# ENDOCARDITE INFETTIVA: ASPETTI CONTROVERSI

## Il paziente settico: eco nel sospetto di endocardite

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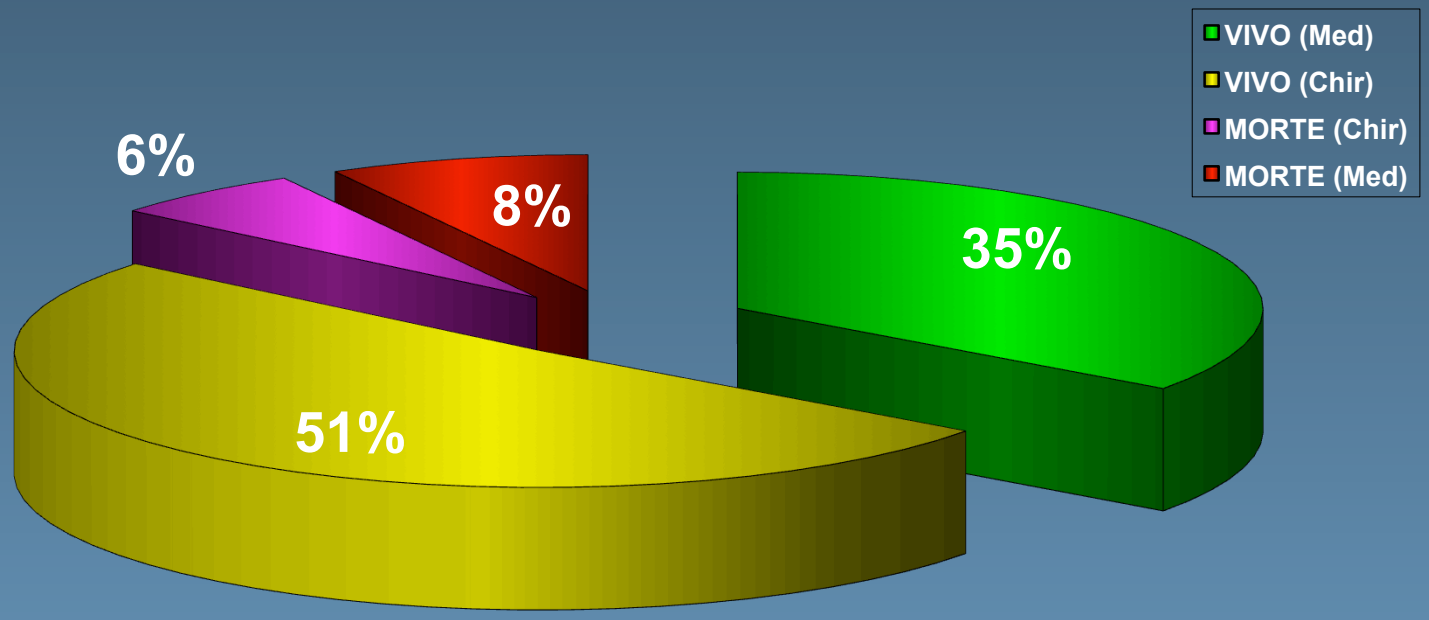
**Ospedale Ca' Foncello, Treviso**

# DESTINO DEI PAZIENTI (n= 680)




| | |
|---|---|
| Scompenso cardiaco | 35% |
| Fenomeni embolici | 14% |
| Infezione non controllata | 10% |

| | |
|---|---|
| Divisione di Cardiologia , Ospedale Maria Vittoria di Torino- Ospedale Malattie Infettive, Amedeo di Savoia di Torino | Divisione di Cardiologia, Ospedale Ca' Foncello di Treviso |
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| Divisione di Cardiologia , Ospedale di Rimini | Divisione di Cardiologia, Ospedale di Senigallia |

Registro Italiano Endocardite Infettiva

European Heart Journal (2009) 30, 2369–2413
doi:10.1093/eurheartj/ehp285

ESC GUIDELINES

**Guidelines on the prevention, diagnosis, and treatment of infective endocarditis (new version 2009)**

## Table 11 Modified Duke criteria for the diagnosis of infective endocarditis (adapted from Li *et al.*[94])

### MAJOR CRITERIA

**Blood cultures positive for IE:**

- Typical microorganisms consistent with IE from two separate blood cultures:
  Viridans streptococci, *Streptococcus bovis*, HACEK group, *Staphylococcus aureus*; or
  Community-acquired enterococci, in the absence of a primary focus;

  *or*
- Microorganisms consistent with IE from persistently positive blood cultures:
  At least two positive blood cultures of blood samples drawn > 12 h apart; or
  All of three or a majority of ≥ 4 separate cultures of blood (with first and last sample drawn at least 1 h apart)

  *or*
- Single positive blood culture for *Coxiella burnetii* or phase I IgG antibody titer > 1 : 800

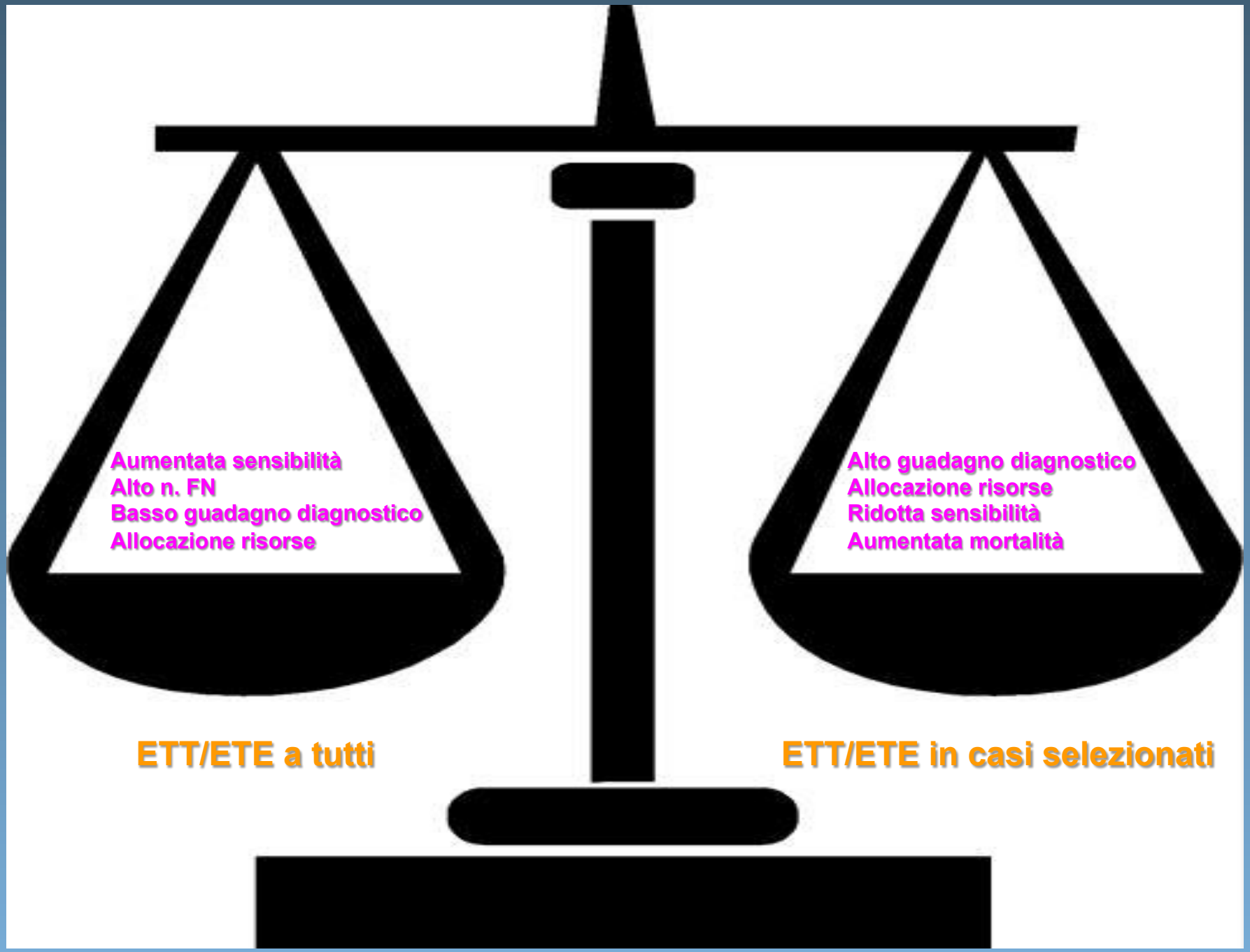
**Evidence of endocardial involvement**

- Echocardiography positive for IE
  Vegetation - Abscess - New partial dehiscence of prosthetic valve
- New valvular regurgitation

### MINOR CRITERIA

- Predisposition: predisposing heart condition, injection drug use
- Fever: temperature > 38°C
- Vascular phenomena: major arterial emboli, septic pulmonary infarcts, mycotic aneurysm, intracranial haemorrhages, conjunctival haemorrhages, Janeway lesions
- Immunologic phenomena: glomerulonephritis, Osler's nodes, Roth's spots, rheumatoid factor
- Microbiological evidence: positive blood culture but does not meet a major criterion or serological evidence of active infection with organism consistent with IE

| Diagnosis of IE is definite in the presence of | Diagnosis of IE is possible in the presence of |
|---|---|
| *2 major criteria, or* | *1 major and 1 minor criteria, or* |
| *1 major and 3 minor criteria, or* | *3 minor criteria* |
| *5 minor criteria* | |


Aumentata sensibilità
Alto n. FN
Basso guadagno diagnostico
Allocazione risorse
Alto guadagno diagnostico
Allocazione risorse
Ridotta sensibilità
Aumentata mortalità
ETT/ETE a tutti
ETT/ETE in casi selezionati

# Eco nel sospetto di endocardite

- ✓ Accesso libero al minimo sospetto diagnostico o selezione dei pazienti ?
- ✓ Come selezionare i pazienti ?
- ✓ Chi seleziona i pazienti e formula le richieste di eco ?
- ✓ In che tempi eseguire l'esame ?
- ✓ Come eseguire l'esame ?
- ✓ Come interpretare i dati ?
- ✓ Cosa fare in caso di eco negativo ed alto sospetto clinico?

European Heart Journal (2009) 30, 2369–2413
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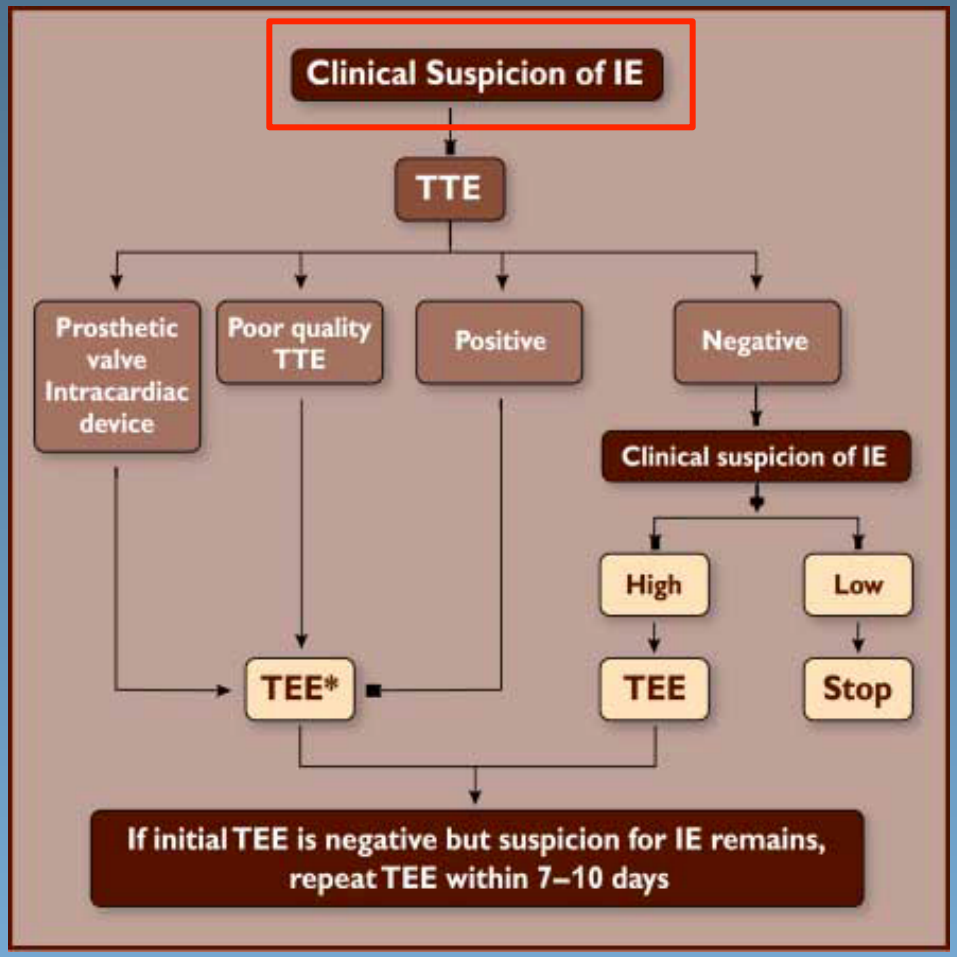
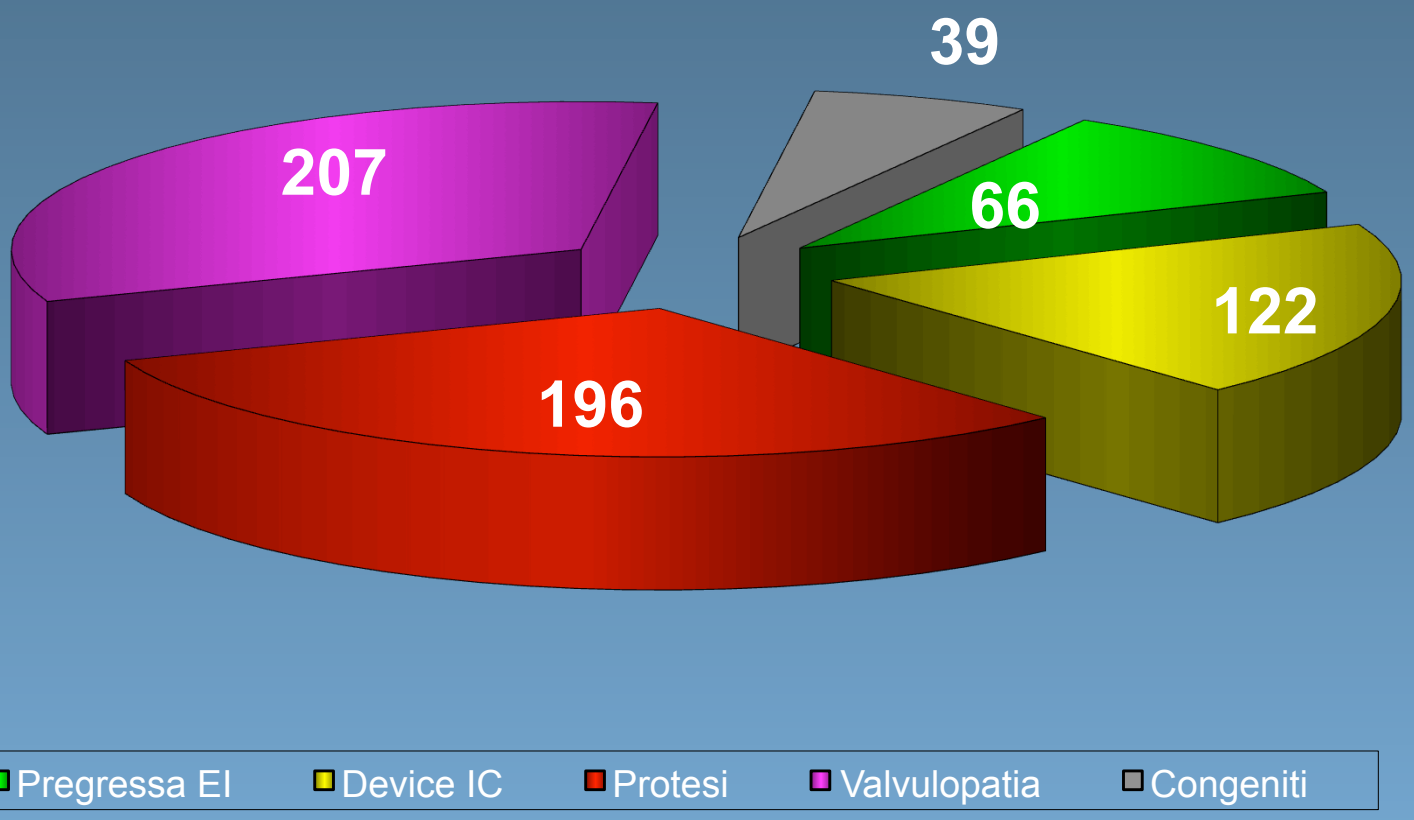
ESC GUIDELINES

Guidelines on the prevention, diagnosis, and treatment of infective endocarditis (new version 2009)

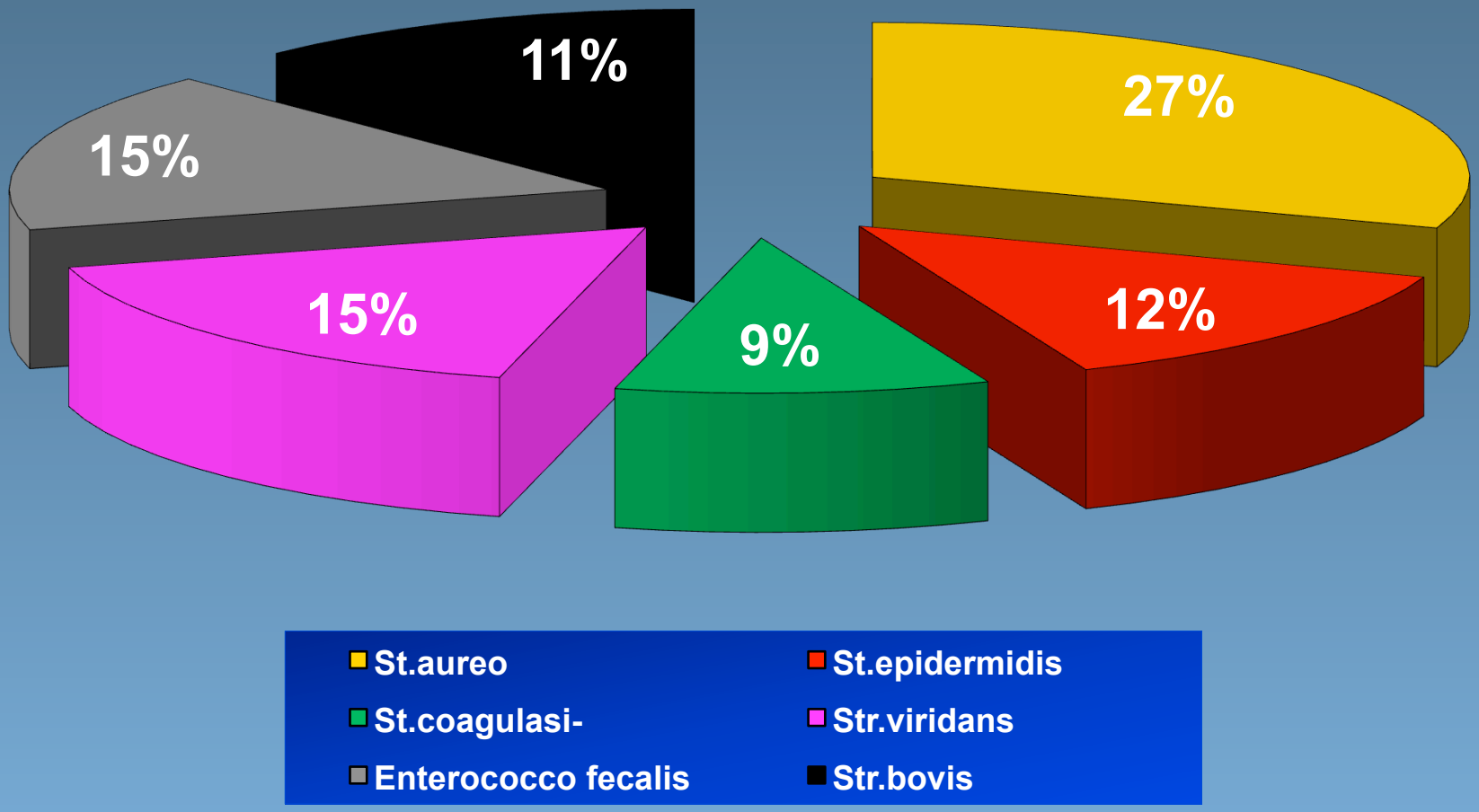
# ESC Guidelines 2009



# Cardiopatia predisponente (n=410; 60%)



# EMOCOLTURE




Registro Italiano Endocardite Infettiva

# Endocardite infettiva
# Sintomi (n=680)

| Manifestazione clinica | N | % |
|---|---|---|
| Febbre | 569 | 91 |
| Dispnea | 160 | 26 |
| Astenia | 151 | 24 |
| Dimagramento | 76 | 12 |
| Tosse, escreato | 24 | 3.5 |
| Embolia periferica | 22 | 3.5 |
| Stroke, AIT | 24 | 3.5 |
| Edemi aa inferiori | 19 | 3 |
| Dolori addominali, vomito, diarrea | 19 | 3 |
| Anoressia | 10 | 1.5 |
| Sudorazione | 9 | 1.5 |
| Artralgie | 10 | 1.5 |
| Pallore | 9 | 1.5 |
| Brivido | 11 | 1.5 |
| Cefalea, confusione mentale | 9 | 1.5 |
| Disuria, pollachiuria | 4 | 0.5 |
| Dolore tasca PM/ICD | 11 | 1.8 |

# ENDOCARDITE INFETTIVA
# TIPO DI CONTATTO MEDICO
## Medici ospedalieri

| | | | |
|---|---|---|---|
| DEA- Med Urgenza | 124 | CARDIOLOGO | 98 |
| INTERNISTA | 96 | INFETTIVOLOGO | 25 |
| NEFROLOGO-UROLOGO | 17 | NEUROLOGO | 13 |
| CHIRURGO | 7 | CARDIOCHIRURGO | 5 |
| GERIATRA | 5 | RIANIMATORE | 4 |
| ORTOPEDICO | 3 | EMATOLOGO | 2 |
| PNEUMOLOGO | 2 | ONCOLOGO | 1 |
| GINECOLOGO | 1 | | |

# Impact of Routine Infectious Diseases Service Consultation on the Evaluation, Management, and Outcomes of *Staphylococcus aureus* Bacteremia

**Timothy C. Jenkins,[1,3] Connie S. Price,[1,3] Allison L. Sabel,[2,4] Philip S. Mehler,[2] and William J. Burman[1,3]**

[1]Division of Infectious Diseases and [2]Department of Patient Safety and Quality, Denver Health and Hospital Authority, and [3]Department of Medicine, Division of Infectious Diseases, and [4]Department of Preventive Medicine and Biometry, University of Colorado Health Sciences Center, Denver, Colorado

*Conclusions.* A policy of routine consultation with an infectious diseases specialist for patients with *S. aureus* bacteremia resulted in more-detailed evaluation, more-frequent detection of endocarditis and metastatic infection, and improved adherence to standards of care.

**Clinical Infectious Diseases 2008; 46:1000–8**

# Close cooperation between infectious disease physicians and attending physicians can result in better management and outcome for patients with *Staphylococcus aureus* bacteraemia

**M. Nagao[1,2], Y. Iinuma[1,2], T. Saito[4], Y. Matsumura[1,2], M. Shirano[1,2], A. Matsushima[1,2], S. Takakura[1,2], Y. Ito[1,3] and S. Ichiyama[1,2]**

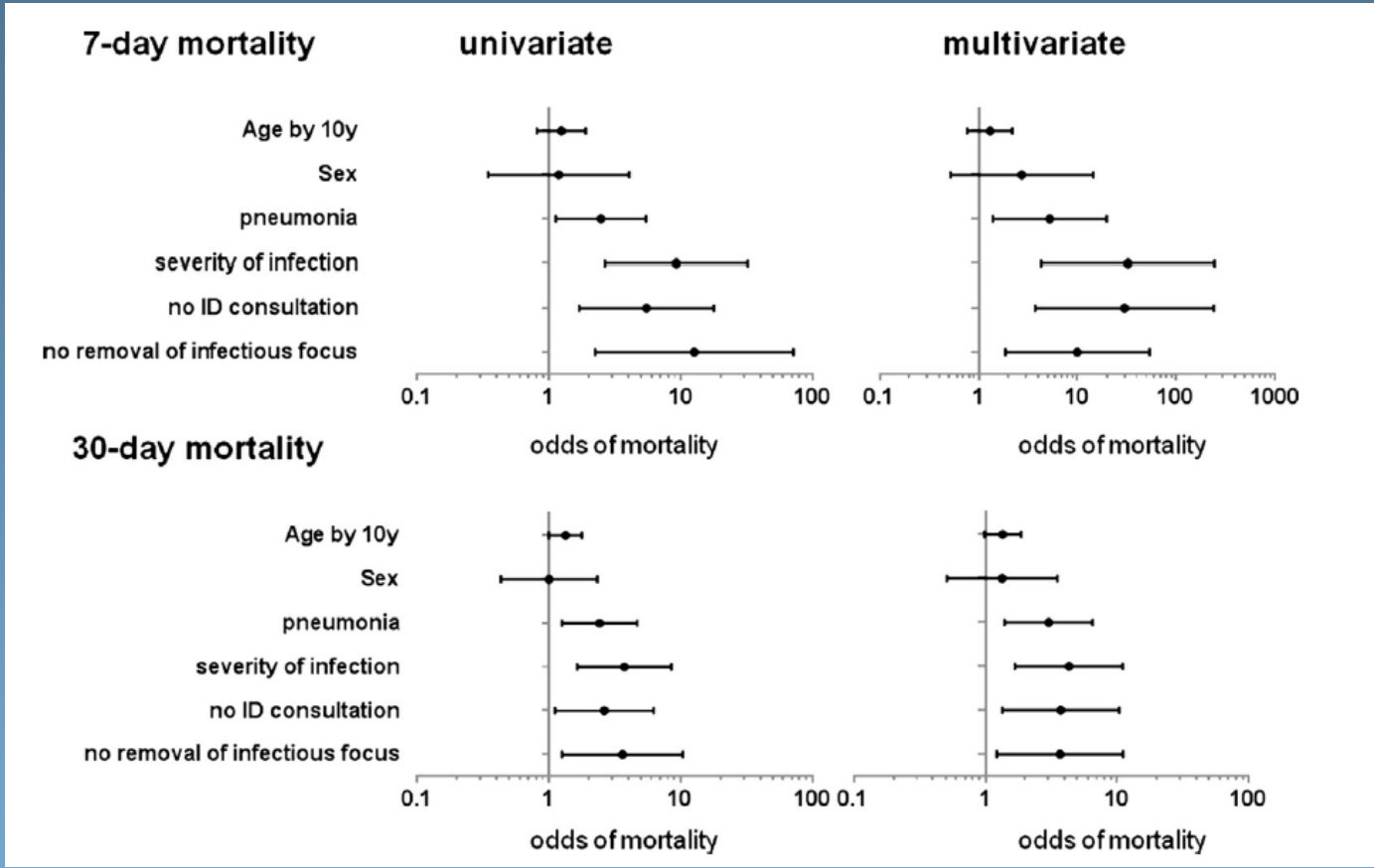
*1) Department of Infection Control and Prevention, Kyoto University Hospital, 2) Department of Clinical Laboratory Medicine, Kyoto University Graduate School of Medicine, 3) Department of Respiratory Medicine, Kyoto University Graduate School of Medicine, Kyoto and 4) Department of Clinical laboratory, Shiga Medical Center for Adults, Shiga, Japan*

fold compared to 2002. Proactive intervention by IDPs raised awareness of optimal management of bacteraemia and improved the adherence to the standards of care, which subsequently resulted in an improvement in the outcome.

*Clin Microbiol Infect* 2010; **16:** 1783–1788

# Mandatory infectious diseases consultation for MRSA bacteremia is associated with reduced mortality

F. Tissot [a,*], T. Calandra [a], G. Prod'hom [c], P. Taffe [d], G. Zanetti [a,b], G. Greub [a,c], L. Senn [a,b]




Journal of Infection 2014: 69; 226

# BATTERIEMIA DA STAFILOCOCCO AUREO

## Role of Echocardiography in Evaluation of Patients With *Staphylococcus aureus* Bacteremia: Experience in 103 Patients

VANCE G. FOWLER, JR., MD, JENNIFER LI, MD, G. RALPH COREY, MD, JERRY BOLEY, MD, KIEREN A. MARR, MD, AJAY K. GOPAL, MD, LI KUO KONG, MD, GEOFFREY GOTTLIEB, MD, CAROLYN L. DONOVAN, MD, FACC, DANIEL J. SEXTON, MD, THOMAS RYAN, MD, FACC

*Durham, North Carolina*

*Objectives.* The purpose of this prospective study was to examine the role of echocardiography in patients with *Staphylococcus aureus* bacteremia (SAB).

*Background.* The reported incidence of infective endocarditis (IE) among patients with SAB varies widely. Distinguishing patients with uncomplicated bacteremia from those with IE is therapeutically and prognostically important, but often difficult.

*Methods.* One hundred-three consecutive patients undergoing both transthoracic (TTE) echocardiography and transesophageal (TEE) echocardiography were prospectively evaluated. All patients presented with fever and ≥1 positive blood culture and were followed up for 12 weeks.

*Results.* Although predisposing heart disease was present in 42 patients (41%), clinical evidence of infective endocarditis (IE) was rare (7%). TTE revealed anatomic abnormalities in 33 patients, but vegetations in only 7 (7%), and was considered indeterminate in 19 (18%). TEE identified vegetations in 22 patients (aortic valve in 5, mitral valve in 9, tricuspid valve in 4, catheter in 2 and pacemaker in 2, abscesses in 2, valve perforation in 1 and new severe regurgitation in 1; 26 total [25%]). Using Duke criteria for the diagnosis of IE, definite IE was present in 26 patients (25%). Clinical findings and predisposing heart disease did not distinguish between patients with and without IE. The sensitivity of TTE for detecting IE was 32%, and the specificity was 100%. The addition of TEE increased the sensitivity to 100%, but resulted in one false positive result (specificity 99%). TEE detected evidence of IE in 19% of patients with a negative TTE and 21% of patients with an indeterminate TTE. At follow-up, cure of staphylococcal infection occurred in a similar percentage of patients with and without IE (77% and 75%, respectively). However, death due to sepsis was significantly more likely among patients with IE (4 of 26 [15%]) than among those without IE (2 of 77 [3%]) ($p = 0.03$).

*Conclusions.* Our results suggest that IE is common among patients admitted to the hospital with SAB and is associated with an increased risk of death due to sepsis. TEE is essential to establish the diagnosis and to detect associated complications. Therefore, the test should be considered part of the early evaluation of patients with SAB.

(J Am Coll Cardiol 1997;30:1072–8)

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# RISCHIO DI ENDOCARDITE IN PORTATORI DI PROTESI ESPOSTI A BATTERIEMIA DA STAFILOCOCCO AUREO

The American Journal of Medicine (2005) 118, 225–229

ELSEVIER

THE AMERICAN JOURNAL of MEDICINE®

CLINICAL RESEARCH STUDY

## Risk of endocarditis among patients with prosthetic valves and *Staphylococcus aureus* bacteremia

Fadi El-Ahdab, MD,[a] Daniel Kelly Benjamin, Jr, MD, MPH, PhD,[d,f] Andrew Wang, MD,[c] Christopher H. Cabell, MD, MHS,[a,c,f] Vivian H. Chu, MD,[b,f] Martin E. Stryjewski, MD, MHS,[b,f] G. Ralph Corey, MD,[b,f] Daniel J. Sexton, MD,[b] L. Barth Reller, MD,[b,e] and Vance G. Fowler, Jr, MD, MHS[b,f]

[a]*Department of Medicine,*
[b]*Division of Infectious Diseases and*
[c]*Division of Cardiology;*
[d]*Department of Pediatrics;*
[e]*Clinical Microbiology Laboratory;*
[f]*Duke Clinical Research Institute,*
*Duke University Medical Center, Durham, North Carolina.*

**PURPOSE:** *Staphylococcus aureus* is a common cause of bacteremia and of native valve infective endocarditis. However, the risk of endocarditis in patients with a prosthetic valve who develop *S. aureus* bacteremia is unclear. The aim of this study was to define the risk of prosthetic valve endocarditis in patients with *S. aureus* bacteremia.

**SUBJECTS AND METHODS:** All patients with a prosthetic valve or ring who developed *S. aureus* bacteremia during the 94-month study period were prospectively evaluated. The modified Duke criteria were used for the diagnosis of endocarditis. Patients were followed up for 12 weeks after the initial diagnosis of *S. aureus* bacteremia.

**RESULTS:** The overall rate of definite prosthetic valve endocarditis among the study patients was 26/51 (51%). The risk of endocarditis was similar in patients with late (≥12 months after valve implantation) vs. early *S. aureus* bacteremia (<12 months after prosthetic valve implantation) (50% vs. 52%, $P=1.0$), mitral vs. aortic prostheses (62% vs. 48%, $P=0.24$), and mechanical vs. bioprosthetic valves (62% vs. 44%, $P=0.29$). The 12-week mortality was higher among patients with definite vs. possible endocarditis (62% vs. 28%, $P=0.019$).

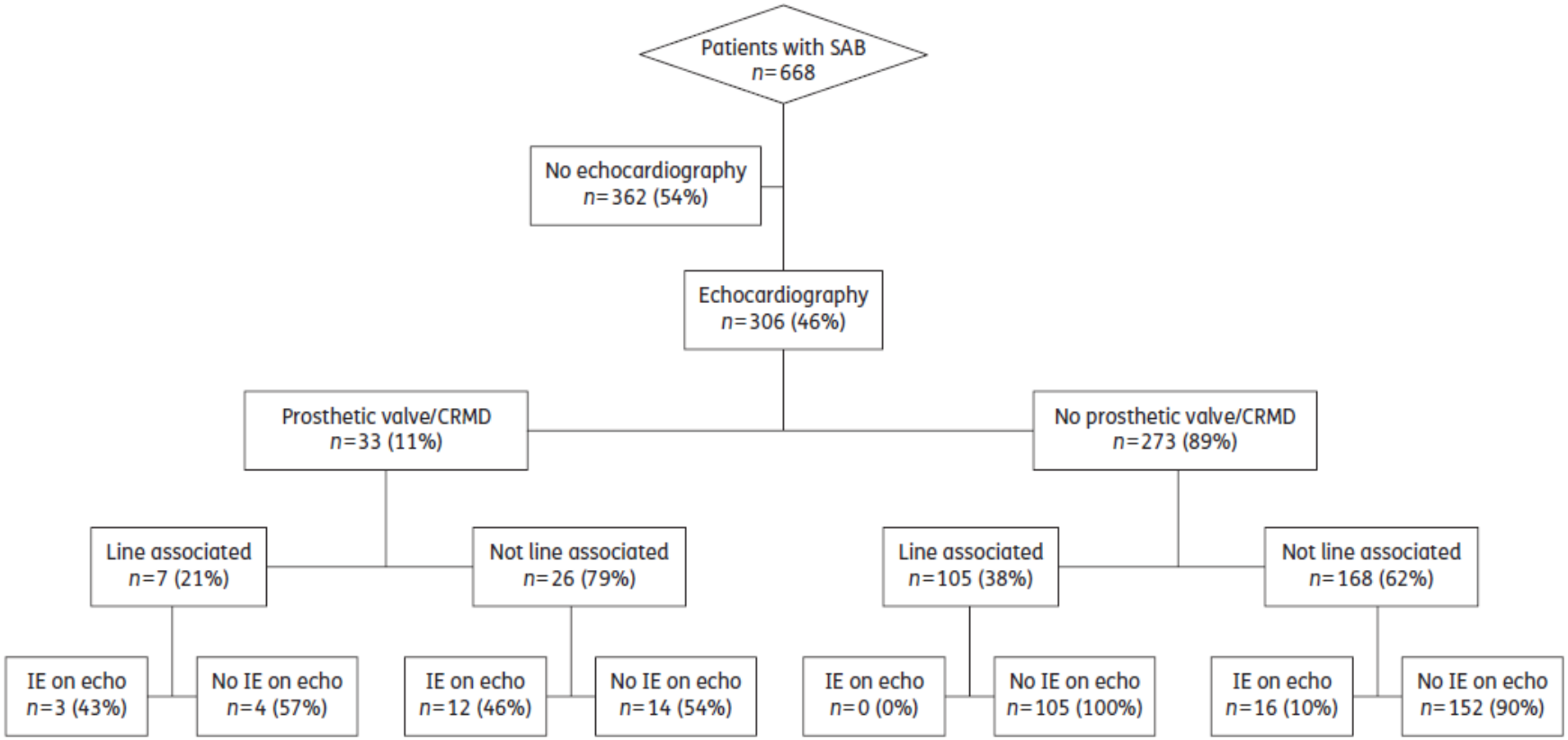
**CONCLUSION:** In this investigation, approximately half of all patients with prosthetic valves who developed *S. aureus* bacteremia had definite endocarditis. The risk of endocarditis was independent of the type, location, or age of the prosthetic valve. The mortality of prosthetic valve endocarditis is high. All patients with a prosthetic valve who develop *S. aureus* bacteremia should be aggressively screened and followed for endocarditis.

*J Antimicrob Chemother* 2013; **68**: 444–449
doi:10.1093/jac/dks408 Advance Access publication 30 October 2012

Journal of Antimicrobial Chemotherapy

# Prioritizing echocardiography in *Staphylococcus aureus* bacteraemia

Jubin P. Joseph[1], Tom R. Meddows[1], Daniel P. Webster[2], James D. Newton[1], Saul G. Myerson[1], Bernard Prendergast[1], Matthew Scarborough[2] and Neil Herring[1]*



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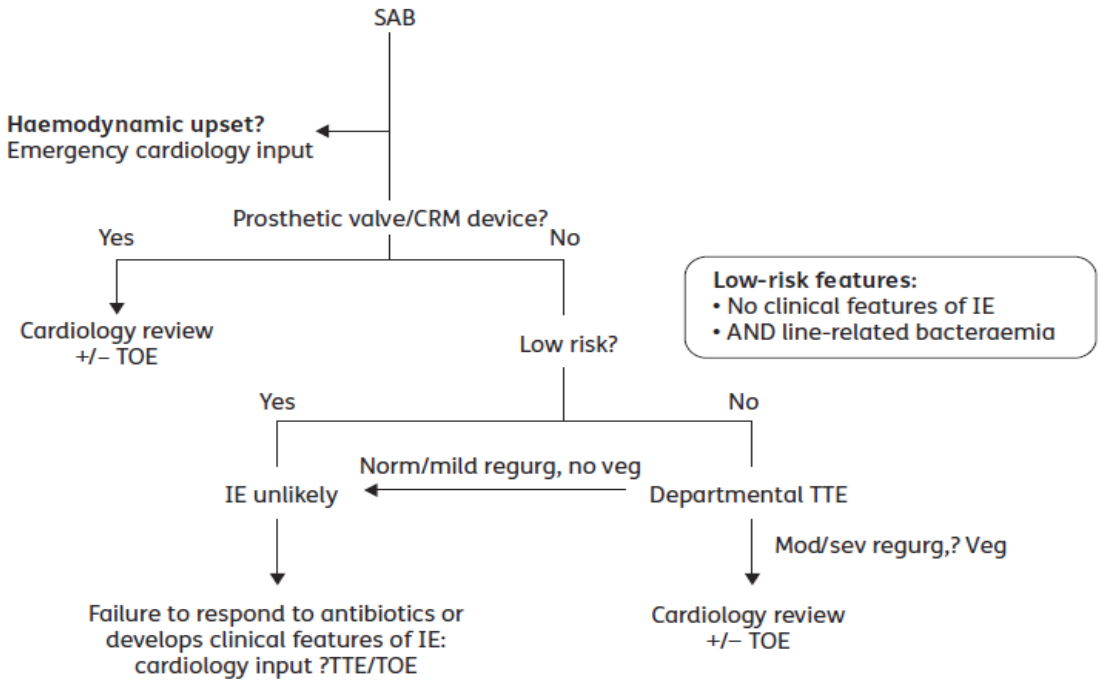



**Definition of line-related bacteraemia**

- Bacteraemia due to *S. aureus*, absence of another obvious source and any of the following:
  - Isolation of *S. aureus* with the same susceptibility profile from:
    - purulent exudate in catheter insertion site, or
    - the catheter tip without any other obvious source
  - Temporal resolution of signs and symptoms of infection after removing the catheter without active antibiotics (all cases will receive active antibiotics once bacteraemia is diagnosed)

# Use of a Simple Criteria Set for Guiding Echocardiography in Nosocomial *Staphylococcus aureus* Bacteremia

Achim J. Kaasch,[1] Vance G. Fowler Jr.,[5] Siegbert Rieg,[4] Gabriele Peyerl-Hoffmann,[4] Hanna Birkholz,[2] Martin Hellmich,[3] Winfried V. Kern,[4] and Harald Seifert[1]

***Results.*** IE was present in 13 (4.3%) of 304 patients in the INSTINCT cohort and in 40 (9.3%) of 432 patients in the SABG cohort. Within 14 days after the first positive blood culture result, echocardiography was performed in 39.8% and 57.4% of patients in the INSTINCT and SABG cohorts, respectively. In patients with IE, the most common clinical prediction criteria present were prolonged bacteremia (69.2% vs 90% for INSTINCT vs SABG, respectively) and presence of a permanent intracardiac device (53.8% vs 32.5%). In total, 13 of 13 patients in the INSTINCT cohort and 39 of 40 patients in the SABG cohort with documented IE fulfilled at least 1 criterion (sensitivity, 100% vs. 97.5%; negative predictive value, 100% vs 99.2%).

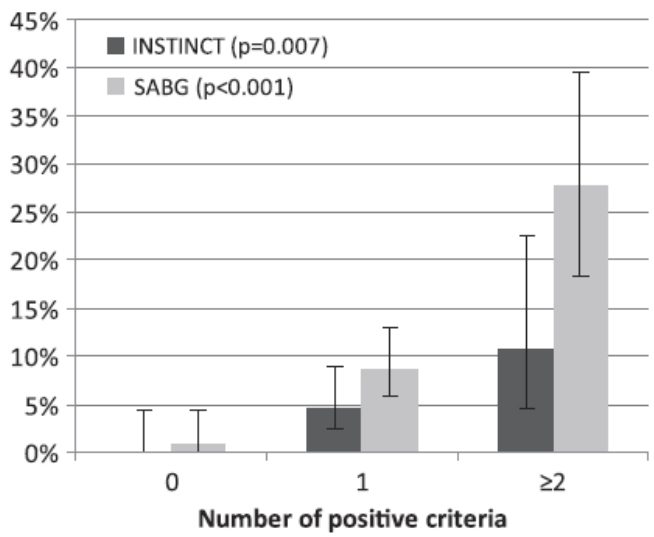



**Table 3. Sensitivity, Specificity, and Positive and Negative Predictive Values of the Clinical Prediction Criteria Set**

| | Percentage (95% CI) | |
|---|---|---|
| Variable | INSTINCT | SABG |
| Sensitivity | 100 (77.2–100) | 97.5 (87.1–99.9) |
| Specificity | 28.5 (23.6–34) | 31.6 (27.2–36.4) |
| Positive predictive value | 5.9 (3.5–9.8) | 12.7 (9.4–16.9) |
| Negative predictive value | 100 (95.6–100) | 99.2 (95.6–100) |

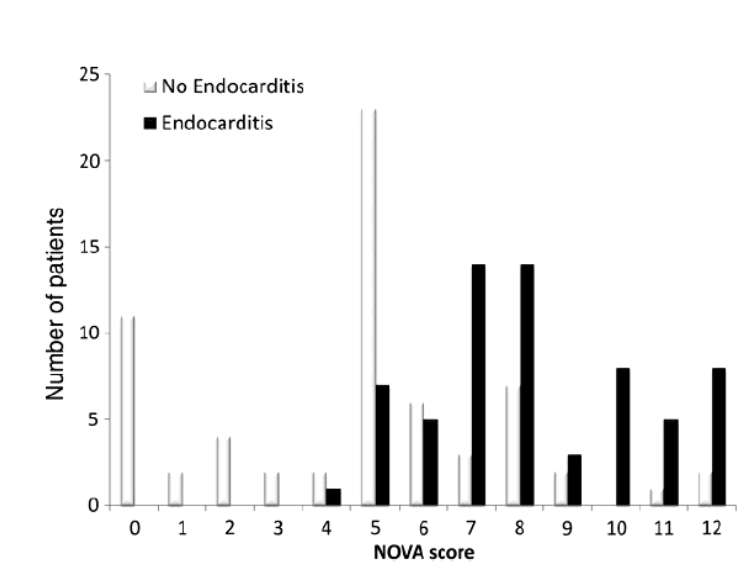
Clinical Infectious Diseases 2011;53(1):1–9

# The NOVA Score: A Proposal to Reduce the Need for Transesophageal Echocardiography in Patients With Enterococcal Bacteremia

Emilio Bouza,[1,2,3,4] Martha Kestler,[1,3,4] Teresa Beca,[1] Gabriel Mariscal,[1] Marta Rodríguez-Créixems,[1] Javier Bermejo,[3,4,5] Ana Fernández-Cruz,[1] Francisco Femández-Avilés,[3,4,5] and Patricia Muñoz[1,2,3,4]; for the Grupo de Apoyo al Manejo de la Endocarditis

**Table 4. Score for Assessing the Risk of Infective Endocarditis in Patients With Enterococcal Bloodstream Infections**

| Variable | Points | Odds Ratio (95% Confidence Interval) |
|---|---|---|
| Number of positive blood cultures (N) | 5 | 9.9 (2.2–40.6) |
| Unknown origin of bacteremia (O) | 4 | 7.7 (2.5–23.8) |
| Prior valve disease (V) | 2 | 3.7 (1.6–8.7) |
| Auscultation of a heart murmur (A) | 1 | 1.8 (.77–4.3) |
| Total | 12 | |




Clinical Infectious Diseases 2015;60(4):528–35

Original article

FIC Federazione Italiana di Cardiologia
*Italian Federation of Cardiology*

# Management of patients with infective endocarditis by a multidisciplinary team approach: an operative protocol

Fabio Chirillo[a], Piergiorgio Scotton[b], Francesco Rocco[c], Roberto Rigoli[d], Elvio Polesel[c] and Zoran Olivari[a]

**Table 1 Possible causes of inadequate diagnosis and treatment in patients with infective endocarditis and perspectives for improvement of management**

| Problem | Cause | Solution |
|---|---|---|
| Inadequate suspicion index (too low, too high); delayed diagnosis | Initial admission to different units depending on the initial clinical manifestations; limited experience of the managing physicians with IE | Routine consultation of specialists in infectious diseases; patients transferred to specific units as soon the diagnosis of IE is obtained |
| Negative blood culture | Empirical prehospital antibiotic therapy; fastidious germs; intracellular microorganisms | Communication to the microbiology laboratory for the use of special culture media, prolonged incubation and serology; temporary withdrawing of the antibiotic therapy or blood sampling before the subsequent administration; serology |
| Inadequate requests for echocardiography; limited access to echocardiography | Inadequate suspicion index (too low, too high) | Evaluation of the pretest probability by a specialist in infectious diseases based on clinical and microbiological findings |
| Incomplete echocardiographic information | Lack of knowledge of the limitations of the technique (both TT and TE) and knowledge of the echocardiographic information relevant for patients' management | Dedicated sonographers and cardiologists available at short notice |

J Cardiovasc Med 2013;14:659-68

Clinical criteria and the appropriate use of transthoracic echocardiography for the exclusion of infective endocarditis

K Greaves, D Mou, A Patel, D S Celermajer

*Heart* 2003;**89**:273–275

**( n= 500)**

**Table 3** Sensitivity, specificity, and predictive values of clinical criteria relating to evidence of endocarditis on transthoracic echocardiography

| Clinical criterion | Sensitivity (%) | Specificity (%) | PPV (%) | NPV (%) |
|---|---|---|---|---|
| Embolism | 77 | 98 | 80 | 98 |
| Central venous access | 17 | 98 | 39 | 93 |
| Injecting drug use | 38 | 91 | 29 | 94 |
| Prosthetic valve | 14 | 90 | 12 | 92 |
| Positive blood culture | 90 | 68 | 20 | 98 |

NPV, negative predictive value; PPV, positive predictive value.

**The collective absence of these five criteria indicated a zero probability of TTE showing evidence of endocarditis.**
**Conclusions: The use of simple clinical criteria during the decision making process may avoid many unnecessary TTE examinations in hospital inpatients with a low probability of endocarditis.**

# Judicious use of transthoracic echocardiography in infective endocarditis screening

Yen-Wen Liu MD[1,2], Wei-Chuan Tsai MD[1,2], Chih-Hsin Hsu MD[1], Li-Jen Lin MD[1], Wei-Ting Li MD[1], Chun-Hsiu Chen MSc[3], Jyh-Hong Chen MD PhD[1]

**TABLE 1**
**Clinical predictors in patients with and without evidence of infective endocarditis on transthoracic echocardiography (TTE)**

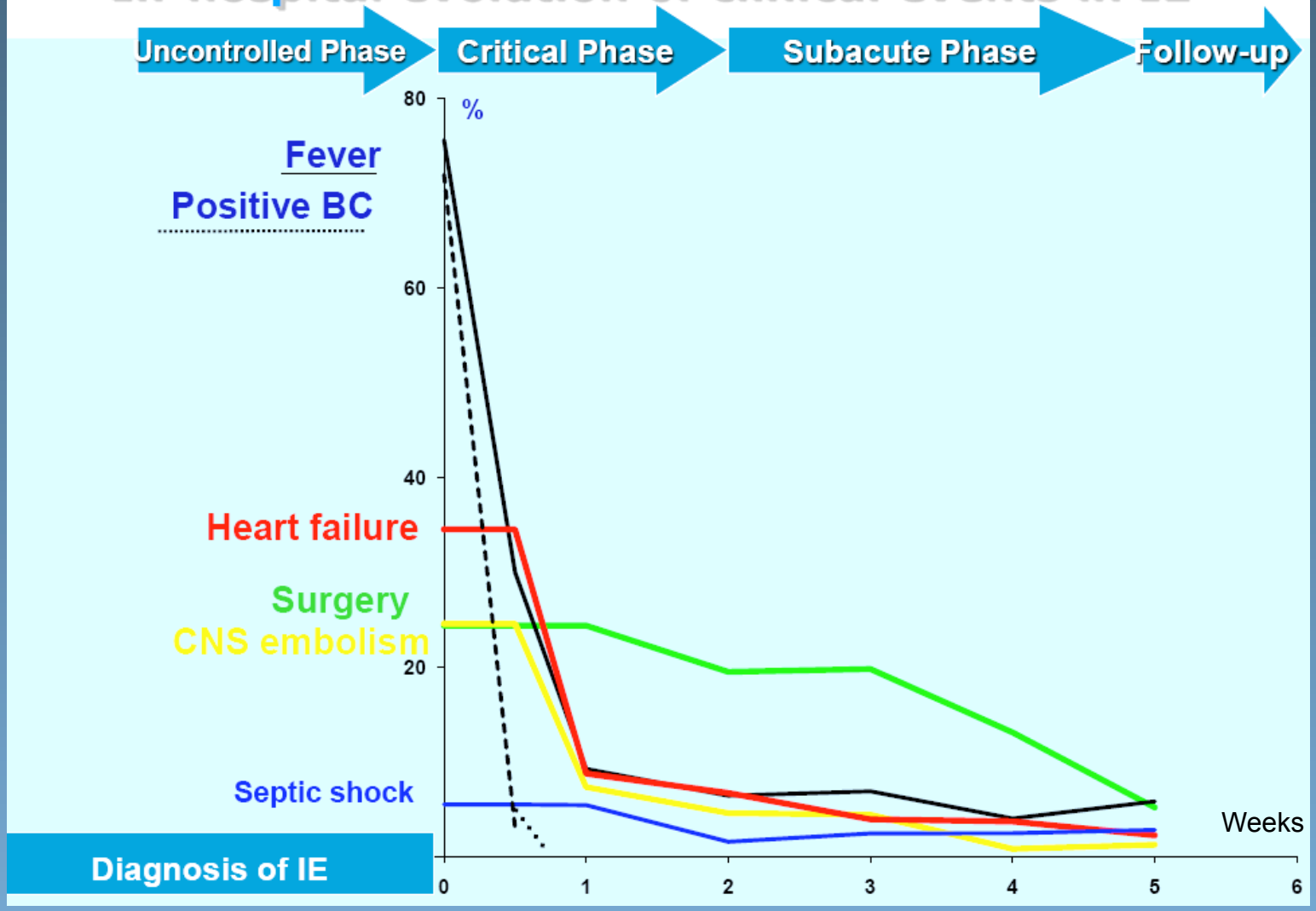
| | TTE evidence of endocarditis | | | |
|---|---|---|---|---|
| Clinical predictors | Positive (n=24) | Negative (n=131) | Total (n=155) | P |
| Embolic events | 15 (62.5) | 20 (15.2) | 35 (22.6) | <0.0001 |
| Immunological phenomena | 11 (45.8) | 15 (11.4) | 26 (16.8) | <0.0001 |
| Recurrent fever | 22 (91.7) | 106 (80.9) | 128 (82.6) | 0.201 |
| Current central venous assessment* | 5 (20.8) | 35 (26.7) | 38 (24.5) | 0.62 |
| Intravenous drug use* | 9 (37.5) | 4 (3.1) | 13 (8.4) | <0.0001 |
| Prosthetic heart valve* | 3 (12.5) | 1 (0.8) | 4 (2.6) | 0.012 |
| Positive blood culture | 23 (95.8) | 46 (35.1) | 69 (44.5) | <0.0001 |
| Presence of cardiac structural abnormality (other than prosthetic valve) | 8 (33.3) | 42 (32.1) | 50 (32.3) | 0.903 |
| Other infection focus* | 1 (4.2) | 75 (57.3) | 76 (49.0) | <0.0001 |

Can J Cardiol 2009; 25; 703-5

# Eco nel sospetto di endocardite

- ✓Accesso libero al minimo sospetto diagnostico o selezione dei pazienti ?
- ✓Chi seleziona i pazienti ?
- In che tempi eseguire l'esame ?
- Come eseguire l'esame ?
- Come interpretare i dati ?
- Cosa fare in caso di eco negativo ed alto sospetto clinico?

# In-hospital evolution of clinical events in IE



# ENDOCARDITE INFETTIVA
## TEMPI DEGLI ESAMI ECOCARDIOGRAFICI

| | PRE-RICOVERO | AL MOMENTO DEL RICOVERO | DURANTE IL RICOVERO | GIORNI DAL RICOVERO |
|---|---|---|---|---|
| ETT* | 156 (27%) | 117 (20%) | 308 (52%) | 5.29 ± 5.30 |
| ETE* | 81 (17%) | 53 (11%) | 333 (71%) | 7.68 ± 6.67 |
| | P=0.0001 | P=0.0001 | P=0.0001 | P=0.0001 |

*La data dell' esame era disponibile in 581 ETT e 467 ETE

Cecchi E, et al. Echocardiography 2013; Sep;30(8):871-9

# Eco nel sospetto di endocardite

- ✓Accesso libero al minimo sospetto diagnostico o selezione dei pazienti ?
- ✓Chi seleziona i pazienti ?
- ✓In che tempi eseguire l'esame ?

Come eseguire l'esame ?

Come interpretare i dati ?

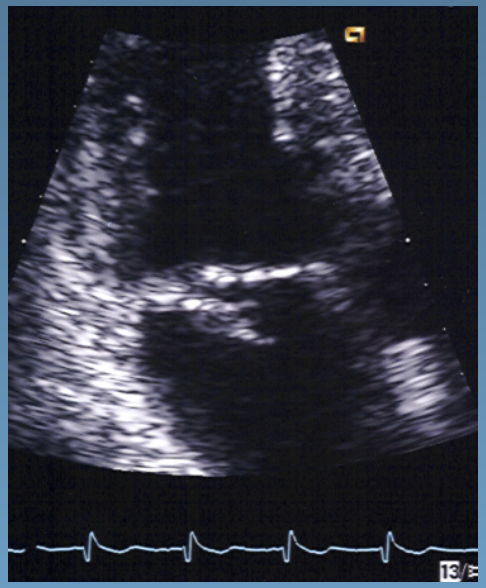
Cosa fare in caso di eco negativo ed alto sospetto clinico?

# METODICHE ECOCARDIOGRAFICHE E QUALITA' DELL'IMMAGINE

**TTE**

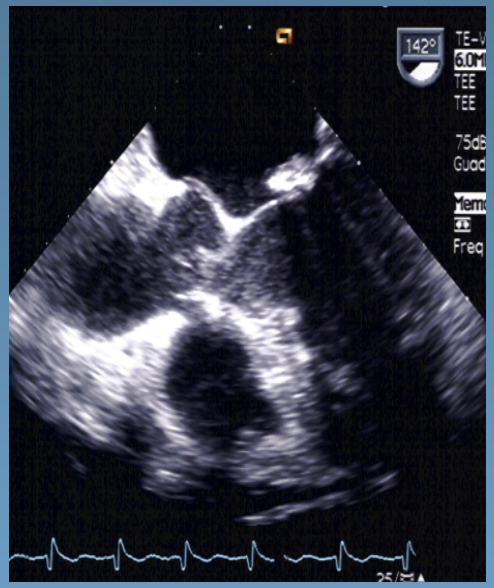
Sonda 3VS2
3.5 MHz

**NTHI**



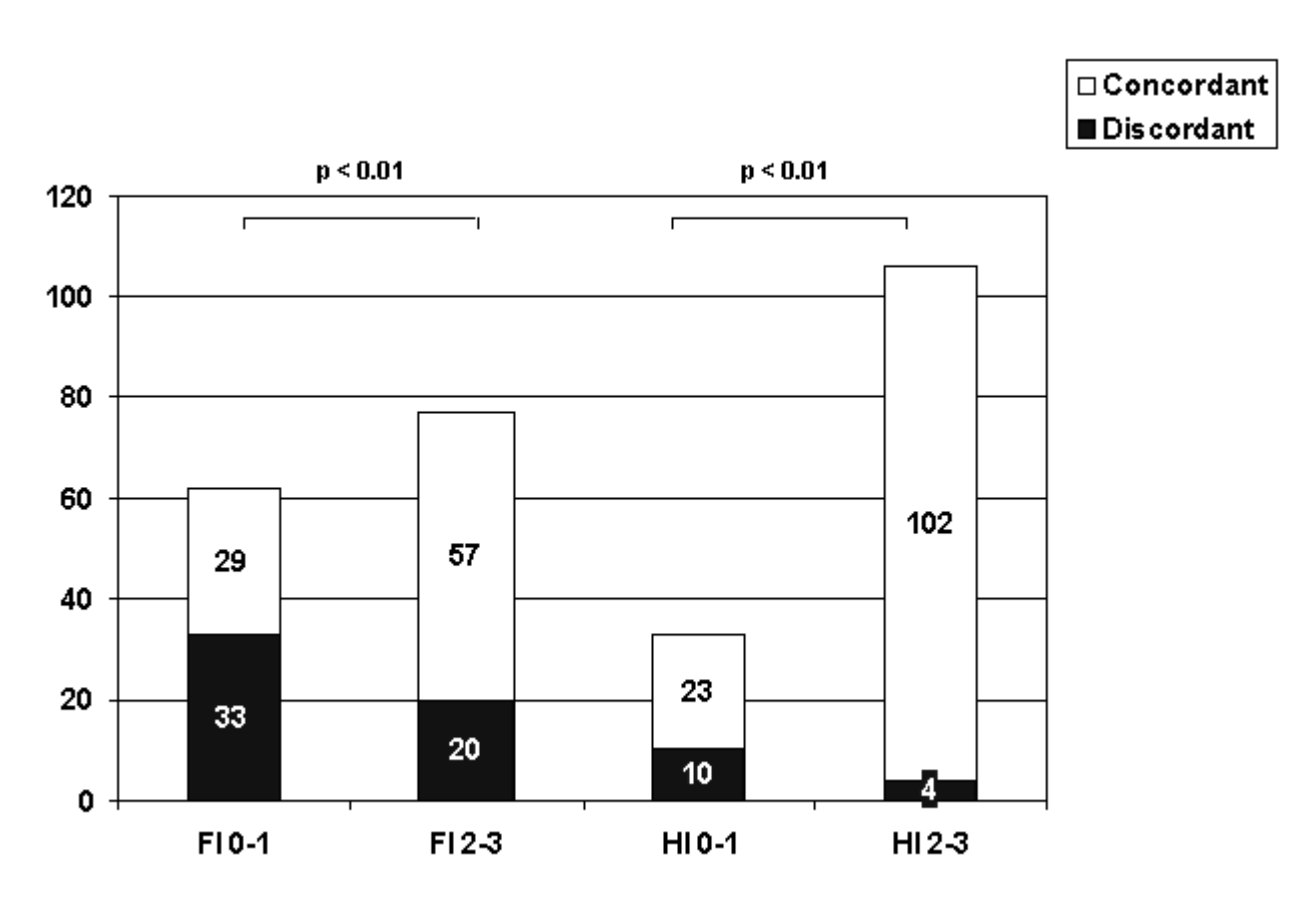
Sonda 3VS2
1.75 MHz

**TEE**




Sonda omniplana
5-7 MHz

# RISULTATI
## Accuratezza diagnostica
## Concordanza con TEE



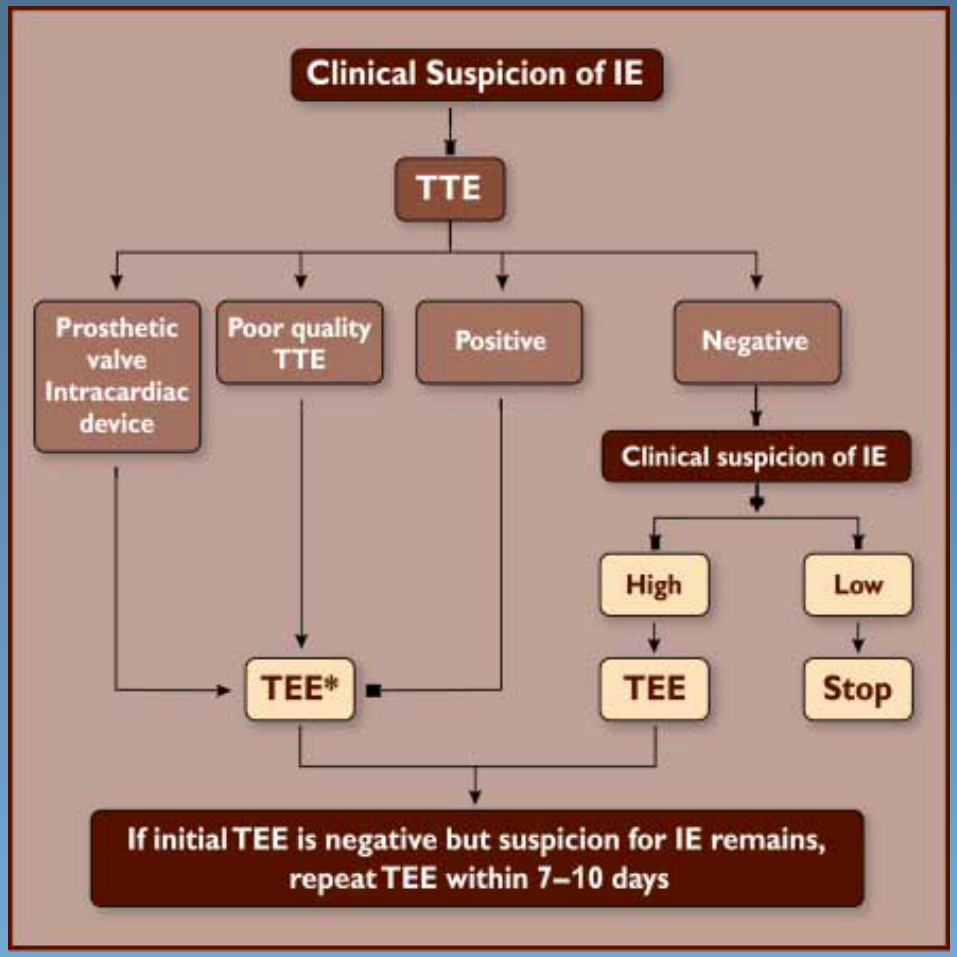

Chirillo F, et al. Heart 2005; 91: 329-33

European Heart Journal (2009) 30, 2369–2413
doi:10.1093/eurheartj/ehp285

ESC GUIDELINES

Guidelines on the prevention, diagnosis, and treatment of infective endocarditis (new version 2009)

# ESC Guidelines 2009



# Ecocardiografia transtoracica

- Specificità 98%, Sensibilità 60%
- Finestra acustica subottimale in circa il 15-20% degli adulti
- Identifica vegetazioni > 2.5-5.0 mm
- Bassa sensibilità (35%) per le EI su protesi
- Bassa sensibilità (28-43%) nella diagnosi di complicanze

# Ecocardiografia transesofagea

- Sensibilità 87-100%
- Specificità  95-98%
- Elevata sensibilità (87-100%) nella diagnosi di complicanze
- Superiore al TTE nella diagnosi di endocardite su protesi (sensibilità >80%)

# Eco nel sospetto di endocardite

- ✓Accesso libero al minimo sospetto diagnostico o selezione dei pazienti ?
- ✓Chi seleziona i pazienti ?
- ✓In che tempi eseguire l'esame ?
- ✓Come eseguire l'esame ?

Come interpretare i dati ?

Cosa fare in caso di eco negativo ed alto sospetto clinico?

# ENDOCARDITE INFETTIVA
# CAPOSALDI DELLA DIAGNOSI

## Clinica

Sospetto diagnostico
Congruenza informazioni
Scelta terapeutica
Valutazione efficacia terapia

## Microbiologia

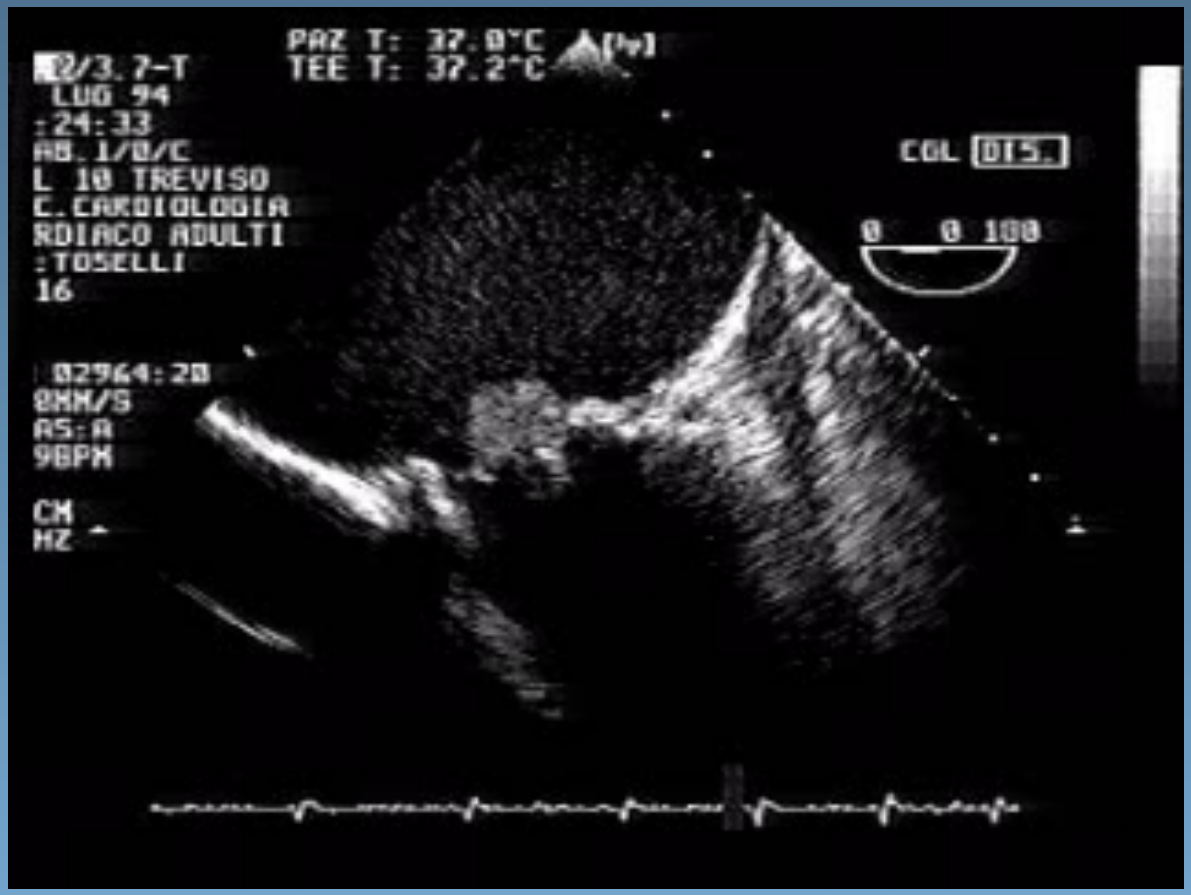
Emocolture
Sierologia
PCR

## Ecocardiografia

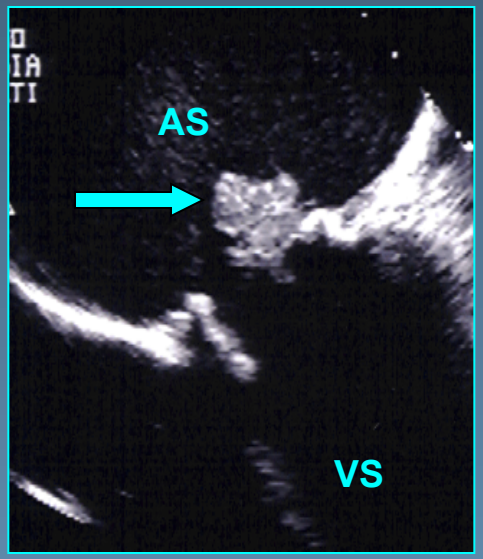
Transtoracica
Transesofagea
Tridimensionale

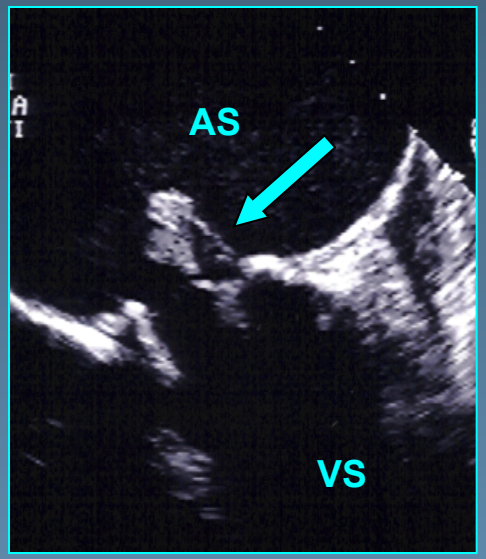
M, 72 anni, bioprotesi HCK 29 mitralica. EC + per Candida Albicans.Defedato dopo lunga permanenza in TI per pancreatite. Ascesso splenico

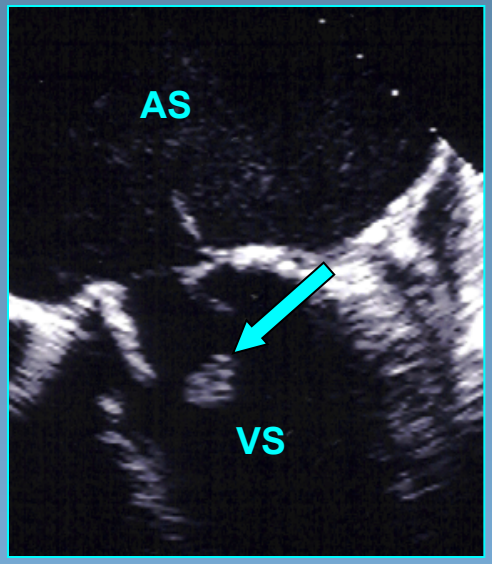
M, 72 anni, bioprotesi HCK 29 mitralica. EC + per Candida Albicans.Defedato dopo lunga permanenza in TI per pancreatite. Ascesso splenico

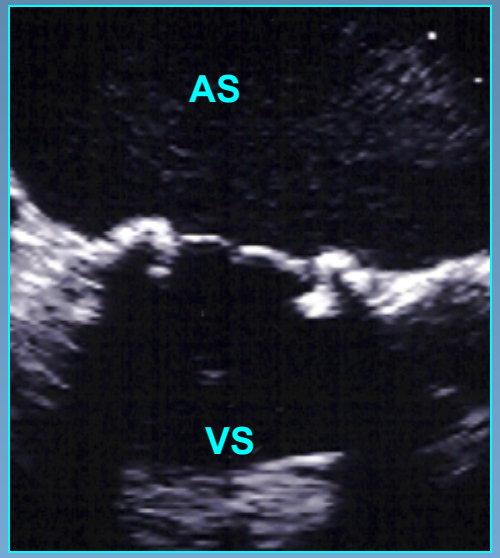


# ENDOCARDITE SU PROTESI MITRALICA



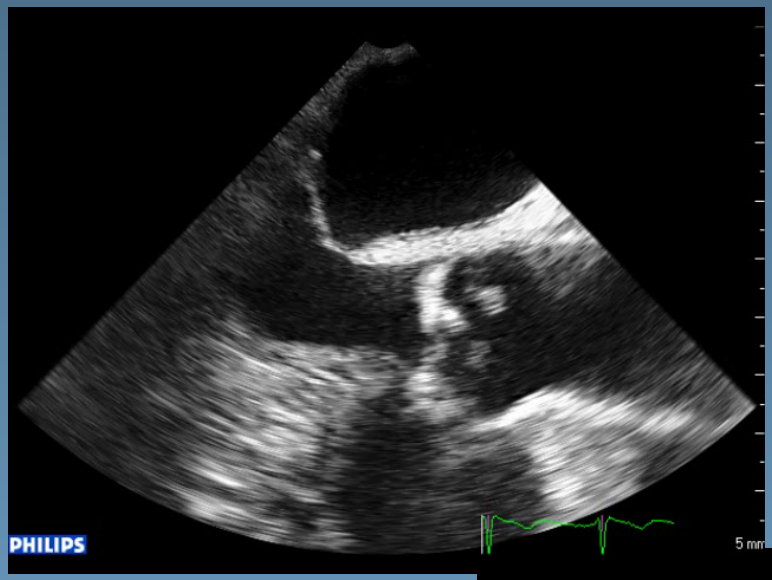



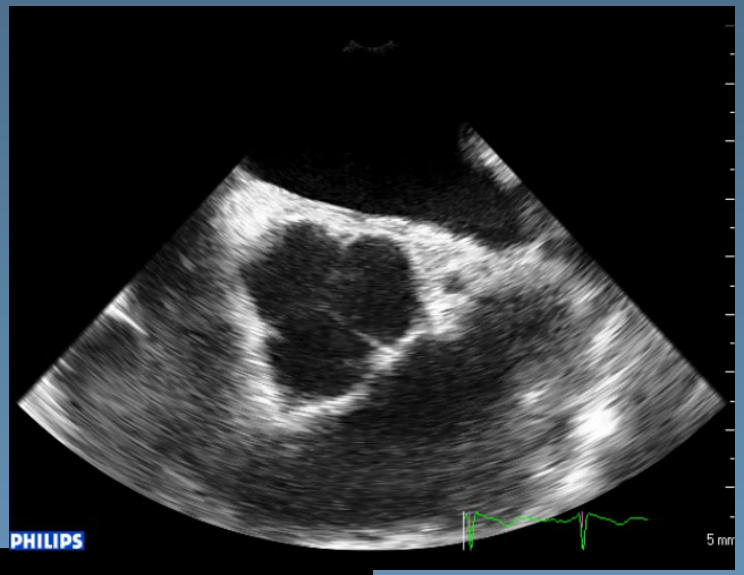



# CONCORDANZA DATI CLINICI - ECOCARDIOGRAFIA

CM, F, 61 anni, fumatrice. Tosse e febbricola da 1 mese



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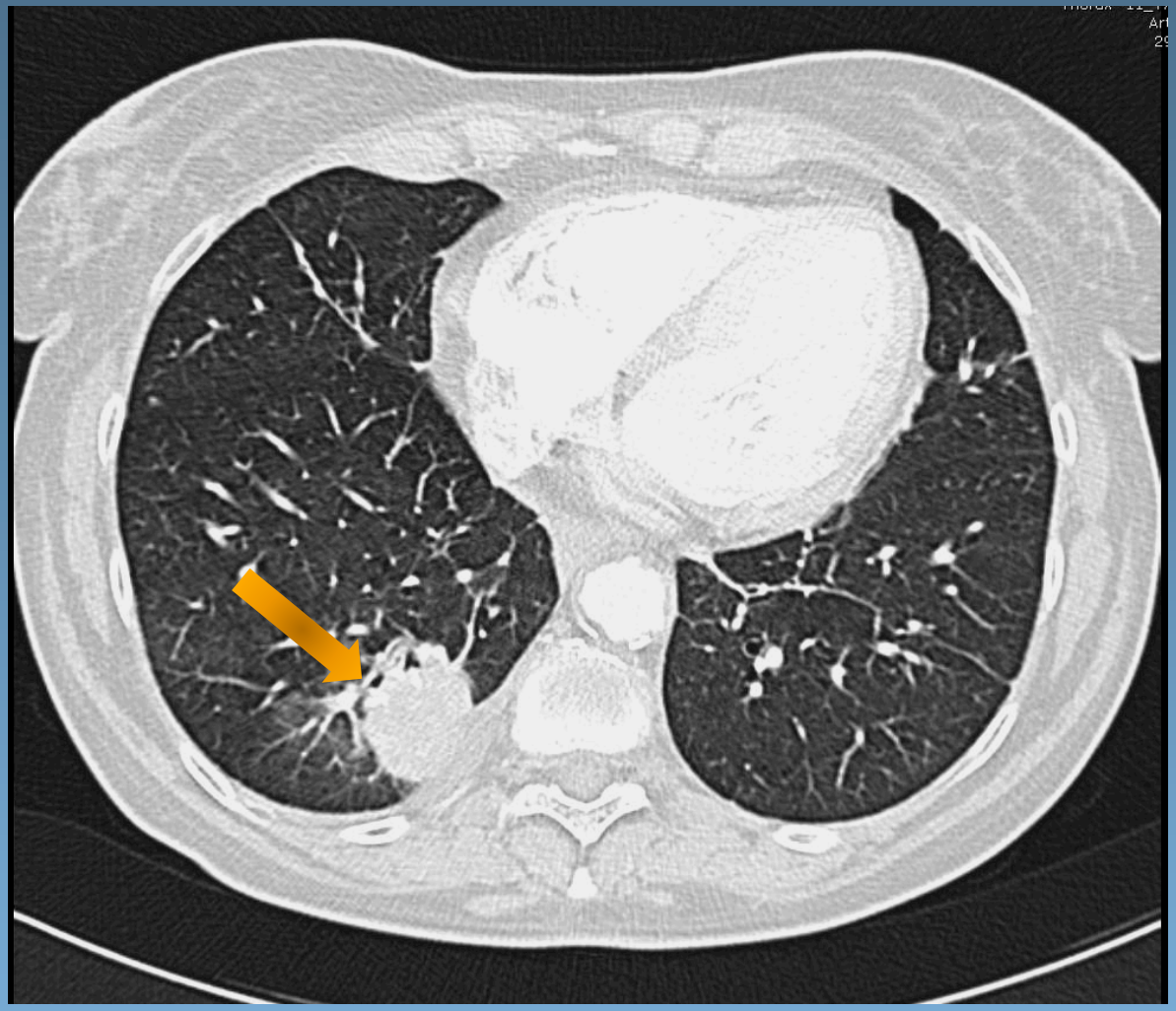

# Eco nel sospetto di endocardite

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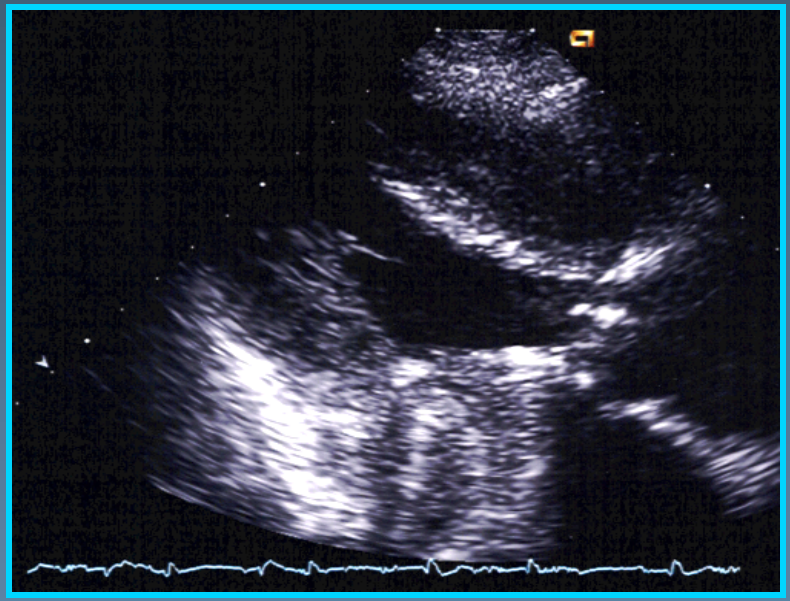
Cosa fare in caso di eco negativo ed alto sospetto clinico?

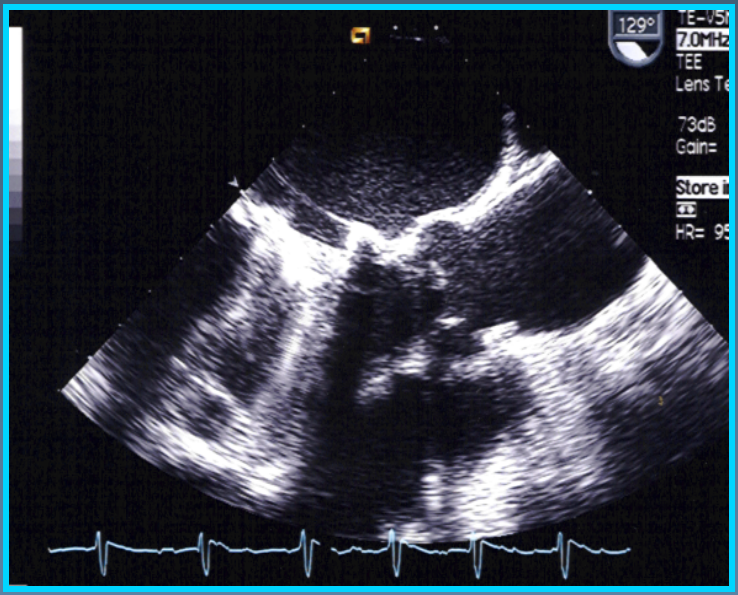
# RIPETIZIONE DELL' ECOCARDIOGRAMMA

1) TEE negativo possiede VPN attorno al 90%

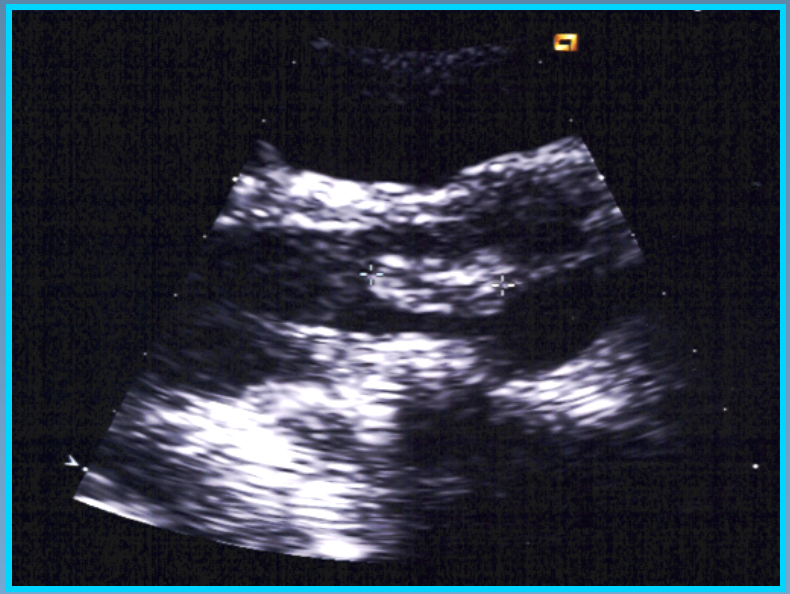
2) reTEE negativo possiede VPN attorno al 95%

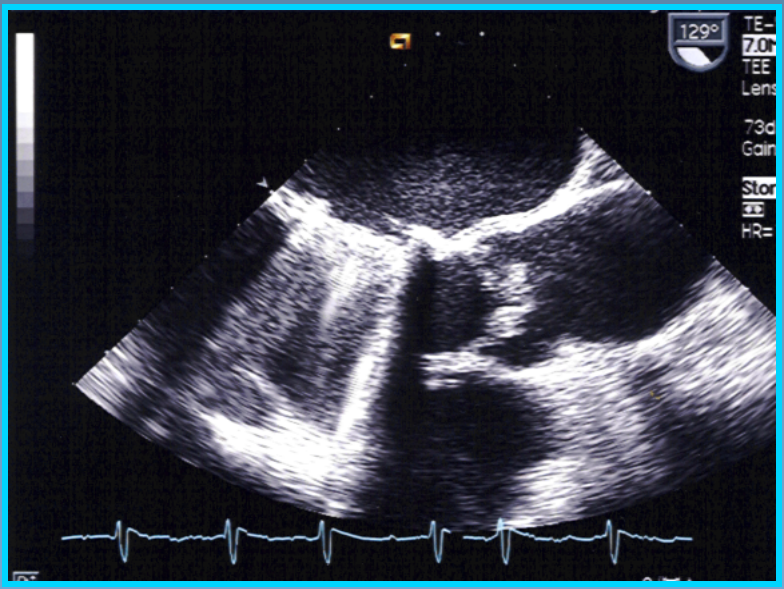
## INTERVALLO ?






Ricovero






10 gg dopo

# $^{18}$ FDG- PET/CT

| Vantaggi | Svantaggi |
|---|---|
| Non-invasiva | Dose radiante (CT) |
| Emivita del $^{18}$FDG 110 min | Costi |
| Tempo dell'esame (2 ore) | Disponibilità |
| Eccellente risoluzione spaziale e di contrasto | Falsi + Recente CCH |
| Fonti alternative di infezione Infezioni metastatiche | Falsi – Vegetazioni piccole, riduzione del grado di infiammazione |
| Valida nelle infezioni di device elettrostimolazione e protesi valvolari | Artefatti alla CT da cavi ICD |
| | Mancanza di validazione su ampia scala |

# Patients

Chirillo F, et al. AHA Scientific Sessions 2014

- 148 consecutive patients with suspected IE (October 2012 - April 2014)
- Prospectively collected data
- Computerized database
- TTE/TEE
- ≥ 3 blood cultures

**45 patients with discrepant clinical evaluation/ TEE/ Blood cultures at presentation**

- **38 Negative/ inconclusive TEE**
  - **24 Positive BC**
  - **7 Embolism**
- **10 Negative BC**
  - **5 Positive TEE**
  - **5 Inconclusive TEE**

# Echocardiography

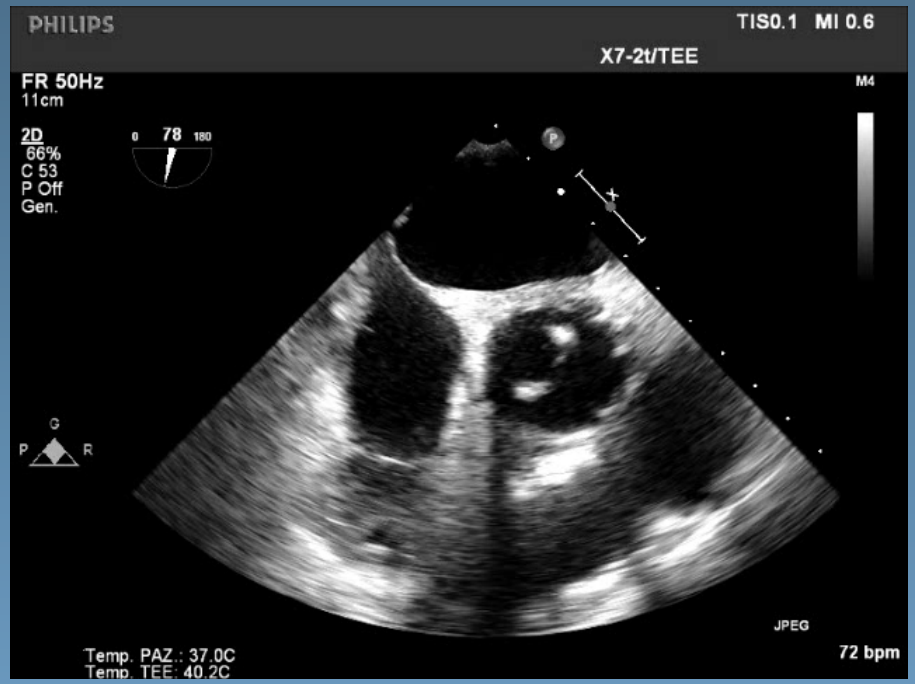
| Parameter | N (%) |
|---|---|
| | |
| Vegetations | 30 (67) |
| Periannular complications | 4 (9%) |
| New partial dehiscence | 3 (7) |
| Initial regurgitation ≥ 2+/4 | 16 (35) |
| LVEF < 0.45 | 18 (40) |

In 6 patients with inconclusive initial TEE, repeat TEE following $^{18}$FDG PET/CT demonstrated periannular abscess

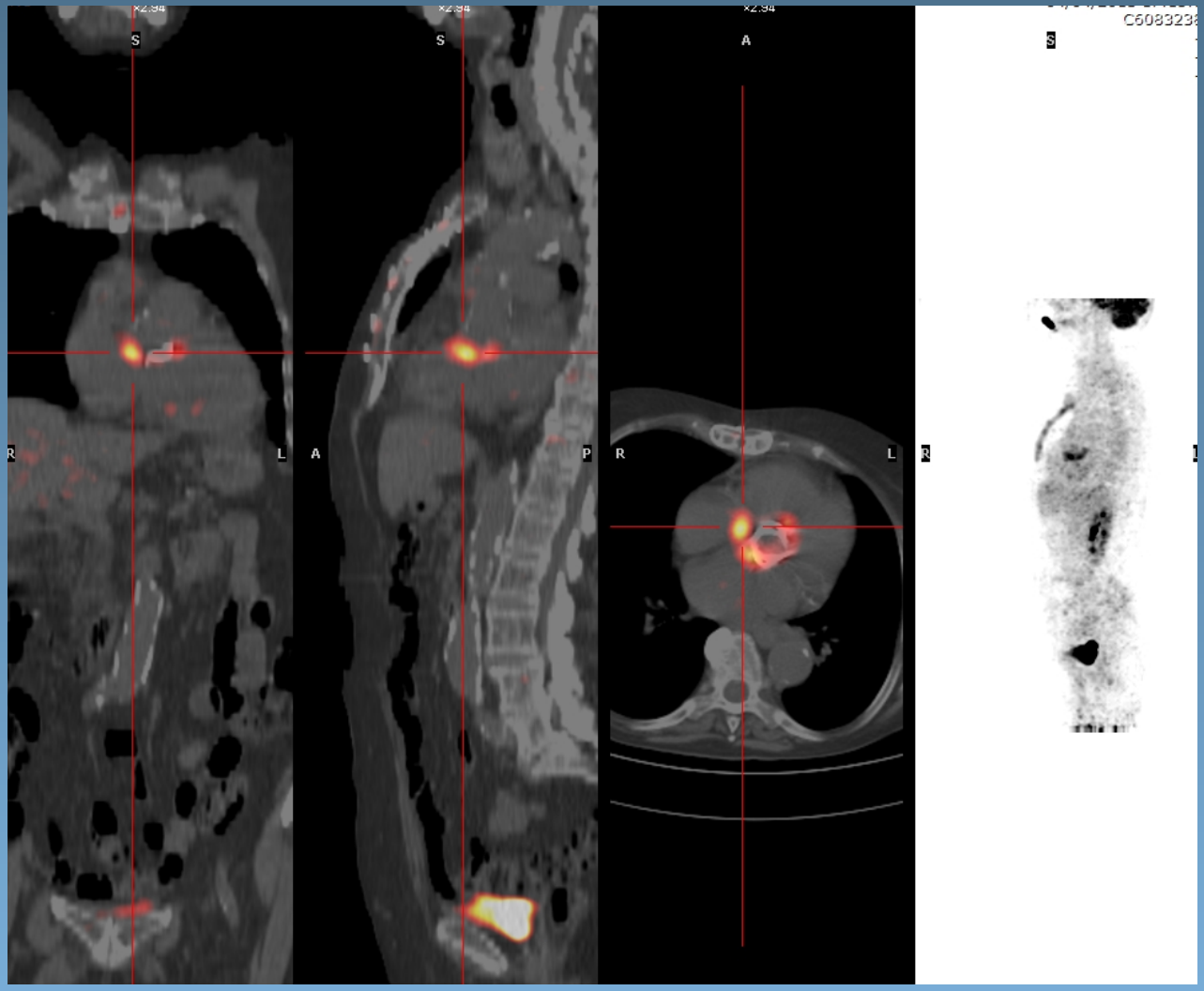
Chirillo F, et al. AHA Scientific Sessions 2014

F, 81 aa, Pregressa sostituzione valvolare aortica. Da un mese febbre e perdita di peso.

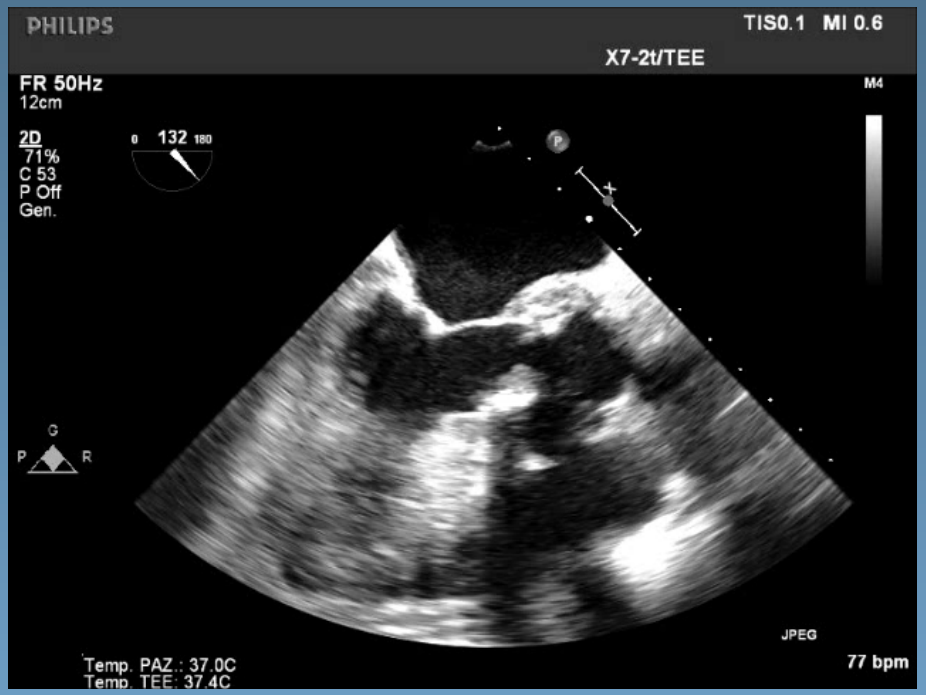
# TEE 01/04/2013

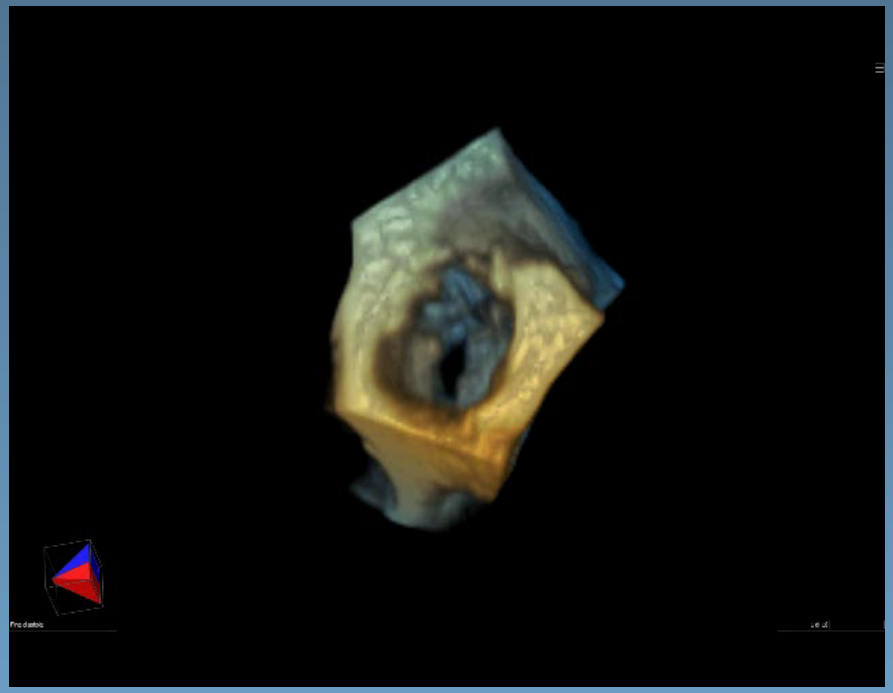


# $^{18}$FDG PET/CT imaging
## 03/04/2013

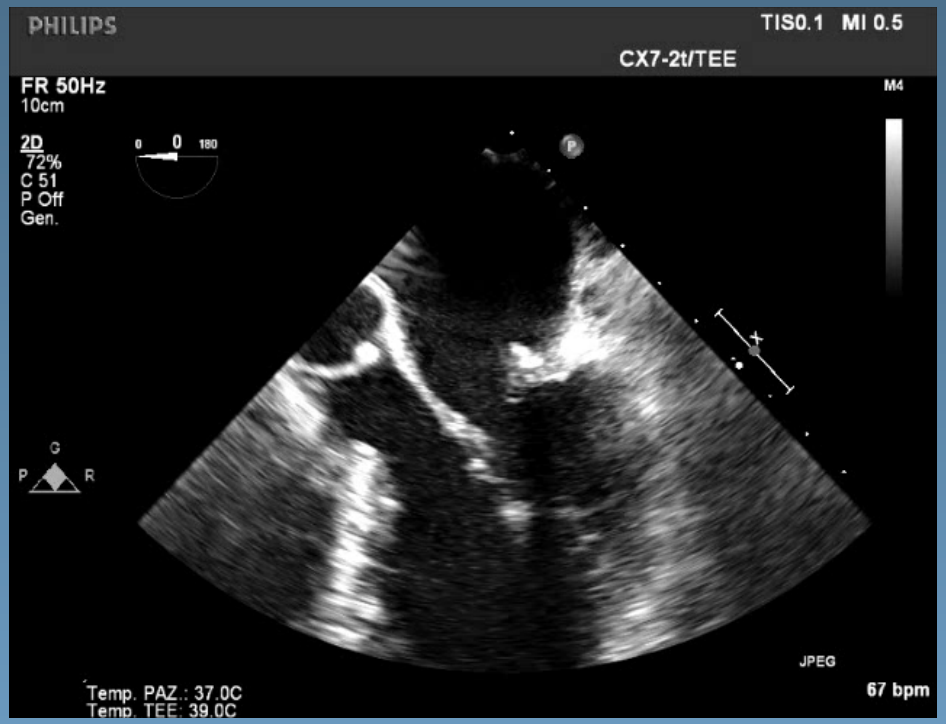


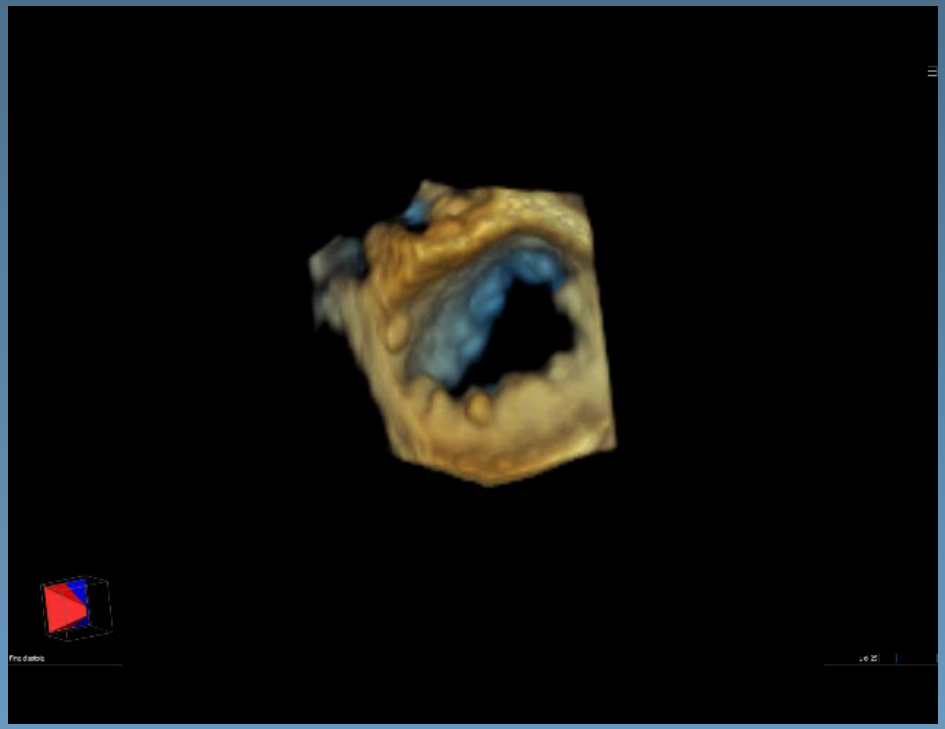
# Secondo TEE 11/04/2013



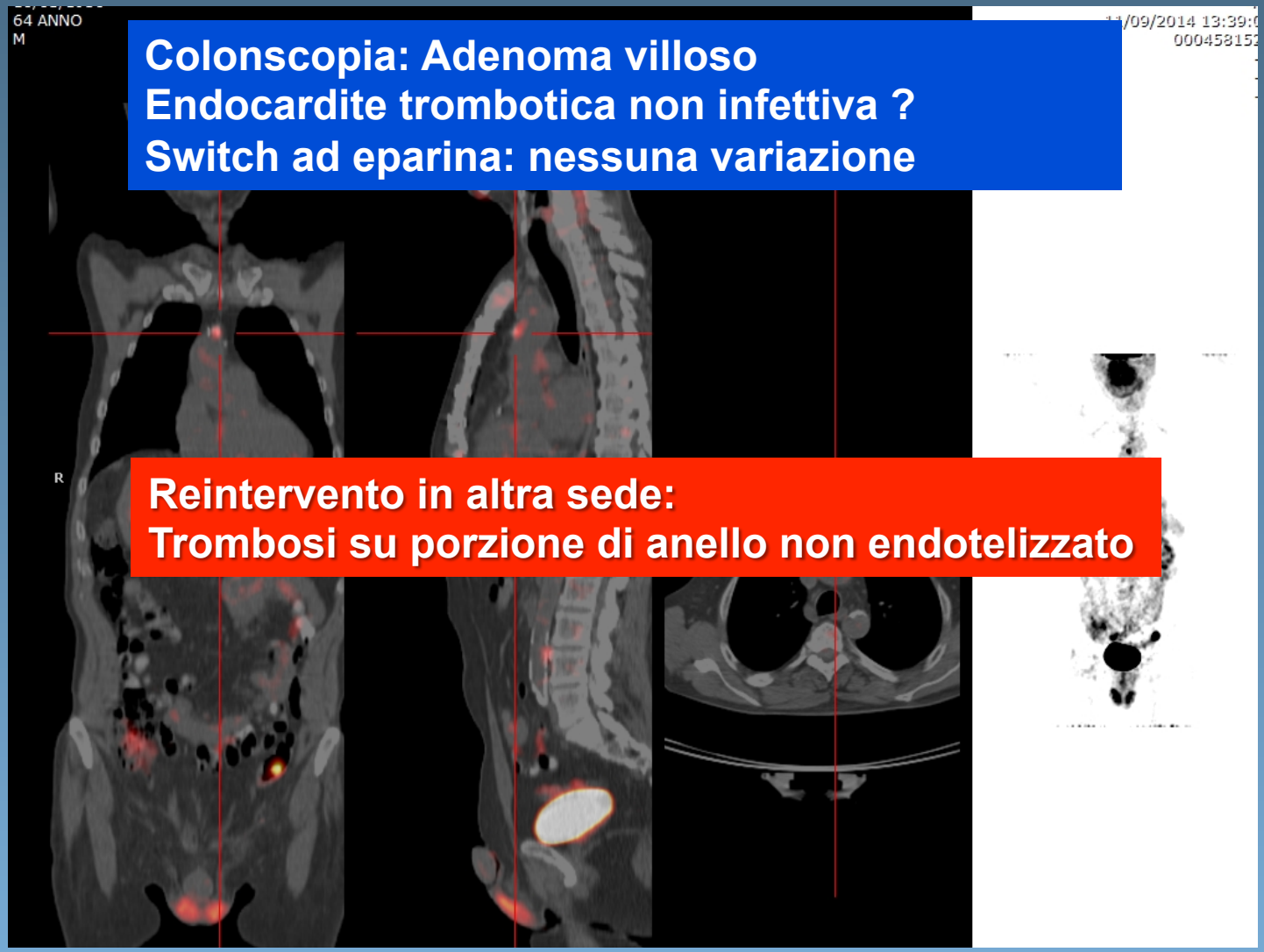



M, 64 aa. Recente plastica mitralica. Riscontro eco casuale di massa mitralica durante riabilitazione. Mai febbre. GB e PCR nella norma. Emocolture sempre negative. INR sempre in range. Mai trattamento antibiotico.



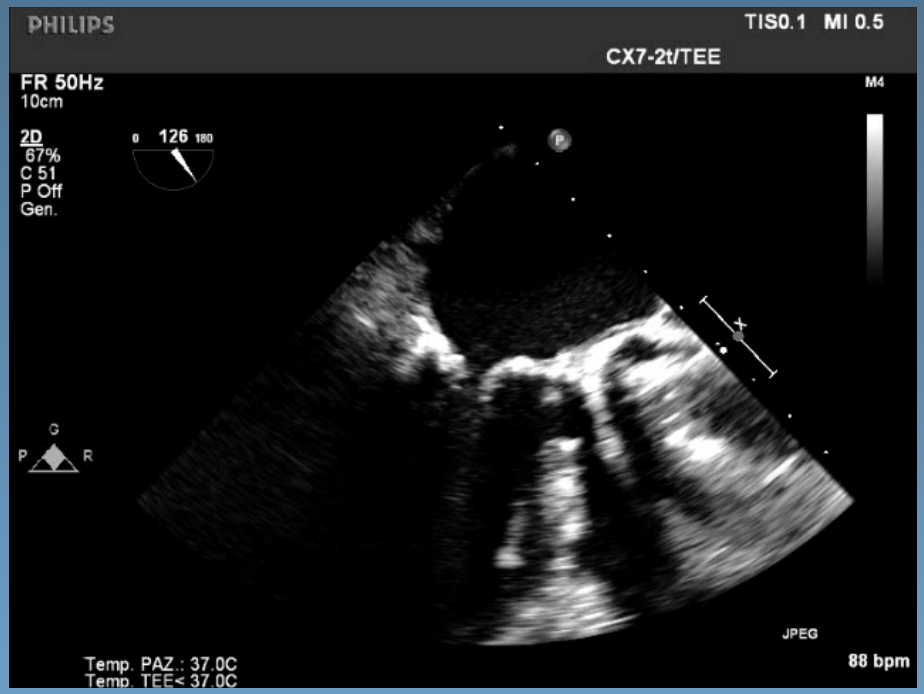
# $^{18}$FDG - PET/CT

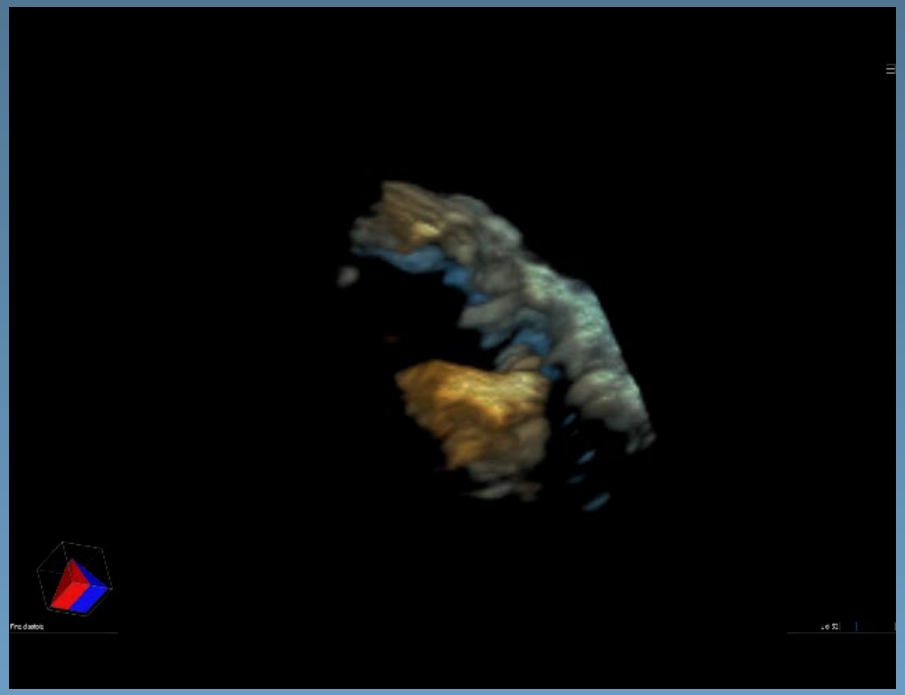


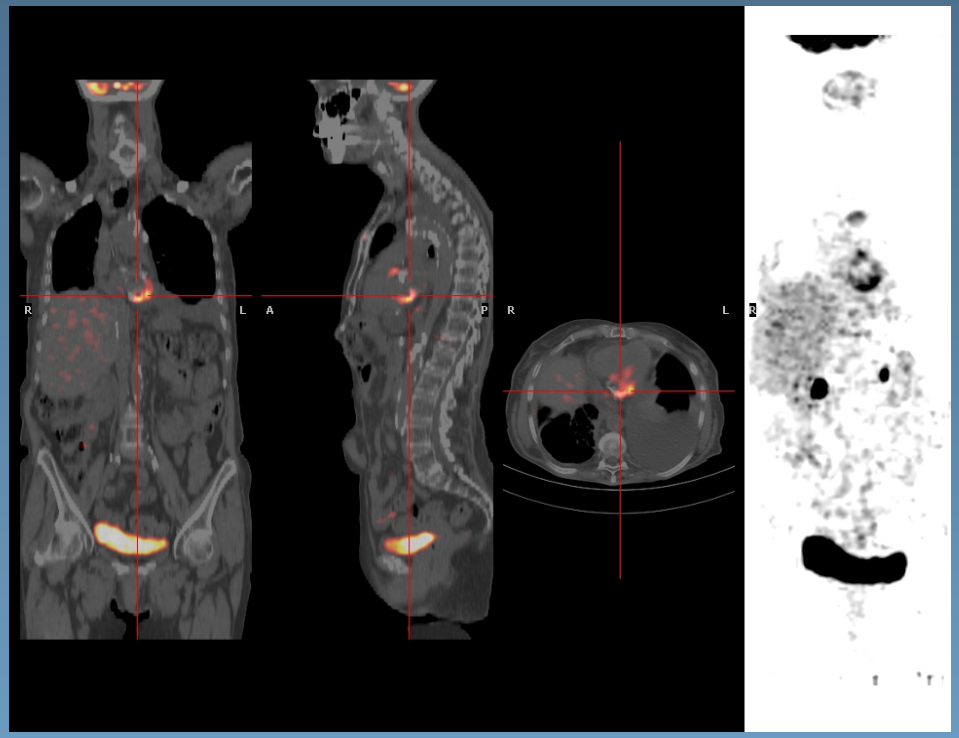

**Colonscopia: Adenoma villoso**
**Endocardite trombotica non infettiva ?**
**Switch ad eparina: nessuna variazione**

**Reintervento in altra sede:**
**Trombosi su porzione di anello non endotelizzato**

F 72 aa. Stenosi aortica serrata sintomatica. TAVI (pregressa irradiazione toracica per LNH, colangiti recidivanti, versamento pleurico sinistro cronico). Febbre due mesi dopo la procedura. Emocolture ripetutamente negative.

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-559.50
P
Fused Transaxials
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# Concordance between TEE and $^{18}$FDG PET/CT in 28 patients with definite IE on CIED and Prosthetic valve

| $^{18}$FDG PET/CT | TEE at admission | |
|---|---|---|
| | + | - |
| + | 14 | 7 |
| - | 7 | 0 |

Chirillo F, et al. AHA Scientific Sessions 2014

# CONCLUSIONI

- Selezione dei pazienti da sottoporre ad eco nel sospetto di EI
- Ruolo dell'infettivologo
- "Fast track" echocardiography (ETT/ETE)
- Un eco completamente negativo non esclude la EI
- Ripetizione dell'esame
- Ruolo della $^{18}$ FDG PET/CT
- Integrazione e corrispondenza con dati clinici e microbiologici