



Hospices  
Civils de  
Lyon



## 2015 ESC Guidelines for the management of infective endocarditis “*Surgical Indications*”



***Cardiothoracic and Vascular Surgery Department***  
***Hôpital Louis Pradel***  
**LYON - France**



## INTRO



### Guidelines on Prevention, Diagnosis and Treatment of Infective Endocarditis Full Text

**2004**

The Task Force on Infective Endocarditis of the European Society of Cardiology

**37p 390 ref**

Task Force Members, Dieter Horstkotte, (Chairperson)\* (Germany), Ferenc Follath (Switzerland), Erno Gutschik (Denmark), Maria Lengyel (Hungary), Ali Oto (Turkey), Alain Pavie (France), Jordi Soler-Soler (Spain), Gaetano Thiene (Italy), Alexander von Graevenitz (Switzerland)



## RECO

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

**2009**

The Task Force on the Prevention, Diagnosis, and Treatment of Infective Endocarditis of the European Society of Cardiology (ESC)

Endorsed by the European Society of Clinical Microbiology and Infectious Diseases (ESCMID) and by the International Society of Chemotherapy (ISC) for Infection and Cancer

**44p 386 ref**

Authors/Task Force Members: Gilbert Habib (Chairperson) (France)\*, Bruno Hoern (France), Pilar Tornos (Spain), Franck Thuny (France), Bernard Prendergast (UK), Isidre Vilacosta (Spain), Philippe Moreillon (Switzerland),



## Case1

### 2015 ESC Guidelines for the management of infective endocarditis

**2015**

The Task Force for the Management of Infective Endocarditis of the European Society of Cardiology (ESC)

**54p 483 ref**

Endorsed by: European Association for Cardio-Thoracic Surgery (EACTS), the European Association of Nuclear Medicine (EANM)

Authors/Task Force Members: Gilbert Habib\* (Chairperson) (France), Patrizio Lancellotti\* (co-Chairperson) (Belgium), Manuel J. Antunes (Portugal), Maria Grazia Bongiorni (Italy), Jean-Paul Casalta (France), Francesco Del Zotti (Italy),



## Case2

## Conclusion

Recommandations de la Société française de cardiologie **SFC 2005** et la prise en charge des valvulopathies acquises et des dysfonctions de prothèse valvulaire

2006 Guidelines for the Management of Patients With Infective Endocarditis ACC/AHA 2006 Revise 1998  
EuroEcho 2010 the practice of echocardiography in infective endocarditis  
Gilbert Habib (France)\*, Luigi Badano (Italy), Ch...

2014 AHA/ACC Guideline for the Management of Patients With Valvular Heart Disease: Executive Summary  
A Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines  
Working Party on Valvular Disease and Antibiotic Chemotherapy  
British 2012

Infective Endocarditis in Adults: Diagnosis, Antimicrobial Therapy, and Management of Complications  
A Scientific Statement for Healthcare Professionals from the American Heart Association  
2015 AHA  
Endorsed by the Infectious Diseases Society of America

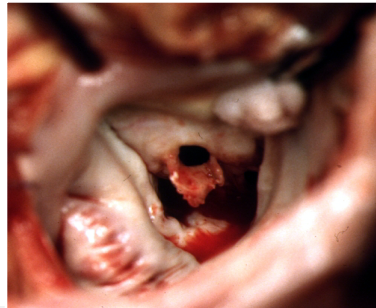




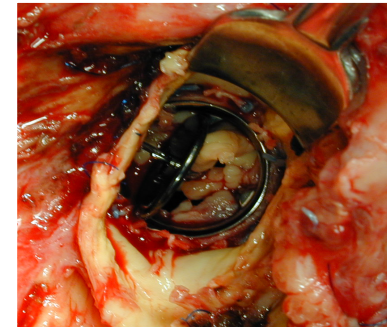
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Task Force Members, Dieter Horstkotte, (Chairperson)\* (Germany), Ferenc Follath (Switzerland), Erno Gutschik (Denmark), Maria Lengyel (Hungary), Ali Oto (Turkey), Alain Pavie (France), Jordi Soler-Soler (Spain), Gaetano Thiene (Italy), Alexander von Graevenitz (Switzerland)



# 2004



### Case1

**Table 11** Complications where surgery should be considered during active NVE

- Acute aortic or mitral regurgitation and CHF
- Evidence of perivalvular extension (locally uncontrolled infection)
- Persistent infection after 7–10 days of adequate antibiotic therapy
- Infection due to microorganisms with a poor response to antibiotic treatment (fungi, *Brucella spp.*, *Coxiella spp.*, *Staphylococcus lugdunensis*, enterococcus ssp. with high-level resistance to gentamicin, gram-negative organisms)
- Mobile vegetation >10 mm size before or during the first week of antibiotic treatment
- Recurrent emboli despite appropriate antibiotic therapy
- Obstructive vegetations

### Case2

**Table 12** Complications where surgery should be considered during active PVE

- Early PVE
- Haemodynamically significant prosthetic valve malfunction
- Evidence of perivalvular extension
- Persistent infection after 7–10 days of adequate antibiotic therapy
- Recurrent emboli despite appropriate antibiotic therapy
- Infections due to microorganisms with a poor response to antibiotic treatment
- Obstructive vegetations

### Conclusion



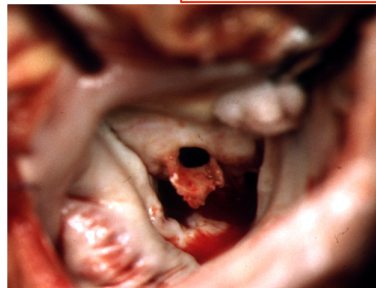


## Guidelines on the prevention, diagnosis, and treatment of infective endocarditis (new version 2009)

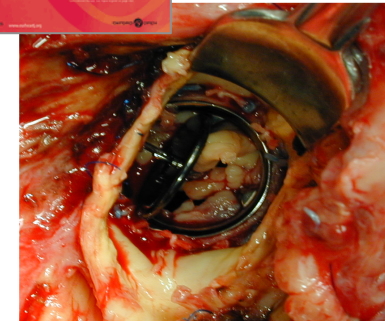
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**2009**  
**Emergency < 24h**  
**Urgent < 7j**  
**Elective → hospit**



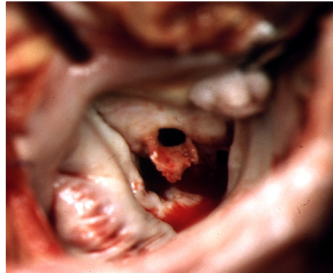
**Table 19** Indications and timing of surgery in left-sided native valve infective endocarditis

Recommendations: Indications for surgery	Timing*	Class <sup>a</sup>	Level <sup>b</sup>
<b>A - HEART FAILURE</b>			
Aortic or mitral IE with severe acute regurgitation or valve obstruction causing refractory pulmonary oedema or cardiogenic shock	Emergency	I	B
Aortic or mitral IE with fistula into a cardiac chamber or pericardium causing refractory pulmonary oedema or shock	Emergency	I	B
Aortic or mitral IE with severe acute regurgitation or valve obstruction and persisting heart failure or echocardiographic signs of poor haemodynamic tolerance (early mitral closure or pulmonary hypertension)	Urgent	I	B
Aortic or mitral IE with severe regurgitation and no HF	Elective	IIa	B
<b>B - UNCONTROLLED INFECTION</b>			
Locally uncontrolled infection (abscess, false aneurysm, fistula, enlarging vegetation)	Urgent	I	B
Persisting fever and positive blood cultures > 7–10 days	Urgent	I	B
Infection caused by fungi or multiresistant organisms	Urgent/elective	I	B
<b>C - PREVENTION OF EMBOLISM</b>			
Aortic or mitral IE with large vegetations (> 10 mm) following one or more embolic episodes despite appropriate antibiotic therapy	Urgent	I	B
Aortic or mitral IE with large vegetations (> 10 mm) and other predictors of complicated course (heart failure, persistent infection, abscess)	Urgent	I	C
Isolated very large vegetations (> 15 mm) <sup>a</sup>	Urgent	IIb	C

**Table 23** Indications and timing of surgery in prosthetic valve infective endocarditis (PVE)

Indications for surgery in PVE	Timing*	Class <sup>a</sup>	Level <sup>b</sup>
<b>A - HEART FAILURE</b>			
PVE with severe prosthetic dysfunction (dehiscence or obstruction) causing refractory pulmonary oedema or cardiogenic shock	Emergency	I	B
PVE with fistula into a cardiac chamber or pericardium causing refractory pulmonary oedema or shock	Emergency	I	B
PVE with severe prosthetic dysfunction and persisting heart failure	Urgent	I	B
Severe prosthetic dehiscence without HF	Elective	I	B
<b>B - UNCONTROLLED INFECTION</b>			
Locally uncontrolled infection (abscess, false aneurysm, fistula, enlarging vegetation)	Urgent	I	B
PVE caused by fungi or multiresistant organisms	Urgent/elective	I	B
PVE with persisting fever and positive blood cultures > 7–10 days	Urgent	I	B
PVE caused by staphylococci or gram negative bacteria (most cases of early PVE)	Urgent/elective	IIa	C
<b>C - PREVENTION OF EMBOLISM</b>			
PVE with recurrent emboli despite appropriate antibiotic treatment	Urgent	I	B
PVE with large vegetations (> 10 mm) and other predictors of complicated course (heart failure, persistent infection, abscess)	Urgent	I	C
PVE with isolated very large vegetations (> 15 mm)	Urgent	IIb	C



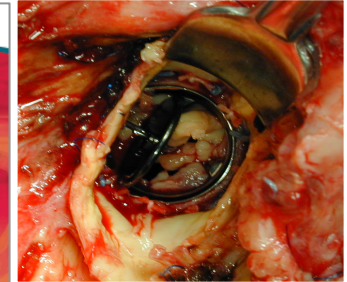


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**Table 22** Indications and timing of surgery in **I** prosthetic valve endocarditis)

**2015**

**II** native infective endocarditis (native valve endocarditis and

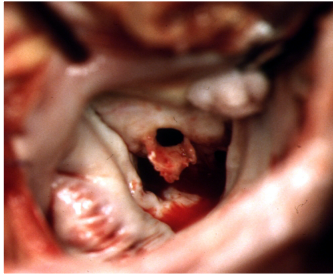
Indications for surgery	Timing <sup>a</sup>	Class <sup>b</sup>	Level <sup>c</sup>	Ref. <sup>d</sup>
<b>1. Heart failure</b>				
Aortic or mitral NVE or PVE with severe acute regurgitation, obstruction or fistula causing refractory pulmonary oedema or cardiogenic shock	Emergency	I	B	111,115, 213,216
Aortic or mitral NVE or PVE with severe regurgitation or obstruction causing symptoms of HF or echocardiographic signs of poor haemodynamic tolerance	Urgent	I	B	37,115, 209,216, 220,221
<b>2. Uncontrolled infection</b>				
Locally uncontrolled infection (abscess, false aneurysm, fistula, enlarging vegetation)	Urgent	I	B	37,209, 216
Infection caused by fungi or multiresistant organisms	Urgent/elective	I	C	
Persisting positive blood cultures despite appropriate antibiotic therapy and adequate control of septic metastatic foci	Urgent	IIa	B	123
PVE caused by staphylococci or non-HACEK gram-negative bacteria	Urgent/elective	IIa	C	
<b>3. Prevention of embolism</b>				
Aortic or mitral NVE or PVE with persistent vegetations > 10 mm after one or more embolic episode despite appropriate antibiotic therapy	Urgent	I	B	9,58,72, 113,222
Aortic or mitral NVE with vegetations > 10 mm, associated with severe valve stenosis or regurgitation, and low operative risk	Urgent	IIa	B	9
Aortic or mitral NVE or PVE with isolated very large vegetations (> 30 mm)	Urgent	IIa	B	113
Aortic or mitral NVE or PVE with isolated large vegetations (> 15 mm) and no other indication for surgery <sup>e</sup>	Urgent	IIb	C	

Case1

Case2

Conclusion



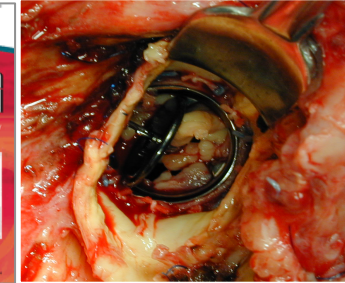


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### 1. Heart failure

2015

Aortic or mitral NVE or PVE with severe acute regurgitation, obstruction or fistula causing refractory pulmonary oedema or cardiogenic shock

Emergency

I

B

111,115,  
213,216

Aortic or mitral NVE or PVE with severe regurgitation or obstruction causing symptoms of HF or echocardiographic signs of poor haemodynamic tolerance

Urgent

I

B

37,115,  
209,216,  
220,221

Case1

Aortic or mitral IE with severe acute regurgitation or valve obstruction causing refractory pulmonary oedema or cardiogenic shock

Emergency

I

B

Aortic or mitral IE with fistula into a cardiac chamber or pericardium causing refractory pulmonary oedema or shock

Emergency

I

B

Aortic or mitral IE with severe acute regurgitation or valve obstruction and persisting heart failure or echocardiographic signs of poor haemodynamic tolerance (early mitral closure or pulmonary hypertension)

Urgent

I

B

Aortic or mitral IE with severe regurgitation and no HF

Elective

IIa

B

Native VE 2014

Case2

PVE with severe prosthetic dysfunction (dehiscence or obstruction) causing refractory pulmonary oedema or cardiogenic shock

Emergency

I

B

PVE with fistula into a cardiac chamber or pericardium causing refractory pulmonary oedema or shock

Emergency

I

B

PVE with severe prosthetic dysfunction and persisting heart failure

Urgent

I

B

Severe prosthetic dehiscence without HF

Elective

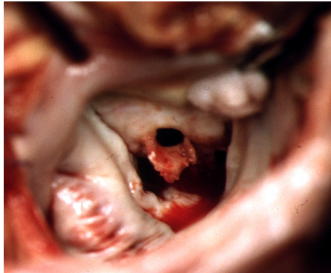
I

B

Prost.VE 2014

Conclusion



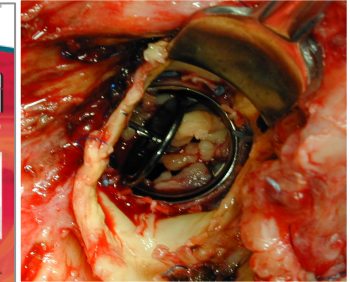


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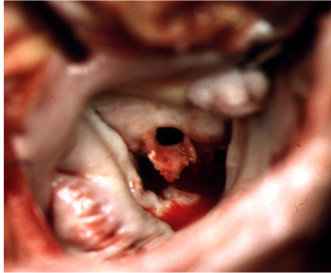
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2015				
2. Uncontrolled infection				
Locally uncontrolled infection (abscess, false aneurysm, fistula, enlarging vegetation)	Urgent	I	B	37,209, 216
Infection caused by fungi or multiresistant organisms	Urgent/elective	I	C	
Persisting positive blood cultures despite appropriate antibiotic therapy and adequate control of septic metastatic foci	Urgent	IIa	B	123
PVE caused by staphylococci or non-HACEK gram-negative bacteria	Urgent/elective	IIa	C	

Locally uncontrolled infection (abscess, false aneurysm, fistula, enlarging vegetation)	Urgent	I	B	
Persisting fever and positive blood cultures > 7–10 days	Urgent	I		Native VE 2014
Infection caused by fungi or multiresistant organisms	Urgent/elective	I	B	

Locally uncontrolled infection (abscess, false aneurysm, fistula, enlarging vegetation)	Urgent	I	B	Prost.VE 2014
PVE caused by fungi or multiresistant organisms	Urgent/elective	I	B	
PVE with persisting fever and positive blood cultures > 7–10 days	Urgent	I	B	
PVE caused by staphylococci or gram negative bacteria (most cases of early PVE)	Urgent/elective	IIa	C	

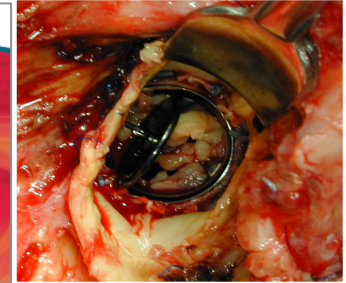


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### 3. Prevention of embolism

**2015**

Aortic or mitral NVE or PVE with persistent vegetations > 10 mm after one or more embolic episode despite appropriate antibiotic therapy

Urgent

**I**

**B**

9,58,72,  
113,222

Aortic or mitral NVE with vegetations > 10 mm, associated with severe valve stenosis or regurgitation, and low operative risk

Urgent

**IIa**

**B**

9

Aortic or mitral NVE or PVE with isolated very large vegetations (> 30 mm)

Urgent

**IIa**

**B**

113

Aortic or mitral NVE or PVE with isolated large vegetations (> 15 mm) and no other indication for surgery<sup>e</sup>

Urgent

**IIb**

**C**

Case1

Case2

Aortic or mitral IE with large vegetations (> 10 mm) following one or more embolic episodes despite appropriate antibiotic therapy

Urgent

**I**

**B**

Aortic or mitral IE with large vegetations (> 10 mm) and other predictors of complicated course (heart failure, persistent infection, abscess)

Urgent

**I**

**Native VE 2014**

Isolated very large vegetations (> 15 mm)<sup>ii</sup>

Urgent

**IIb**

**C**

PVE with recurrent emboli despite appropriate antibiotic treatment

Urgent

**I**

**B**

PVE with large vegetations (> 10 mm) and other predictors of complicated course (heart failure, persistent infection, abscess)

Urgent

**I**

**Prost. VE 2014**

PVE with isolated very large vegetations (> 15 mm)

Urgent

**IIb**

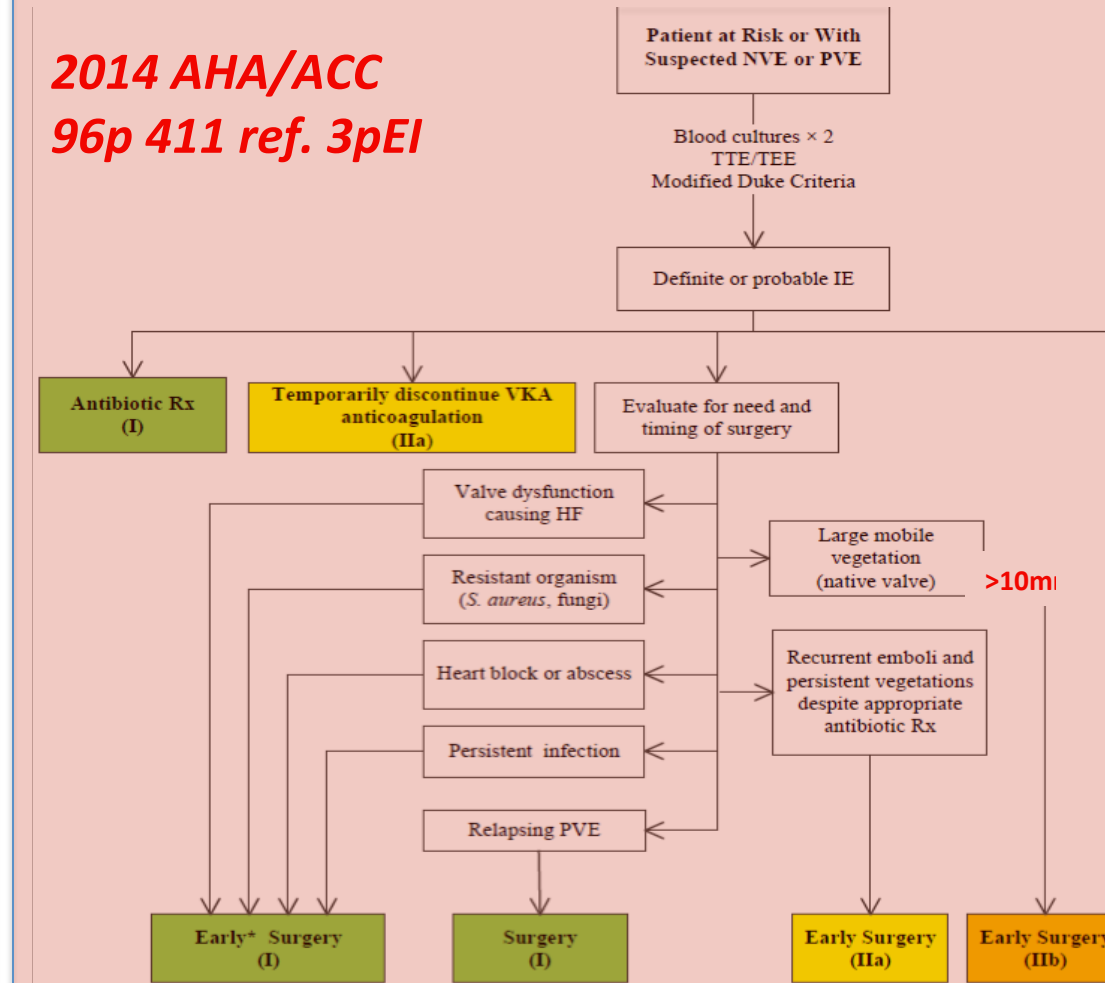
**C**

Conclusion



# 2014 AHA/ACC Guideline for the Management of Patients With Valvular Heart Disease: Executive Summary

**2014 AHA/ACC**  
**96p 411 ref. 3pEI**



**Infective Endocarditis in Adults: Diagnosis, Antimicrobial Therapy, and Management of Complications**  
A Scientific Statement for Healthcare Professionals From the American Heart Association

Endorsed by the Infectious Diseases Society of America

## Early Valve Surgery in Left-Sided NVE: Recommendations **2015 AHA/inf**

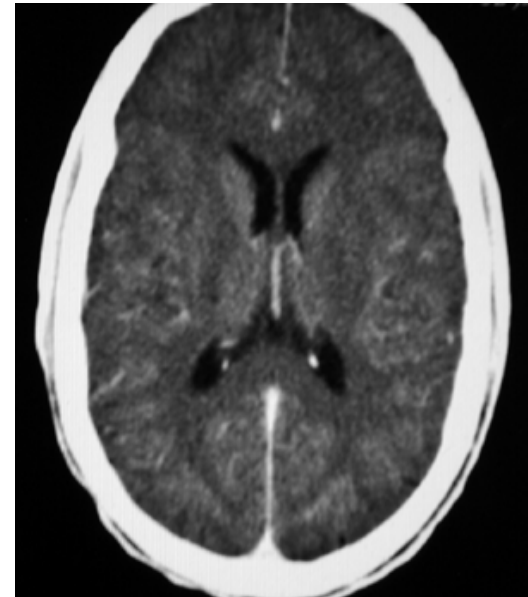
1. Early surgery (during initial hospitalization and before completion of a full course of antibiotics) is indicated in patients with IE who present with valve dysfunction resulting in symptoms or signs of heart failure (*Class I; Level of Evidence B*).
2. Early surgery should be considered particularly in patients with IE caused by fungi or highly resistant organisms (eg, vancomycin-resistant *Enterococcus*, multidrug-resistant Gram-negative bacilli) (*Class I; Level of Evidence B*).
3. Early surgery is indicated in patients with IE complicated by heart block, annular or aortic abscess, or destructive penetrating lesions (*Class I; Level of Evidence B*).
4. Early surgery is indicated for evidence of persistent infection (manifested by persistent bacteremia or fever lasting >5–7 days and provided that other sites of infection and fever have been excluded) after the start of appropriate antimicrobial therapy (*Class I; Level of Evidence B*).
5. Early surgery is reasonable in patients who present with recurrent emboli and persistent or enlarging vegetations despite appropriate antibiotic therapy (*Class IIa; Level of Evidence B*).
6. Early surgery is reasonable in patients with severe valve regurgitation and mobile vegetations >10 mm (*Class IIa, Level of Evidence B*).
7. Early surgery may be considered in patients with mobile vegetations >10 mm, particularly when involving the anterior leaflet of the mitral valve and associated with other relative indications for surgery (*Class IIb; Level of Evidence C*).



## – Homme 35 ans

- 1993 RVAo+RVM
- Décembre 2003
  - Syndrome grippal
- Janvier 2004
  - AIT
  - Végétations mit 12 mm
- Total Body Scan → RAS
- → ?

## Bilan Pré-opératoire



3. Prevention of embolism				
Aortic or mitral NVE or PVE with persistent vegetations >10 mm after one or more embolic episode despite appropriate antibiotic therapy	Urgent	I	B	9,58,72, 113,222
Aortic or mitral NVE with vegetations >10 mm, associated with severe valve stenosis or regurgitation, and low operative risk	Urgent	IIa	B	9
Aortic or mitral NVE or PVE with isolated very large vegetations (>30 mm)	Urgent	IIa	B	113
Aortic or mitral NVE or PVE with isolated large vegetations (>15 mm) and no other indication for surgery <sup>e</sup>	Urgent	IIb	C	



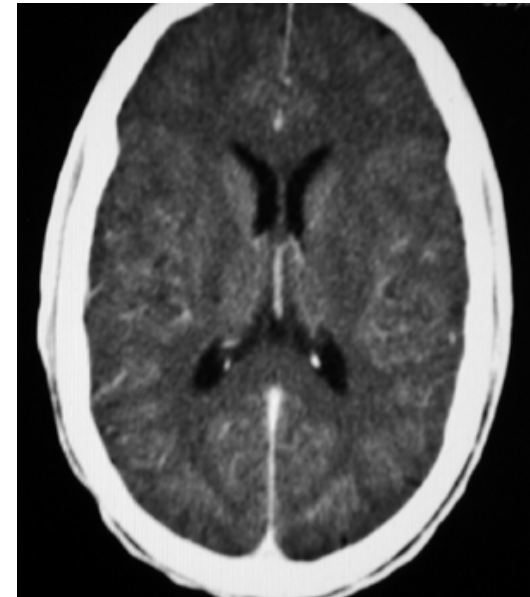


## – Homme 35 ans

- 1993 RVAo+RVM
- Décembre 2003
  - Syndrome grippal
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  - AIT
  - Végétations mit 12 mm
- Total Body Scan → RAS

• **RVAo + RVM**

## Bilan Pré-opératoire



### 3. Prevention of embolism

Aortic or mitral NVE or PVE with persistent vegetations >10 mm after one or more embolic episode despite appropriate antibiotic therapy	Urgent	I	B	9,58,72, 113,222
Aortic or mitral NVE with vegetations >10 mm, associated with severe valve stenosis or regurgitation, and low operative risk	Urgent	IIa	B	9
Aortic or mitral NVE or PVE with isolated very large vegetations (>30 mm)	Urgent	IIa	B	113
Aortic or mitral NVE or PVE with isolated large vegetations (>15 mm) and no other indication for surgery <sup>e</sup>	Urgent	IIb	C	



## – Homme 35 ans

- 1993 RVAo+RVM
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  - Végétations mit 12 mm
- Total Body Scan → RAS
- **RVAo + RVM**

**J5 → AVC → Coma**



### 3. Prevention of embolism

Aortic or mitral NVE or PVE with persistent vegetations >10 mm after one or more embolic episode despite appropriate antibiotic therapy	Urgent	<b>I</b>	<b>B</b>	9,58,72, 113,222
Aortic or mitral NVE with vegetations >10 mm, associated with severe valve stenosis or regurgitation, and low operative risk	Urgent	<b>IIa</b>	<b>B</b>	9
Aortic or mitral NVE or PVE with isolated very large vegetations (>30 mm)	Urgent	<b>IIa</b>	<b>B</b>	113
Aortic or mitral NVE or PVE with isolated large vegetations (>15 mm) and no other indication for surgery <sup>e</sup>	Urgent	<b>IIb</b>	<b>C</b>	





## Surgery after cerebral embolic events 2004

After manifestation of a cerebral embolism, cardiac surgery to prevent a recurrent episode is not contraindicated if performed early (best within 72 h)<sup>207,300,315,316</sup>

and cerebral haemorrhage has been excluded by cranial computed tomography (CCT) immediately before the operation. Although surgical results are best within the first 72 h of stroke, when the blood-brain barrier is not yet altered,<sup>207</sup> surgery should be considered in patients with focal deficits and severe heart failure, ongoing infection resistant to antibiotic therapy as long as CCT scans exclude a haemorrhagic lesion.<sup>316</sup>

**Table 20** Management of neurological complications

2009

Recommendations: neurological complications	Class <sup>a</sup>	Level <sup>b</sup>
After a silent cerebral embolism or transient ischaemic attack, surgery is recommended without delay if an indication remains	I	B
Following intracranial haemorrhage, surgery must be postponed for at least one month	I	C
Neurosurgery or endovascular therapy are indicated for very large, enlarging, or ruptured intracranial aneurysm	I	C
After a stroke, surgery indicated for heart failure, uncontrolled infection, abscess, or persistent high embolic risk should not be delayed. Surgery should be considered as long as coma is absent and cerebral haemorrhage has been excluded by cranial CT	IIa	B
Intracranial aneurysm should be looked for in any patient with IE and neurological symptoms - CT or MR angiography should be considered for diagnosis	IIa	B
Conventional angiography should be considered when non-invasive techniques are negative and the suspicion of intracranial aneurysm remains	IIa	B

**Table 23** Management of neurological complications of infective endocarditis

2015

Recommendations	Class <sup>a</sup>	Level <sup>b</sup>	Ref. <sup>c</sup>
After a silent embolism or transient ischaemic attack, cardiac surgery, if indicated, is recommended without delay	I	B	105, 263
Neurosurgery or endovascular therapy is recommended for very large, enlarging or ruptured intracranial infectious aneurysms	I	C	
Following intracranial haemorrhage, surgery should generally be postponed for $\geq 1$ month	IIa	B	264–266
After a stroke, surgery indicated for HF, uncontrolled infection, abscess, or persistent high embolic risk should be considered without any delay as long as coma is absent and the presence of cerebral haemorrhage has been excluded by cranial CT or MRI	IIa	B	9,263
Intracranial infectious aneurysms should be looked for in patients with IE and neurological symptoms. CT or MR angiography should be considered for diagnosis. If non-invasive techniques are negative and the suspicion of intracranial aneurysm remains, conventional angiography should be considered	IIa	B	267, 268



## Homme 48 ans

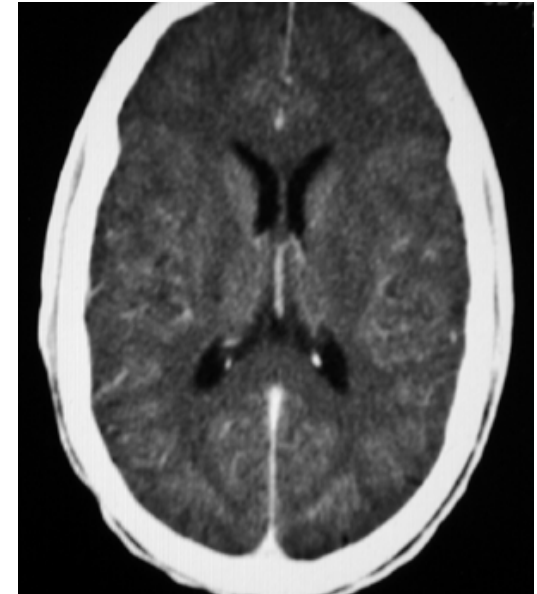
1991 EI mitrale à Strepto

Juillet 2009 → fébrile

4 Aout 2009 → Aphasie Transit

- EI à strepto mitis, IM modérée,
- Végét < 10mm
- Clamoxyl+Genta.

Scanner normal



### 3. Prevention of embolism

Aortic or mitral NVE or PVE with persistent vegetations >10 mm after one or more embolic episode despite appropriate antibiotic therapy	Urgent	I	B	9,58,72, 113,222
Aortic or mitral NVE with vegetations >10 mm, associated with severe valve stenosis or regurgitation, and low operative risk	Urgent	IIa	B	9
Aortic or mitral NVE or PVE with isolated very large vegetations (>30 mm)	Urgent	IIa	B	113
Aortic or mitral NVE or PVE with isolated large vegetations (>15 mm) and no other indication for surgery <sup>e</sup>	Urgent	IIb	C	





## Homme 48 ans

1991 EI mitrale à Strepto

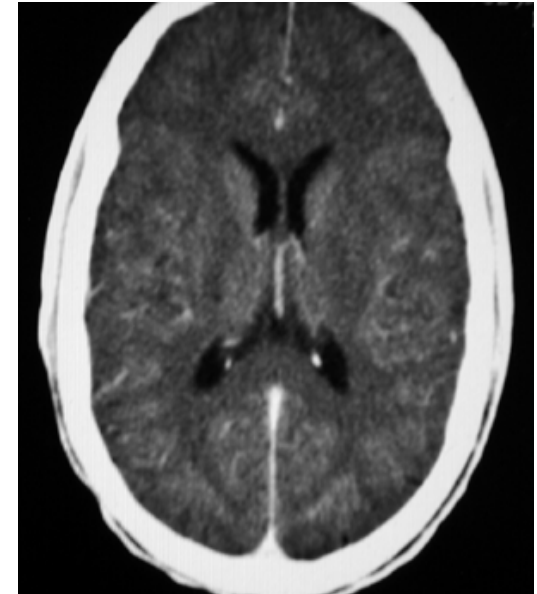
Juillet 2009 → fébrile

4 Aout 2009 → Aphasie Transit

- EI à strepto mitis, IM modérée,
- Végét < 10mm
- Clamoxyl+Genta.

8 Août → Récidive Troubles phasiques

Scanner normal



### 3. Prevention of embolism

Aortic or mitral NVE or PVE with persistent vegetations >10 mm after one or more embolic episode despite appropriate antibiotic therapy

Urgent

I

B

9,58,72,  
113,222

Aortic or mitral NVE with vegetations >10 mm, associated with severe valve stenosis or regurgitation, and low operative risk

Urgent

IIa

B

9

Aortic or mitral NVE or PVE with isolated very large vegetations (>30 mm)

Urgent

IIa

B

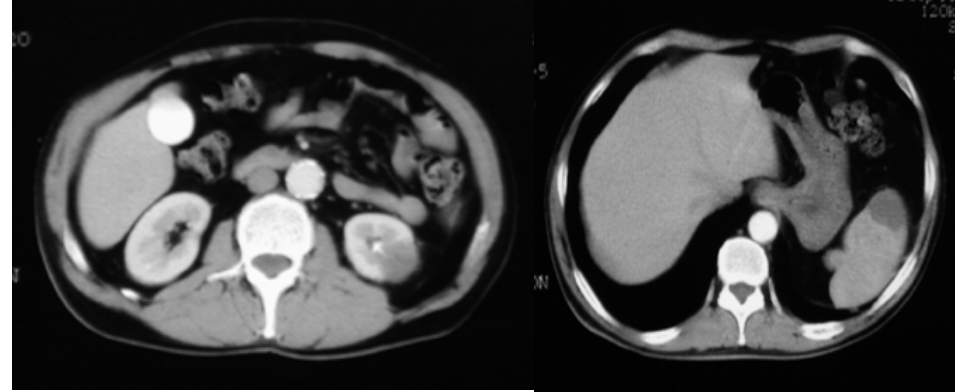
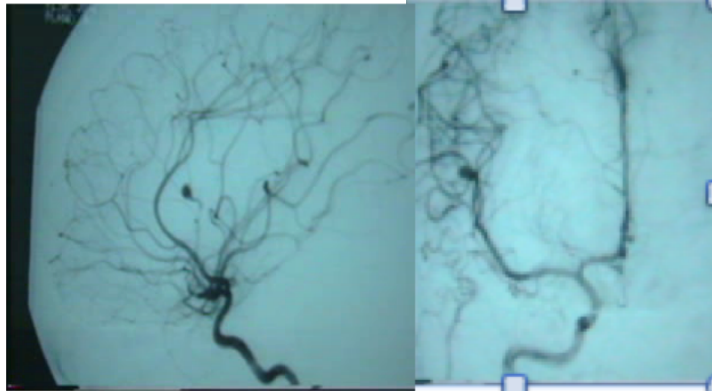
113

Aortic or mitral NVE or PVE with isolated large vegetations (>15 mm) and no other indication for surgery<sup>e</sup>

Urgent

IIb

C



**Contre-indic**  
***Risque d'aphasie***  
***Refus neurochir***



- **Indication Cardiaque**
  - *Embolies récidivantes*
  - *Végétations +*
  - *Fièvre sous ttt*





## Surgery after cerebral embolic events 2004

After manifestation of a cerebral embolism, cardiac surgery to prevent a recurrent episode is not contraindicated if performed early (best within 72 h)<sup>207,300,315,316</sup> and cerebral haemorrhage has been excluded by cranial computed tomography (CCT) immediately before the operation. Although surgical results are best within the first 72 h of stroke, when the blood-brain barrier is not yet altered,<sup>207</sup> surgery should be performed in patients with focal deficits and no evidence of severe heart failure, ongoing infection resistant to antibiotic therapy as long as CCT scans exclude a haemorrhagic lesion.<sup>316</sup>

**Table 20** Management of neurological complications

2009

Recommendations: neurological complications	Class <sup>a</sup>	Level <sup>b</sup>
After a silent cerebral embolism or transient ischaemic attack, surgery is recommended without delay if an indication remains	I	B
Following intracranial haemorrhage, surgery must be postponed for at least one month	I	C
Neurosurgery or endovascular therapy are indicated for very large, enlarging, or ruptured intracranial aneurysm	I	C
After a stroke, surgery indicated for heart failure, uncontrolled infection, abscess, or persistent high embolic risk should not be delayed. Surgery should be considered as long as coma is absent and cerebral haemorrhage has been excluded by cranial CT	IIa	B
Intracranial aneurysm should be looked for in any patient with IE and neurological symptoms - CT or MR angiography should be considered for diagnosis	IIa	B
Conventional angiography should be considered when non-invasive techniques are negative and the suspicion of intracranial aneurysm remains	IIa	B

**Table 23** Management of neurological complications of infective endocarditis

2015

Recommendations	Class <sup>a</sup>	Level <sup>b</sup>	Ref. <sup>c</sup>
After a silent embolism or transient ischaemic attack, cardiac surgery, if indicated, is recommended without delay	I	B	105, 263
Neurosurgery or endovascular therapy is recommended for very large, enlarging or ruptured intracranial infectious aneurysms	I	C	
Following intracranial haemorrhage, surgery should generally be postponed for >1 month	IIa	B	264–266
After a stroke, surgery indicated for HF, uncontrolled infection, abscess, or persistent high embolic risk should be considered without any delay as long as coma is absent and the presence of cerebral haemorrhage has been excluded by cranial CT or MRI	IIa	B	9,263
Intracranial infectious aneurysms should be looked for in patients with IE and neurological symptoms. CT or MR angiography should be considered for diagnosis. If non-invasive techniques are negative and the suspicion of intracranial aneurysm remains, conventional angiography should be considered	IIa	B	267, 268

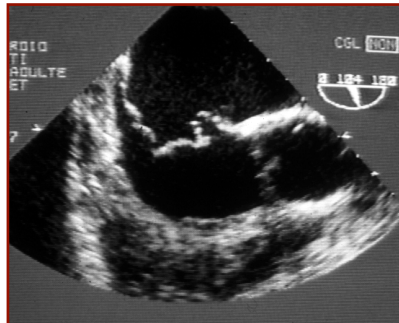


## ***“Surgical techniques and prostheses choice...”***

Questionable risk score → Heart team

### **Cancer Treatment**

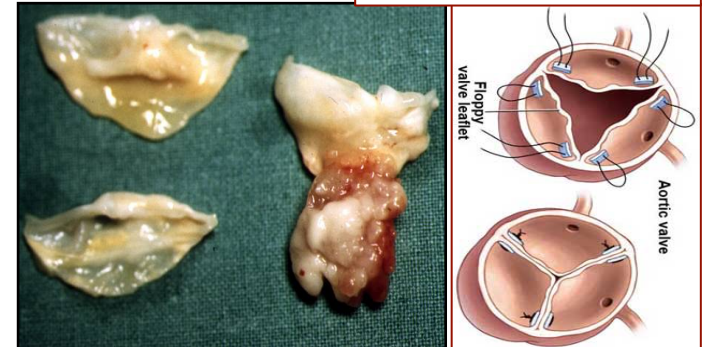
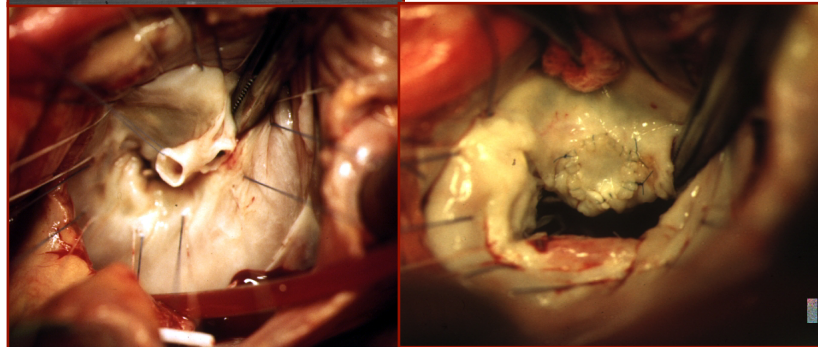
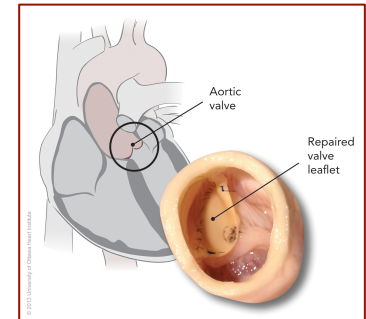
- 1) Chemotherapy / ATB
- 2) Resect of all the infected tissue
- 3) Reconstruction (substitute ?)



**MVR = 26%**

**+++ REPAIR +++**

**AoVR ≈ 5 %**



Case1

Surg ?

Conclusion





## ***“Surgical techniques and prostheses choice...”***

No single operative risk score is perfect → clinical evaluation by a heart team



### **Cancer Treatment**

- 1) Chemotherapy
- 2) Resect of all the infected tissue
- 3) Reconstruction



There is no perfect valve substitute



AHA  
60/70

ESC  
60/70  
65/75



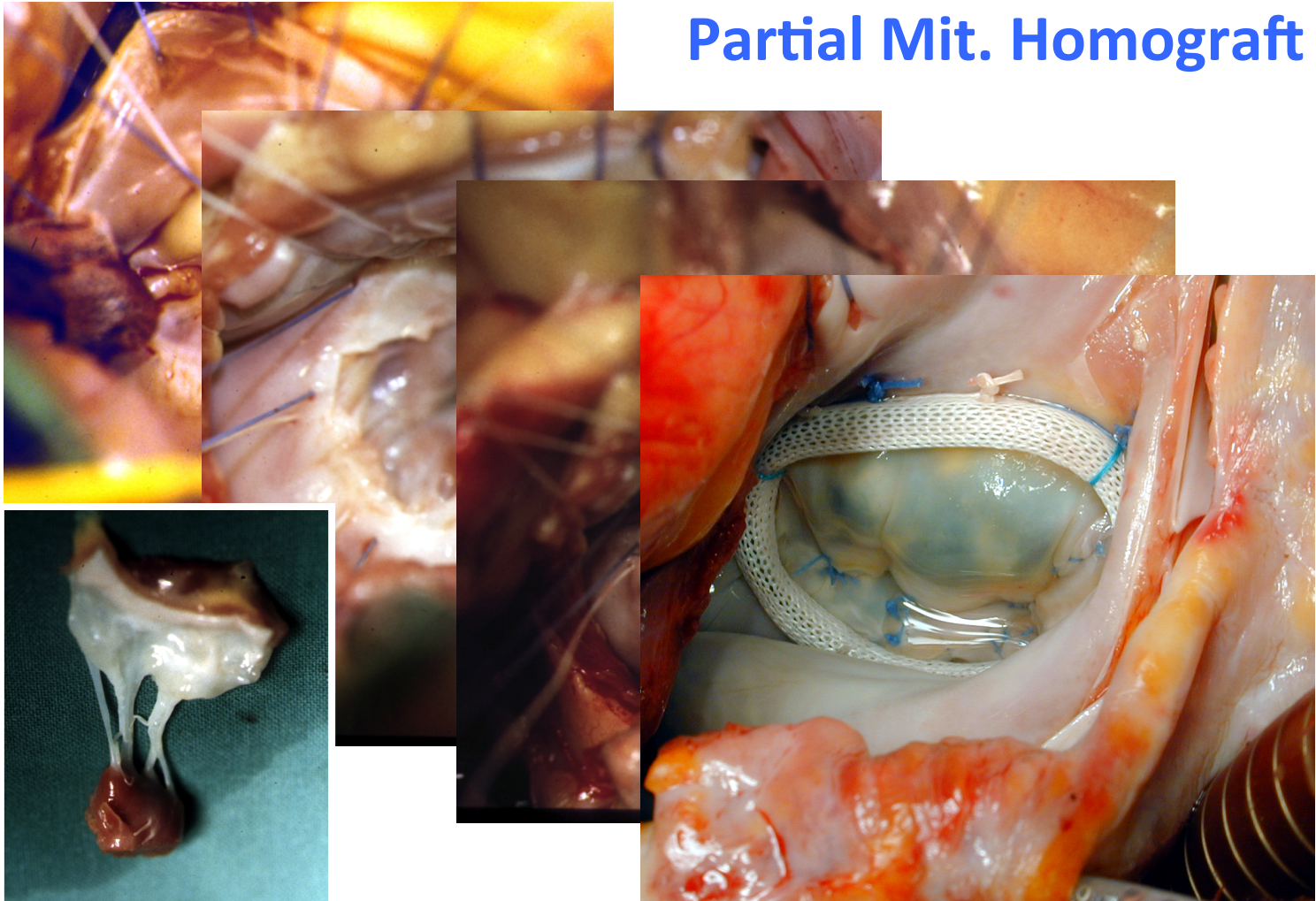
**Mechanical and biological prostheses have similar operative mortality. Therefore the Task Force does not favour any specific valve substitute but recommends a tailored approach for each individual patient.**

INTRO



RECO

## Partial Mit. Homograft



Case1

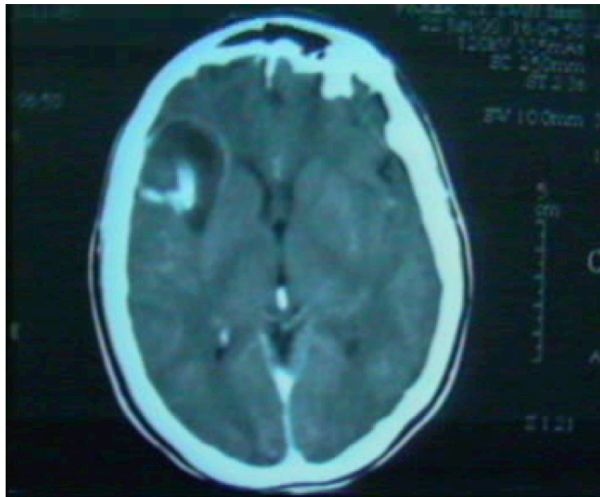
Case2

Conclusion



## Suites avec Fièvre intermittente

- Chir. Cardiaque → Plastie Mitrale
  - Modification antibiotique
  - Soins dentaires
  - Surveillance Anévrisme



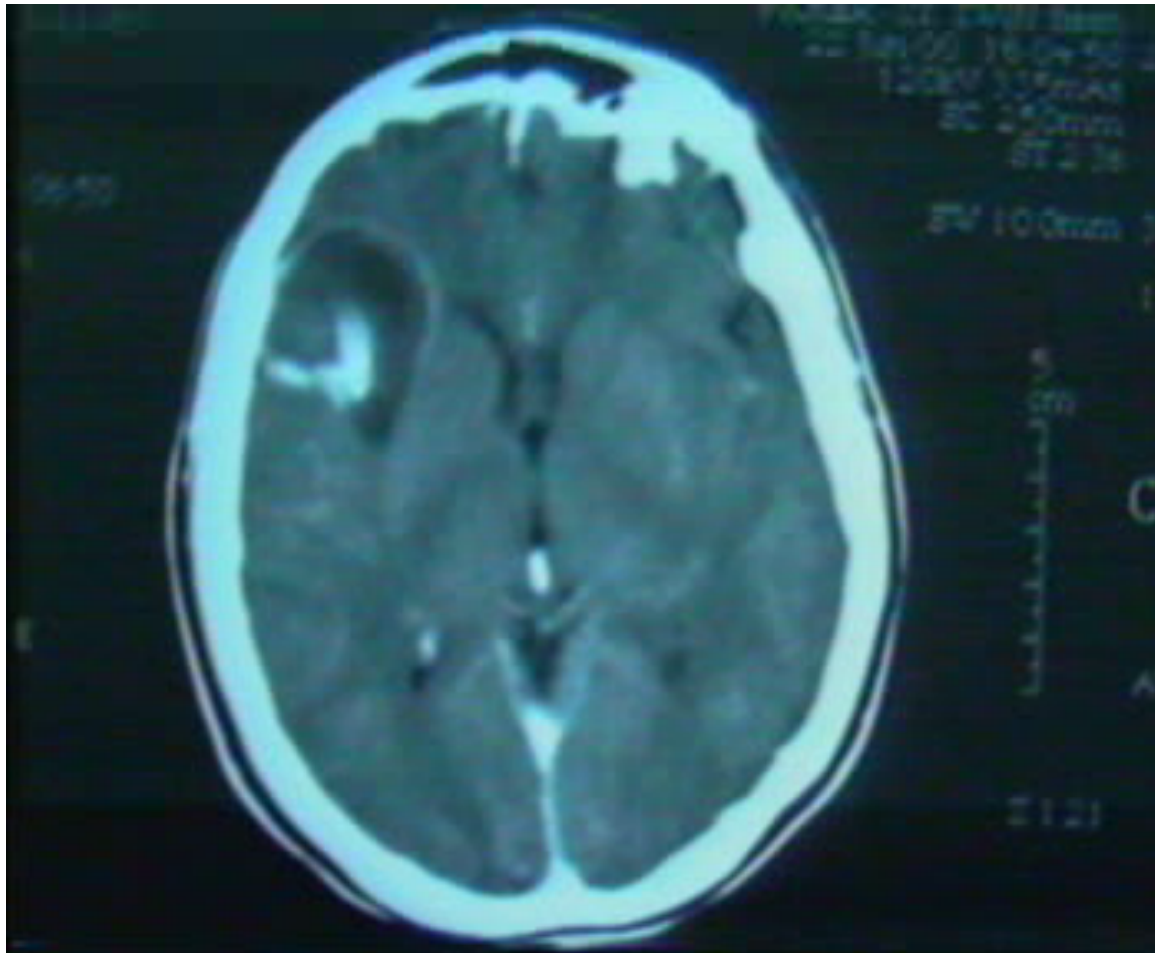
1 mois 1/2

- Indication Neurochirurgie





## Indication Neuro-chirurgicale



**Suites Favorables**  
**Dysphasie modérée**  
**Suivi à 4 ans sans IM**



***“Many hands make tight work : Crowdsourcing research can balance discussions, validate findings and better inform policy, Raphael Silberzahn and Eric L. Uhlmann. 2015 Nature”***



### ONE DATA SET, MANY ANALYSTS

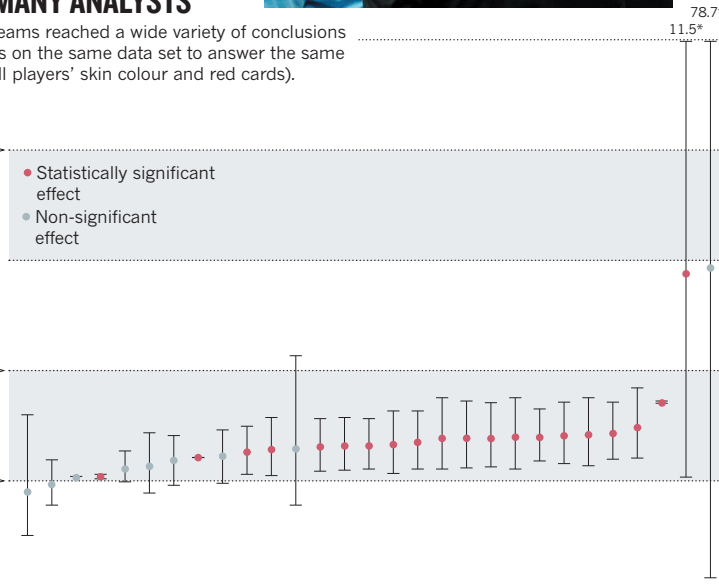
Twenty-nine research teams reached a wide variety of conclusions using different methods on the same data set to answer the same question (about football players' skin colour and red cards).

Dark-skinned players four times more likely than light-skinned players to be given a red card.

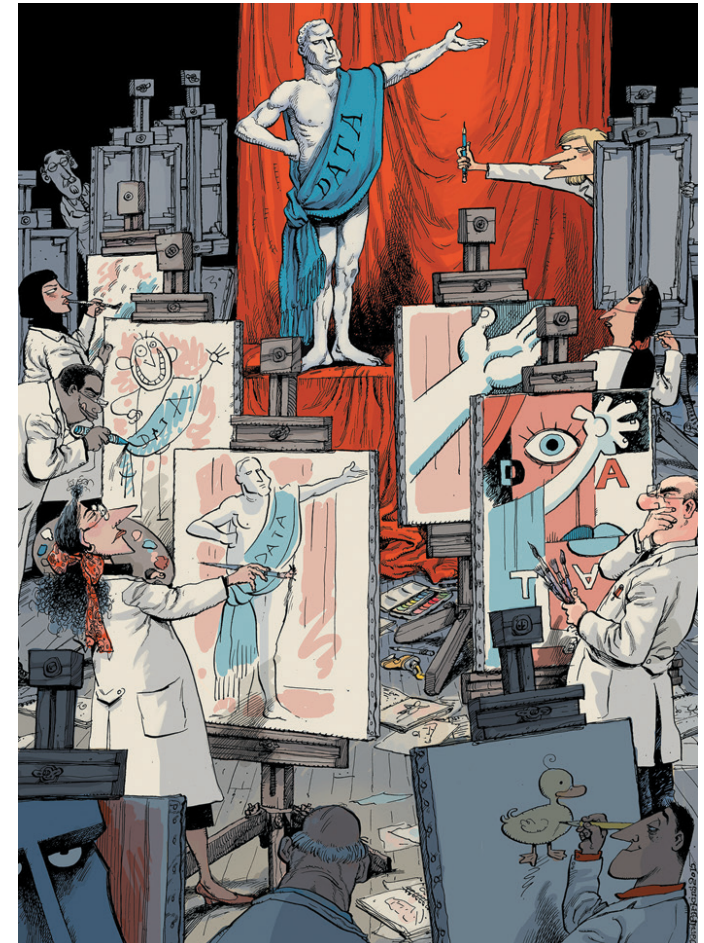
- Statistically significant effect
- Non-significant effect

Twice as likely

Equally likely



Point estimates and 95% confidence intervals. \*Truncated upper bounds.







Regular meetings at a precise time (Weekly basis)  
Pre-program announcing the files to discuss  
a minimum of at 3 different specialties  
Several members / Specialties  
Involving Coordinator/nurse  
Written decisions recorded  
Yearly evaluation

