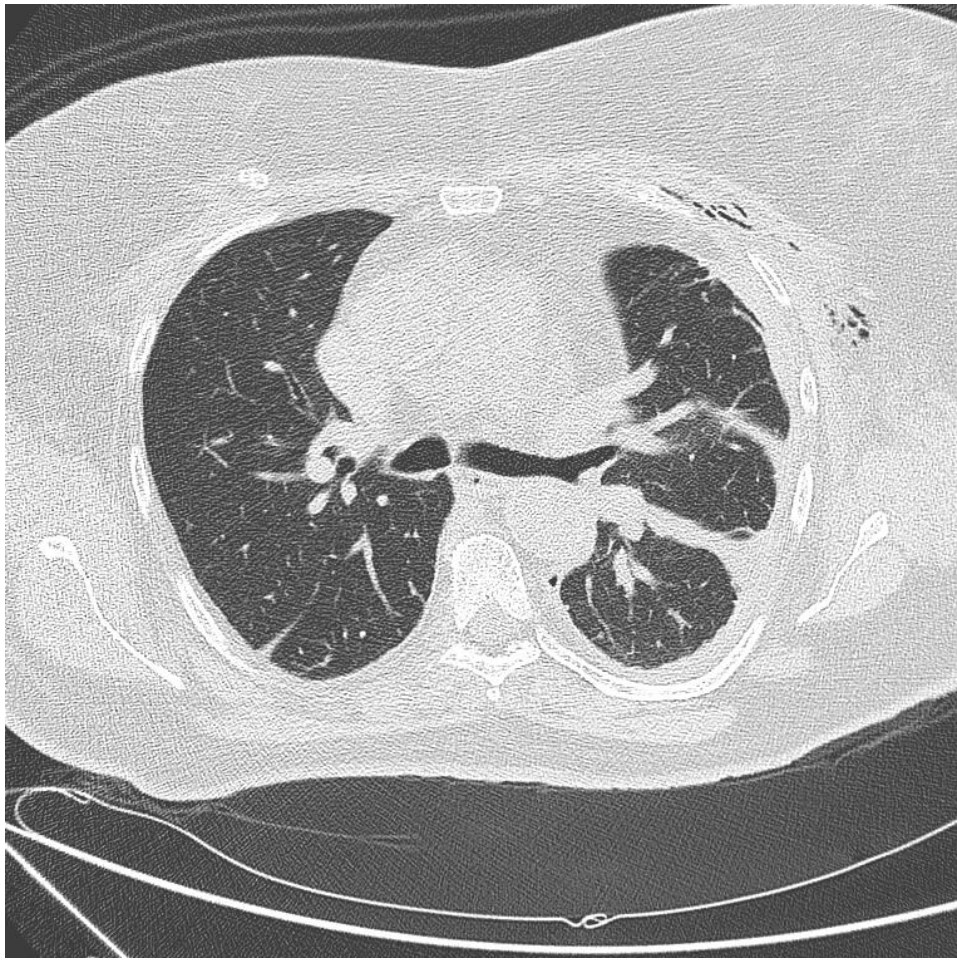

Caso clinico C.P. donna 69aa 29/05/2014

Intrapleural Use of Tissue Plasminogen Activator and DNase in Pleural Infection

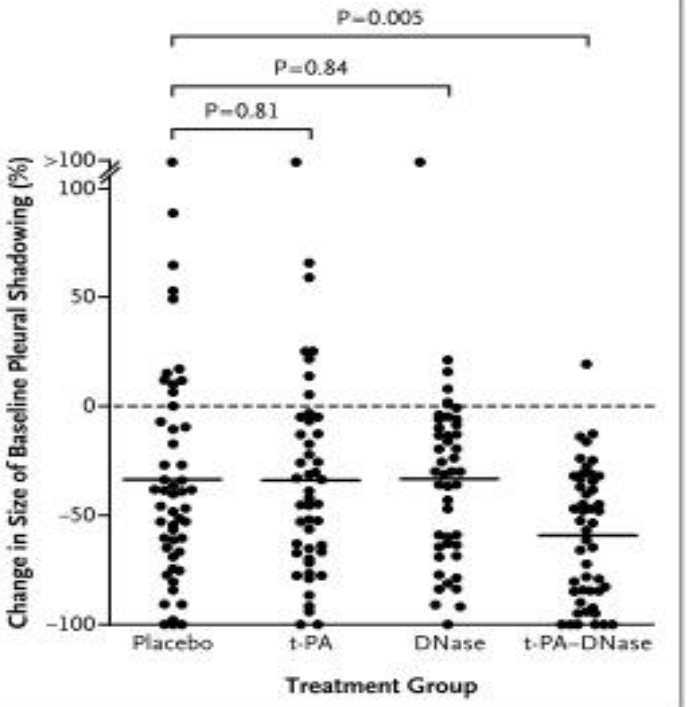

Figure 2. Change in Area of Pleural Fluid on Chest Radiography on Day 7 versus Day 1, According to Study Group.

Each circle represents an individual patient, and mean changes are indicated by the horizontal bars.

Intrapleural t-PA–DNase therapy improved fluid drainage in patients with pleural infection and reduced the frequency of surgical referral and the duration of the hospital stay.

n engl j med 365;6 nejm.org august 11, 2011