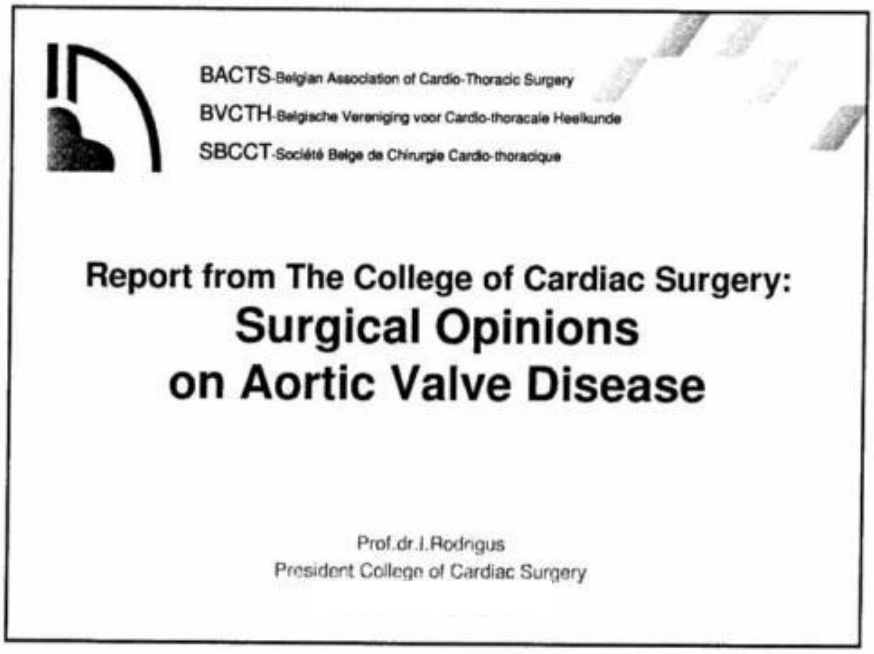
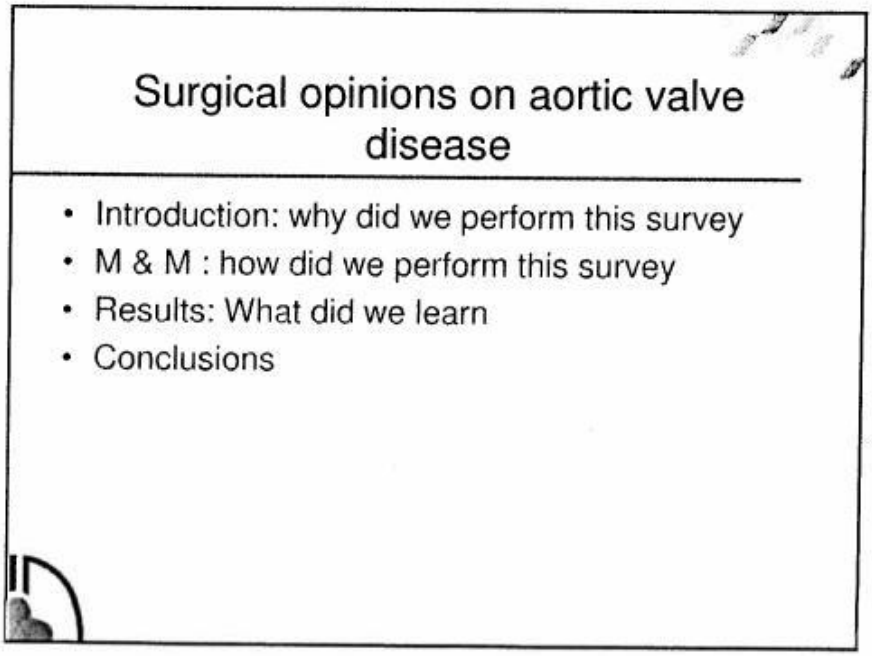

BACTS-Belgian Association of Cardio-Thoracic Surgery
BVCTH-Belgische Vereniging voor Cardio-thoracale Heelkunde
SBCCT-Société Belge de Chirurgie Cardio-thoracique
Report from The College of Cardiac Surgery:
Surgical Opinions
on Aortic Valve Disease
Prof.dr.I.Rodrigus
President College of Cardiac Surgery


Surgical opinions on aortic valve disease
• Introduction: why did we perform this survey
• M & M : how did we perform this survey
• Results: What did we learn
• Conclusions

Introduction (1)

- College of Cardiac Surgery (RD 14/9/2004)
- 6 Members proposed by the BACTS
  - De Smet, Kolh, Rodrigus, Van Kerrebroeck, Van Praet, Van Nooten
- Mission
  - Quality indicators on good medical practice (Infrastructure, Manpower, Medical practice, Results)
  - Dataregistration model
  - Site visits
  - National year report
  - Answer to questions
  - Feed-back to hospitals and doctors
  - Financial report

Introduction: project 2007 (2)

Invited papers

Acta Chir Belg, 2008, 108, 638-644

Guidelines for Quality Improvement in Cardiac Surgery
The College of Cardiac Surgery : Results of the 2007 Survey

J.-M. De Smet, Ph. Kolh**, Chr. Van Kerrebroeck***, G. Van Nooten***, F. Van Praet****, I. Rodrigus******

*C.U.B. Hôpital Erasme, Brussels ; **C.H.U. Sart Tilman, Liège ; ***A.Z. Z.O.L., Genk ; ****U.Z. Gent ; *****OLV Ziekenhuis, Aalst ; ******UZ Antwerpen, Edegem.

Introduction: project 2007 (3)

Top 5 Quality Indicators	
1	Use of at least one arterial graft (project 2008)
2	Surgical volume for valve surgery
3	Participation in systematic database including EuroSCORE
4	Common patient discussion with Cardiologists
5	Percentage of mitral repair/total mitral valve surgery

Introduction: project 2009 (4)

- Belgian guidelines for the management of patients with valvular heart disease ?
- Surgical opinions on aortic valve disease
- Does our practice comply with the current international guidelines ?

Introduction: international guidelines (5)

- "2008 Focused Update Incorporated into the ACC/AHA 2006 Guidelines for the Management of Patients with Valvular Heart Disease"
  - http://circ.ahajournals.org/cgi/content/full/118/15/e523
- "Guidelines on the Management of Valvular Heart Disease", The Task Force on the Management of Valvular Heart Disease of the European Society of Cardiology"
  - European Heart Journal 2007; 28:230-26
  - Doi:10.1093/eurheartj/ehl428

Material & Methods (1)

- Composition of a 19-item questionaire by the College members
- Approval by the BACTS Board
- Survey by e-mail to all BACTS Cardiac Surgeons (C and CT with email address)
  - End of February
  - Reminder end of March
- Online answers, anonymised

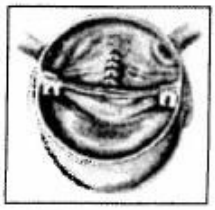
Material & Methods (2)

- C and CT (non honorary): 112 members
- C alone: 83
- Total of answers: 33
- Response rate of 29 to 40 %

Results: What did we learn ?







Q1. What is the age limit for implantation of a biological valve in a patient with severe aortic stenosis, no coronary disease, no comorbidities, in SR ?

	N= 33	%
Above 60 years	5	15
Above 65 years	12	36,3
Above 70 years	10	30
Above 75 years	3	9
Other: above 85 years	1	3
Other: 70 Y for male/ 75 Y for female	1	3
Other: to discuss with patient	1	3

Q1. ESC Guidelines

- Rather than setting arbitrary age limits, prosthesis choice should be individualized and discussed in detail with the patient, taking into account the following factors
- In favor of bioprosthesis
  - Desire of the informed patient (Ic)
  - Unavailability of good-quality antico (CI or high-risk, unwillingness, complianve problems, lifestyle, occupation) (Ic)
  - Re-operation for mechanical valve thrombosis in a patient with proven poor antico control (Ic)
  - Patient for whom future redo valve surgery would be at low risk (IIa,c)
  - Limited life expectancy, severe comorbidity, or age >65-70 (IIa,c)
  - Young woman contemplating pregnancy (IIb,c)

Q1. ACC/AHA Guidelines

- Class I
  - A mechanical prosthesis is recommended for AVR in patients with a mechanical valve in the mitral or tricuspid position (C)
  - A bioprosthesis is recommended for AVR in patients of any age who will not take warfarin of who have major medical contraindications to warfarin therapy
- Class IIa
  - **Patient preference** is a reasonable consideration in the selection. A mechanical prosthesis is reasonable in patients under 65 years of age who do not have a contraindication to anticoagulation. A bioprosthesis is reasonable in patients under 65 years of age who elect to receive this valve for lifestyle considerations after detailed discussions of the risk of anticoagulation versus the likelihood that a second AVR may be necessary in the future
  - A bioprosthesis is reasonable in patients aged 65 years or older without risk factors for thromboembolism

Q2. In your population of patients who receive a biological valve, what is your preferred valve

	N= 33	**%**
Pericardial valve	28	84,9
Porcine valve	3	9
Stentless Pericardial valve	1	3
Stentless Porcine valve	0	0
Other: depends on clinic	1	3

Q2. ESC guidelines

- There is no perfect valve substitute !
  - Autografts and homografts in the aortic position provide the best EOA
  - Stentless bioprosthesis provide better EOA than stented bioprostheses, which are relatively stenotic in the small sizes (annulus <21mm)
  - Modern mechanical valves provide better haemodynamic performance than stented bioprosteses

Q3. What is your preferred technique for implantation of a mechanical valve

	N= 33	%
Everting separate pledgetted sutures	8	24,4
Everting separate non-pledgetted sutures	6	18,2
Non-everting separate pledgetted sutures	9	27,3
Non-everting separate non-pledgetted sutures	10	30,3
Running suture	0	0

Q4. How often do you use an enlargement plasty for small aortic annulus as a percentage of your total AVR procedures

	N= 33	%
< 1 %	22	66,7
1 – 5 %	9	27,3
6 – 10 %	1	3
> 11 %	1	3

"Enlargement of the small aortic root during aortic valve replacement: Is there a benefit ?" *A.Kulik et al. Ann Thorac Surg 2008;85:94-101*

AVR alone (n=540) and AVR + ARE (n=172)

For patients with small aortic roots, ARE at the time of AVR is a safe procedure that reduces PO gradients and the incidence of PPM. However, ARE does not appreciably improve long-term clinical outcomes

Q5. In the work-up of an aortic stenosis patient, which investigations you want to be done

	N= 142	%
Transthoracic echocardiography	28	19,7
Transesophageal echocardiography	15	10,6
Coronary angiography	32	22,5
Ventriculography	11	7,8
Aortography	23	16,2
Invasive gradient measurement	15	10,6
Right heart catheterisation	13	9,2
Exercise testing	4	2,8
Angio CT	1	0,7

Q5. ESC Guidelines

- Patient history and physical examination remain essential
- Echocardiography has become the key diagnostic tool
  - Confirms the presence of AS. Assesses the degree of valve calcification, LV function and wall thickness. Detects the presence of other associated valve disease. Provides prognostic information
- TEE is rarely needed
- Exercise testing is contraindicated in symptomatic patients with AS, but is useful for unmasking symptoms and in the risk stratification of asymptomatic patients with severe AS
- CT and MRI could improve assessment of the ascending aorta, if required
- Retrograde LV catheterisation to assess the severity of AS is seldom needed and should only be used with caution, as it is not without risk

Q6. What should be the minimum amount of AV cases to be performed in a centre to keep up the experience and optimize the outcome

	N= 33	%
Less than 20	2	6
21 to 50	9	27,3
51 to 100	16	48,5
More than 100	3	9
There is no volume-outcome relation	3	9

BAGIS position statement on TAVI < [illegible] 100 AVR cases per year

Q7. Did you perform a Ross operation or referred a patient during the last 5 years

	N= 33	%
No	15	45,5
Yes	18	54,5

"Ross operation in the adult: long term outcomes after root replacement and inclusion techniques" *L.de Kerchove et al. Ann Thorac Surg 2009;87:95-102*

"Valve-related events after aortic root replacement with cryopreserved aortic homografts" *A.Kaya, M.Schepens et al. Ann Thorac Surg 2005;79:1491*

Q7. Guidelines

- Autografts and homografts in the aortic position provide the best EOA, but are subject to SVD.
- Homografts and pulmonary autografts account for less than 0,5% of aortic valve replacements in most large databases
- Besides technical concerns, limited availability and increased complexity of reoperation contribute to restrict the use of homografts to complicated aortic valve endocarditis
- The operation is more complex than standard AVR and has been associated with at least some increase in in-hospital mortality
- Small,short-term randomized and nonrandomized comparisons of pulmonary autografts and aortic homografts have demonstrated no definite advantage of either in adults in terms of hemodynamics and patient outcome

Q8. Which antico scheme for a 50-year old patient 3 months after implantation of a mechanical bileaflet valve, in SR

	N= 33	%
Vit K antagonist, INR 1.5-2.0	4	12
Vit K antagonist, INR 2.0-2.5	20	60,6
Vit K antagonist, INR 2.5-3.0	7	21,2
Acetyl Salicic Acid alone	0	0
Vit K antagonist and Acetyl Salicic Acid	0	0
Other:	2	6

Q8. ESC Guidelines

- We chose to recommend a median INR value rather than a range to avoid considering extreme values in the target range as valid target INR

Prosthesis thrombogenicity	Patient-related risk factors [a]	
	No risk factor	> 1 risk factor
Low (Carbomedics, Medi-Hall, SJM)	2.5	3.0
Medium (Björk-Shiley, other bileaflet)	3.0	3.5
High (Lillehei-Kaster,Omniscience, Starr-Edwards)	3.5	4.0

[a] mitral, tricuspid or pulmonary valve replacement, previous thrombo-embolism, atrial fibrillation, LA >50mm, LA dense spontaneous contrast, MS of any degree, LVEF <35%, hypercoagulable state

Q9. Do you advise self-monitoring of antico therapy to your AVR patients

	N= 33	%
No	14	42,4
Yes	19	57,6

Self-management of anticoagulation has been shown to reduce INR variability and should therefore be recommended in all patients who, after education and training, have the availability to control their own anticoagulation

Q10. What is the most important draw-back to implement self-monitoring

	N= 33	%
Test strips are not reimbursed	15	45.5
Teaching of patient is too difficult	4	12.1
It is not safe to leave this to the patient	2	6.1
Self-monitoring device is too expensive	10	30.3
I do not want to be involved in the FU of these patients	0	0
Other: a minority asks to do it	1	3
Other: education of medical community	1	3

Q9 and Q10. KCE report 117 A

- POC tests have a positive influence on outcome
- Self-management (= patient performs the POC test and adjust therapy) is a first choice and is cost-effective, but only available for a small percentage of patients
- Patient self-control (= patient performs the POC test and therapy is adjusted by a professional) lowers the incidence of thrombo-embolic events, but not of mortality
- POC tests performed by the general practitioner or in antico clinics is probably not cost-effective
- Conclusion: **What are we waiting for ?**

Q11. For which period do you advise antico treatment with Vit K antagonists after a biological valve implantation with good LV and SR

	N= 36	%
I do not advise Vit K antagonists at all	8	24.2
As long as the patient is in the hospital	0	0
For a maximum of 6 weeks	7	21.2
For a maximum of 3 months	17	51.5
Other:depends on age, but max 3 months	1	3

Q11.ACC/AHA guidelines

- Class I
  - After AVR with a bioprosthesis and no risk factors, aspirin is indicated at 75 to 100 mg per day
  - After AVR with a bioprosthesis and risk factors, warfarin is indicated to achieve an INR of 2.0 to 3.0
  - Risk factors: Atrial fibrillation, previous thromboembolism, LV dysfunction and hypercoagulable condition
- Class IIa
  - During the first 3 months after AVR with a bioprosthesis in a patient with no risk factors, it is reasonable to give warfarin to achieve an INR of 2.0 to 3.0
- After 3 months, the tissue valve can be treated like native valve disease, and warfarin can be discontinued in more than two thirds of the patients. .....although most centers use only aspirin for biological valves in the aortic position.

Q12. Will percutaneous aortic valve replacement become a valuable treatment for patients with AS

	N= 33	%
Yes	28	84.9
No	5	15.2

Q13. The current age limit for percutaneous aortic valve replacement should be

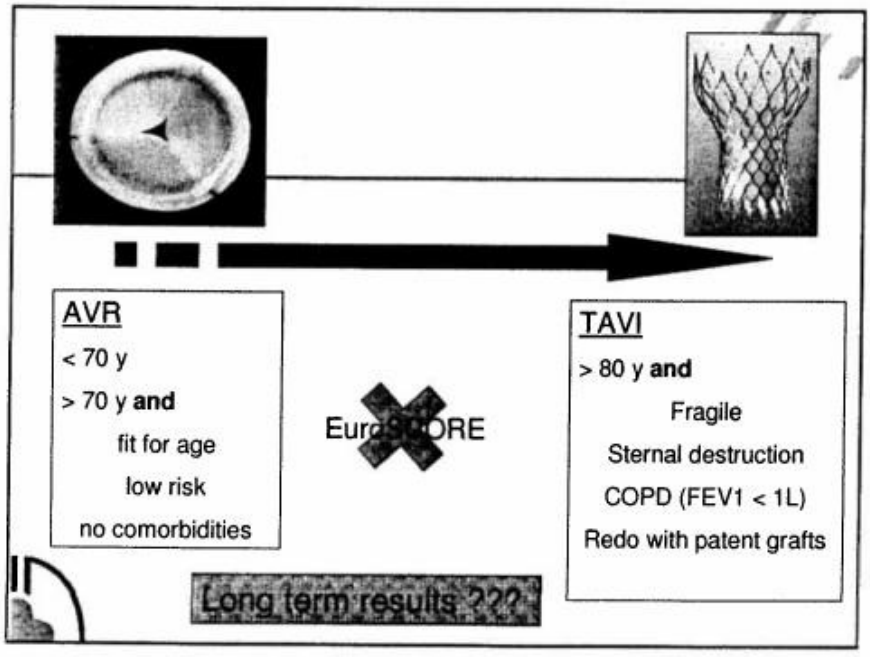
	N= 33	%
Above 60 years	2	6
Above 65 years	0	0
Above 70 years	3	9
Above 75 years	28	85

Q14. If TAVI would have proven a good FU of 10 years and treatment would be reimbursed, what percentage of patients above 70 years would you offer this treatment

	N= 33	%
< 10 %	8	24.2
11 to 25 %	10	30.3
26 to 50 %	9	27.3
51 to 75 %	2	6.1
76 to 90 %	0	0
> 90 %	8	24.2

Q15. At this stage of development, what is the top 3 of indications for TAVI

	N= 89	%
Age above 75	0	0
Age above 80	14	15.7
EuroSCORE above 20	4	4.5
EuroSCORE above 25	23	25.8
Previous CABG with the use of arterial grafts	12	13.5
Severe pulmonary disease with the use of BD and FEV1 < 1,5 L	19	21.4
Patient refusing surgical treatment	4	4.5
Radiation of the chest	13	14.6



Q16. In what % of single AVR did you use a ministernotomy over the last year

	N= 33	%
< 1 %	17	51.5
1 to 5 %	1	3.0
6 to 10 %	3	9.1
11 to 25 %	4	12.1
26 to 50 %	4	12.1
> 50 %	4	12.1

Q 16. Ministernotomy versus conventional sternotomy for aortic valve replacement: a systematic review and meta-analysis

- M.Brown et al. *J Thorac Cardiovasc Surg 2009;137:670*
- 26 studies, 4586 patients
- No difference in mortality
- MS:
  - longer crossclamp and bypass times (7.9 and 11.4 minutes)
  - Shorter intensive care unit and hospital stays (0.46 and 0.91 days)
  - Shorter ventilation time (2.1 h)
  - Less 24 h blood loss (80 ml)
- Randomized studies tended to demonstrate no difference
- Conversion rate: 3 %
- Conclusion: *MS can be performed safely for AVR, without increased risk of death or other major complications; however, **few objective advantages have been shown**.*

Q17. In what % of your elective aortic regurgitation population did you perform a valve sparing operation

	N= 33	%
< 1 %	7	21.2
1 to 5 %	9	27.3
6 to 10 %	4	12.1
11 to 25 %	6	12.1
26 to 50 %	4	12.1
> 50 %	3	9.1

Q17. Literature

- **"Repair-oriented classification of aortic insufficiency: Impact on surgical techniques and outcome"** M.Boodhwani et al. *J Thorac Cardiovasc Surg 2009;137:286*
- **"Cusp repair in aortic valve reconstruction: Does the technique affect stability ?"** D.Aicher et al. *J Thorac Cardiovasc Surg 2007;134:1533*

Q18. In surgery for severe aortic regurgitation, what is your preferred cardioplegia delivery route

	N= 33	%
Coronary ostia perfusion	17	51.5
Retrograde CS perfusion	8	24.2
Combined (CS and ostia)	7	21.2
Deep hypotherm circulatory arrest	0	0
Other: antegrade or retrograde depending on approach	1	3.0

Q19. What is your preferred choice of prosthesis in a 55-year-old man with endocarditis with involvement of the aortic annulus

	N= 33	%
Mechanical Valve	7	21.2
Stented pericardial valve	2	6.1
Stented porcine valve	0	0
Stentless pericardial valve	3	9.1
Stentless porcine valve	8	24.2
Homograft	13	39.4
Ross procedure	0	0

Do not forget the EHRA !

Conclusions

- Low response rate (29 to 40 %)
- Interesting discussions can emerge
- Our opinions are fairly based on the international guidelines
- Variability in answers can be an ideal substrate to reflect on our daily practice