



## CHIRURGIE CARDIAQUE / CARDIAC SURGERY

### CHALLENGES IN OPEN HEART SURGERY(OHS) IN AFRICA: CÔTE D'IVOIRE EXPERIENCE

*Distinguished Lecture of the United States Chapter of The International Society of Surgery (ISS) delivered on Wednesday October 7 TH ,2015 during the Clinical Congress 2015 of the American College of Surgeons (ACS) in Chicago( USA)*

By

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- Head, Cardio-Vascular and Thoracic Surgery Bouake University Teaching Hospital
- President, African Association of Thoracic and Cardio-Vascular Surgeons
- President, Pan-African Association of Surgeons
- Immediate Past President, West African College of Surgeons

#### INTRODUCTION (Slide 1,2)

I would like to thank the United States Chapter of the ISS (slide 3) for inviting me at the ACS clinical congress 2015 (slide 4) and give me an opportunity to speak on "Challenges in Open Heart Surgery in Africa: Cote d'Ivoire Experience" (slide 5).

I am an active member of the ISS since June 1998 (slide 6); ISS is a well-known society of surgeons chaired by prestigious surgeons such as the Swiss Theodor Kocher (1840-1917) who was the first surgeon to receive the Nobel Prize in 1909 (slide 7).

Cote d'Ivoire is located in Western Africa (slides 8-9); its physical features are shown on slide 10. His Excellency Late Dr Felix Houphouet-Boigny, former President of Cote d'Ivoire (1960-1993) (slide 11) facilitated the creation of the first "Heart Institute of Cardiology" (slide 12) where the first open heart surgery in Côte d'Ivoire was performed on March 16th, 1978 in Abidjan (slide 13) by 3 surgeons: Pr D. Metras, Pr A. Ouezzin-Coulibaly and Late Dr K. Ouattara (slide 14).

#### CARDIAC LESIONS AND SURGERY

Acquired valvular Heart Diseases and Congenital Heart Diseases were the two main categories described in our experience (slides 15).

Regarding Acquired valvular diseases three etiologies were concerned: Rheumatic Fever, the most frequent; Native Valve Endocarditis and Endomyocardial Fibrosis (slide 16-17)

Most often, rheumatic fever attacked the Mitral valve with massive destruction (slides 18,19,20,21,22) ; usually, the severity of rheumatic valve lesions made surgical repair uneasy and replacement by bioprosthesis or mechanical devices more adequate to perform (slides 23,24,25,26). Bioprosthesis degeneration as main complication or disadvantage of biological prosthesis, occurred between 4.24 and 6.5 years post-operative follow-up (slides 27,28)

A tropical valvular heart disease called "Endomyocardial Fibrosis (EMF)" (slide 29) has also been diagnosed (slides 30,31); its clinical, imaging features ; surgical procedures and results are shown on slides (32,33,34,35,36). Different types of Congenital Heart Diseases (CHD) were noted with an overall surgical hospital mortality at 10% (slides 37-45)

## CHALLENGES (slide 46)

-Rheumatic Heart Disease (RHD) is the most common form of Cardio-vascular diseases in the developing world and it will remain as it is for the next 20-40 years to come in sub-saharan Africa (slides 47,48,49) where exists the highest prevalence of RHD worldwide

-RHD is the leading cause of death during the first 5 decades of life with a mortality of 20% at 6 years follow-up in Nigeria (slide 50)

-RHD causes extensive and severe heart valve lesions (slide 51) making quasi-impossible valve repair in our context; such situation should be avoided by earlier diagnosis and surgical treatment for it has been demonstrated best long term results after conservative surgical procedure rather than valve replacement (slides 52,53).

-EMF is a mysterious pathology with a remaining unknown etiology (slide 54); we have one of the most largest clinical and surgical experience in the world.

-Lack of detecting CHD in Cote d'Ivoire as in sub-saharan Africa (slides 55,56); of cardiac centres (slides 57,58,59); of specialized personnel in Cardiology and Cardiac Surgery including cardiac surgeons (slides 60,61,62,63). Therefore ,we need more structured training programmes for cardiologists and cardiac surgeons in our developing countries (slides 64, 65,66,67)

-Sustainability of training programme, of cardiac centres and Cost constraints for cardiac surgery are crucial (slides 68,69,70 ); patients have no enough financial resources to afford cardiac surgery (slides 71,73) and there is no health insurance scheme (slide 72)

-Insufficient number of OHS done, less than 400 operations per million of population per year (slides 73,74) because of lack of funding (slide 74) or other difficulty as limited laboratory support in some countries like Nigeria (slide 75)

## RECOMMENDATIONS (slide 76)

Recommendations are as follows:

-Public Health insurance to be planned (slide 77)

-More Centres for Cardiac surgery to be effective (slide 78) for training and health care; a new cardiac centre in construction is going to commence activities soon (slides 79,80,81) in Côte d'Ivoire

-Global expansion of OHS (slides 82-83) should include : Government, international and regional cooperation, non governmental organizations, foundations, donors, industries; and should also include scientific exchanges at local, regional and international levels (slides 84-93); and promotion of clinical research (slide 94)

## CONCLUSION

Before ending my lecture, may I give a tribute to all my predecessors since the beginning in 1992 of this distinguished lecture (slides 95-98); to the USA Chapter of the ISS; to two American College of Surgeons past –presidents I met some years ago for the first time in Washington DC (USA) (slide 99); Prof Patricia Numman was one of them. I share with Prof Patricia Numman a same idea: Bringing more African women to Surgery. We all know: Women are the cornerstones of our families in Africa; educating women means more than anywhere else, educating a Nation; moreover, empowering Women in Africa can be one of the solutions to end poverty in Africa (slide 100)

Ladies and Gentlemen, We should all remember the 5 phases of life: VITA (Life), LABOR (Work), STUDIUM (Study), CHARITAS (Charity), MORS (Death) mentioned by Gregorio Calvi di Bergolo (1904-1994) (slides 101,102); Indeed, we shall all die one day, whatever we are. Lifetime

is very short and we don't have to wait too long for actions. Actions are your passion; actions are my passion; you and I can change the world with Joy, Enthousiasm, Optimism (slide 103); you and I can transform dream into reality (slide 104); we can make it happen (slide 105).

Dear Colleagues,

your humble servant, your Guest has spoken (slide 106)

God bless America,  
God bless Africa,  
God bless the World  
Thank you for your attention

## **APPENDIX : SLIDES**

## THE DISTINGUISHED LECTURE OF THE INTERNATIONAL SOCIETY OF SURGERY

was established by the Board of Regents of the American College of Surgeons in June 1990, and the first lecture was delivered at the 1992 Clinical Congress in New Orleans, Louisiana. This Lecture was proposed and endowed by the U. S. Chapter of the International Society of Surgery to recognize the Society's worthwhile activities by honoring distinguished international surgeons at the annual Clinical Congress of the American College of Surgeons. The next Distinguished Lecture of the International Society of Surgery at the Clinical Congress of American College of Surgeons will be:

Lecturer: Koffi Herve Yangni-Angate

Title: Challenges in Open Heart Surgery in Africa: Côte – d'Ivoire Experience

Location: McCormick Place Convention Center – Room: W-179

Date: Wednesday, October 7, 2015

Time: 8:00 am – 9:00 am



Slide 2



Slide 3

## CHALLENGES IN OPEN HEART SURGERY IN AFRICA COTE D'IVOIRE EXPERIENCE







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Cardio-Vascular and Thoracic Surgeon

President, Pan African Association of Surgeons  
Immediate Past-President, WACS

Slide 4



Slide 5

**HISTORY**  
of the  
**INTERNATIONAL SOCIETY OF SURGERY (ISS)**  
**SOCIÉTÉ INTERNATIONALE DE CHIRURGIE (SIC)**

By Martin Allgöwer and Ulrich Troehler <sup>1</sup>

A first international congress took place in Brussels three years later. In the chair was a citizen of another neutral country, the Swiss Theodor Kocher (1840-1917), who was well known in Europe and overseas through his widely translated scientific work and his intensive travels. His reputation increased even more when in 1909 he received the Nobel Prize as the first surgeon. By this time the Society had 600 members of whom 200 attended the first meeting. Thus in 1905 the SOCIÉTÉ was born with its full structure and it was decided to hold the next two meetings in 1908 and 1911, again in Brussels. Afterwards the SOCIÉTÉ bravely crossed the Atlantic to meet in New York in 1914.

Slide 7



Slide 8

**WESTERN AFRICA**

Map showing countries and major cities in Western Africa: MAURITANIE, ALGÉRIE, MALI (Tombouctou, Gao), NIGER (Niamey, Zinder), TCHAD (Maiduguri), SÉNÉGAL (Dakar), GAMBIE (Banjul), GUINÉE-BISSAU (Bissau), GUINÉE (Conakry), SIERRA LEONE (Freetown), CAP-VERT (Praia), LIBERIA (Monrovia), CÔTE D'IVOIRE (Yamoussoukro), GHANA (Accra), TOGO (Lomé), BÉNIN (Porto-Novo), NIGERIA (Abuja), and CAMEROUN (Port-Harcourt). The Atlantic Ocean is labeled 'Océan Atlantique'. A scale bar shows 300 km.

Population = 265.819 Millions      Medical Doctors (%o Inhab.) = [0.03%o - 0.49 %o]  
 Population Growth = [1.36 % - 3.24 %]      GDP/Inhabitant ( \$ ) = [140 - 2130]  
 Infant Mortality (%o) = [24.6 %o - 132.5 %o]  
 Life Expectancy (year) = [42,6 - 64, 2]

Slide 9

**Population = 25,5 Millions**

**Population Growth = 2,03 %**

**Mean Age (year) = 19,2 ♂**

**18,9 ♀**

**Infant Mortality (‰)=116,9**

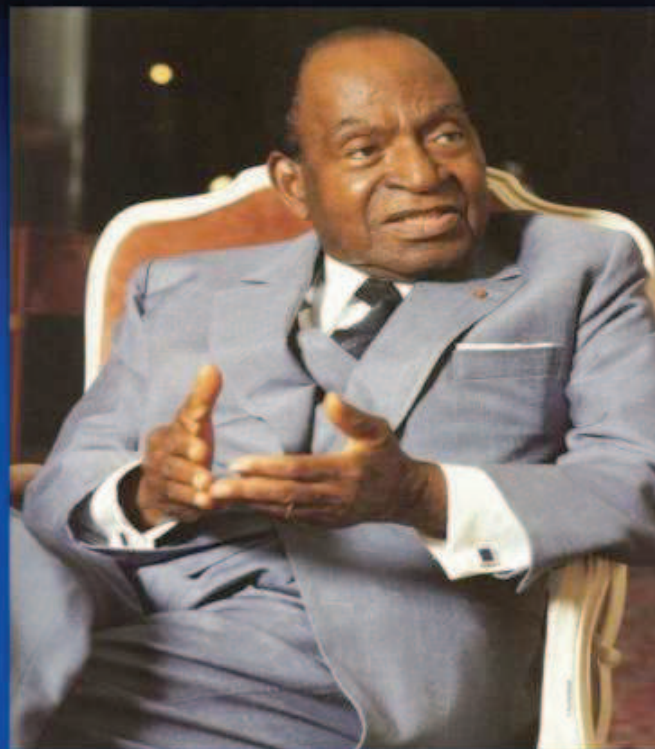
**Life Expectancy (year) = 48,3**

**GDP/Inhabitant ( \$ ) = 1 699**

**Medical Doctors (‰ Inhab.) = 0,12 ‰**



Slide 10



**Dr Felix HOUPHOUËT-BOIGNY**  
**First President of the Republic of Côte d'Ivoire**  
**1960-1993**

Slide 11

REPUBLICQUE DE COTE D'IVOIRE

INSTITUT DE  
CARDIOLOGIE  
D'ABIDJAN

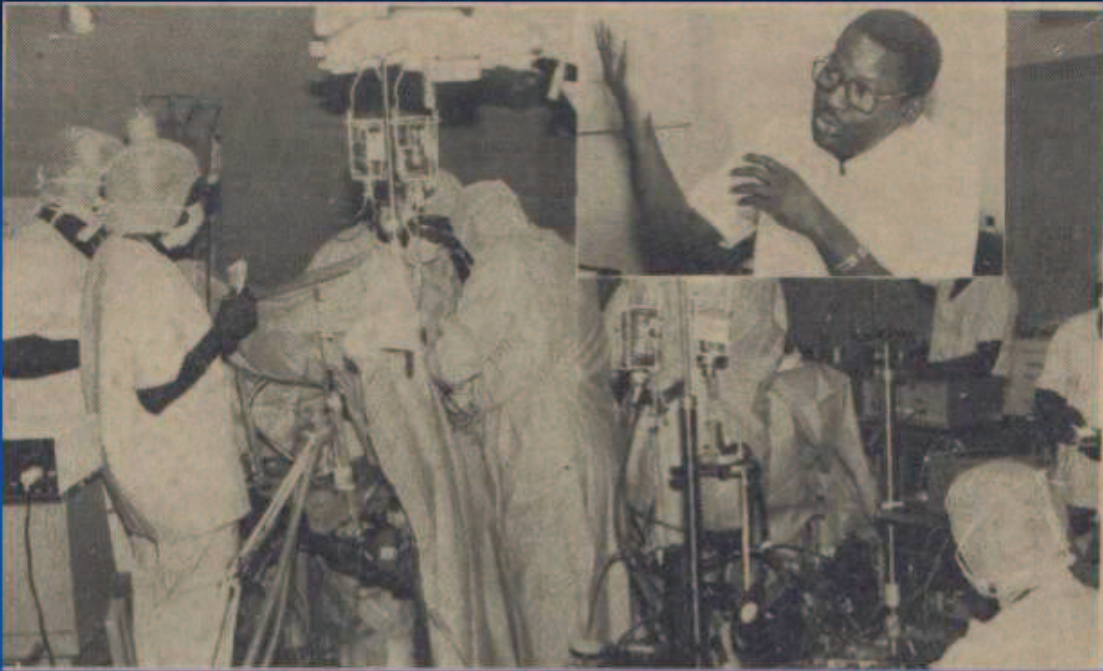


MINISTÈRE DE LA SANTÉ PUBLIQUE

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Slide 12

First Open Heart Surgery, Abidjan : Adult 26 years Atrial Septal Defect



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Slide 13



Slide 14

## CARDIAC LESIONS AND SURGERY IN IVORY COAST

- ACQUIRED VALVULAR HEART DISEASES  
(Rheumatic Fever +++)

- CONGENITAL HEART DISEASES.

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Slide 15

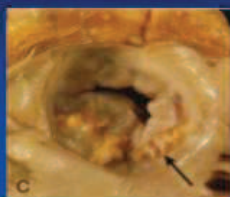
## ACQUIRED VALVULAR HEART DISEASES

	COTE D'IVOIRE (CI) N = 994	SENEGAL N = 122	GHANA N = 172
<b>Mean Age</b>	26 years (4 – 69 years)	23.2 years	30 years
<b>Etiology</b>			
Rheumatic Fever	80 %	100 %	86,6 %
Native Valve Endocarditis	12 %	-	2,9 %
Endomyocardial Fibrosis	8 %	-	3,5 %
<b>Functional Status IV NYHA</b>	52 %	-	68,6 %

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Slide 16

## ETIOLOGY OF MITRAL VALVE DISEASE

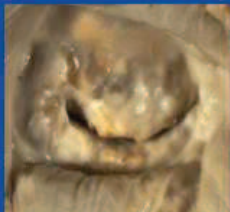



**RHEUMATIC**  
Developing countries

- Ischemic
- Dilated cardiomyopathy
- Congenital



**DEGENERATIVE**  
Industrialized countries

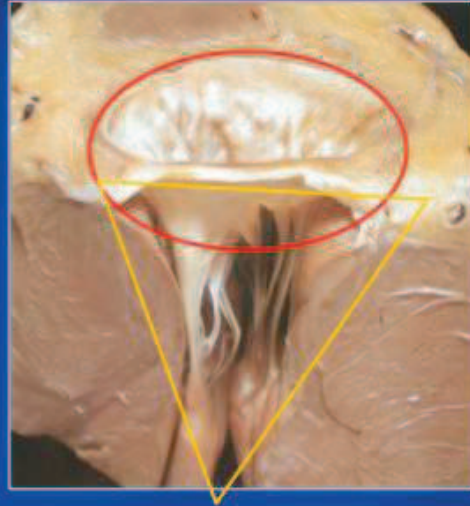
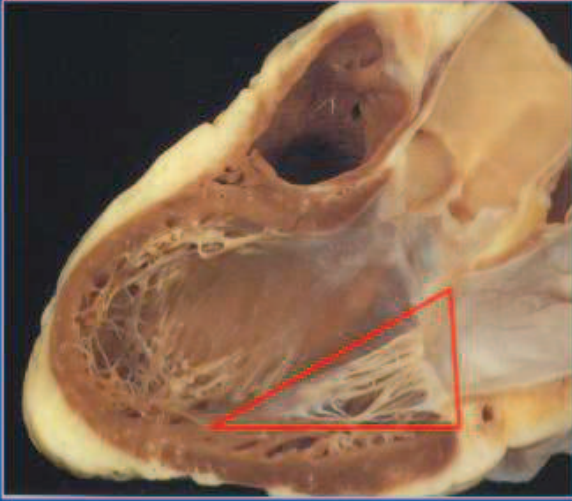




16

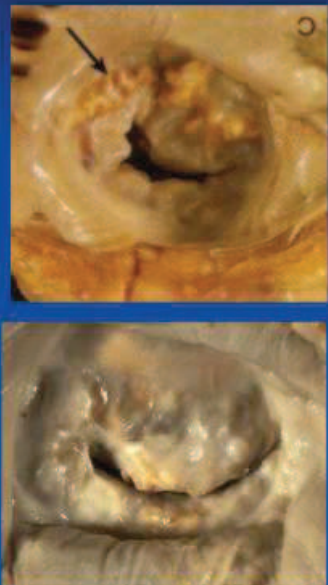
Slide 17

## BACKGROUND (3) ANATOMY OF THE HEART:



NORMAL MITRAL VALVE

Slide 18

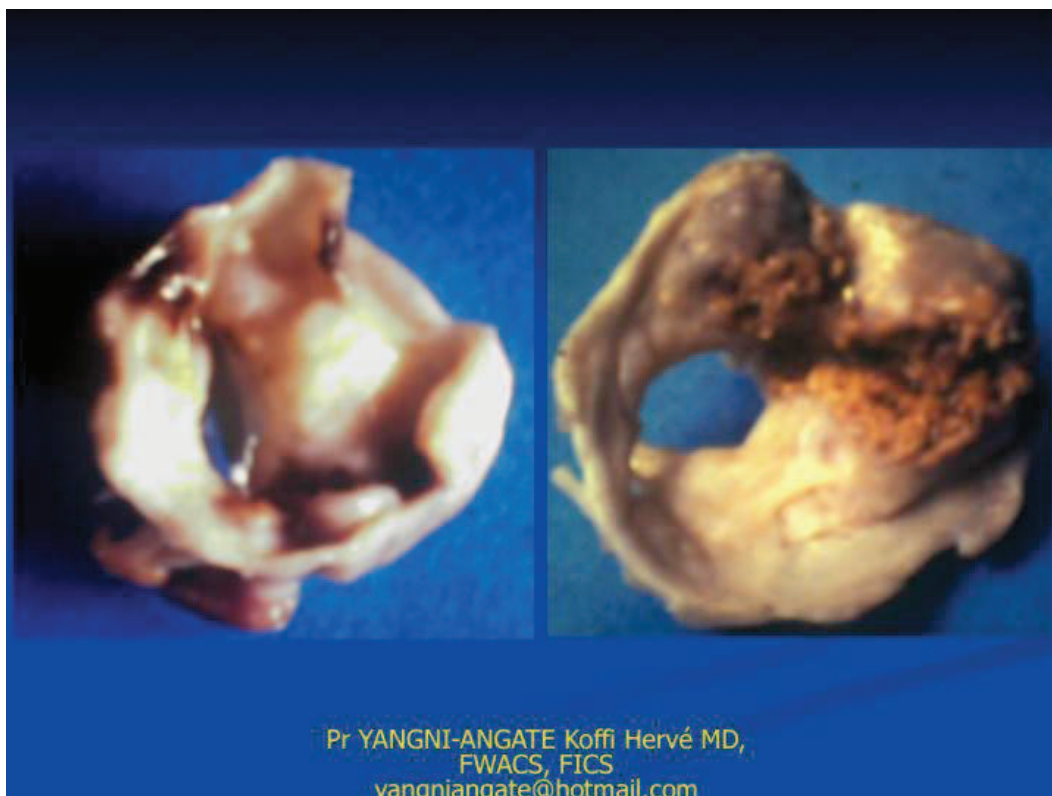


*Untreated streptococcal infections may cause rheumatic fever in which the body's antibodies fight the infection but also attack heart valve leaflet tissue, most commonly the mitral valve.*

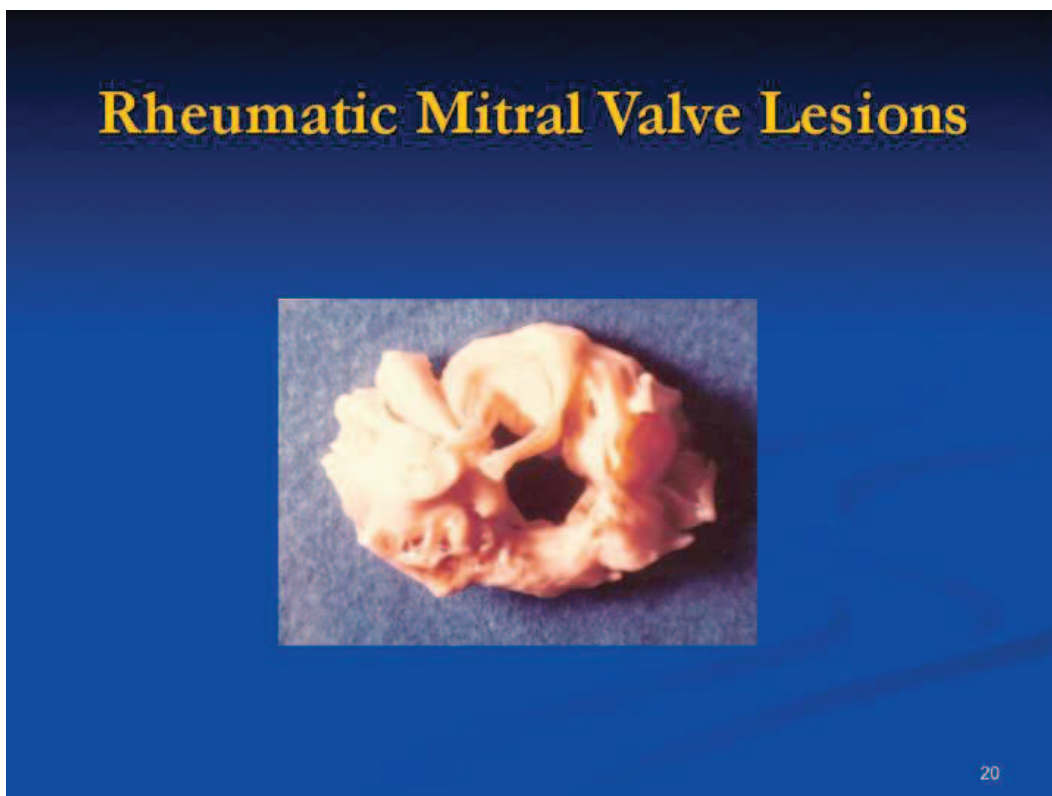
17

The slide contains two photographs of a heart valve, likely the mitral valve, showing signs of infection and damage. The top photograph shows a valve with a dark, irregular mass on its leaflet, indicated by a black arrow. The bottom photograph shows a valve with a similar mass, but from a different angle. To the right of the photographs is a text box with a white background and blue border, containing text in italics. The number '17' is in the bottom right corner of the slide.

Slide 19

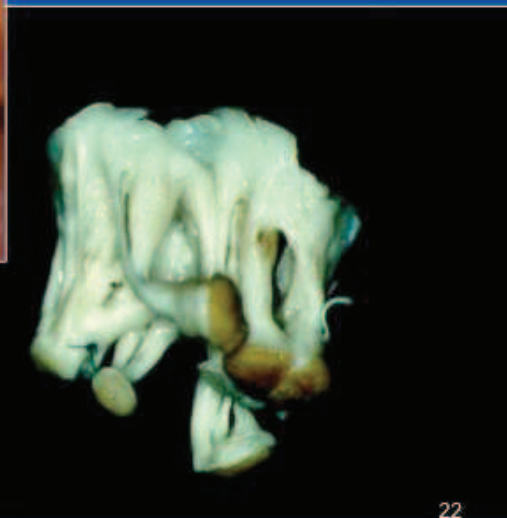


Slide 20

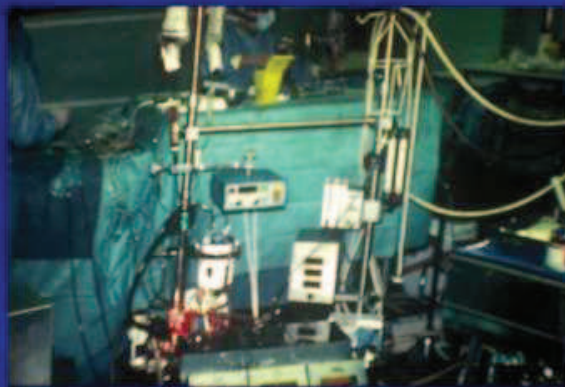


Slide 21

# Rheumatic Mitral Valve Lesions



Slide 22



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Slide 23

Figure 52-26: The Carpentier-Edwards porcine xenograft aortic bioprosthesis. The glutaraldehyde-preserved porcine aortic valve is mounted on a flexible frame made of Elgiloy (a corrosion-resistant alloy of cobalt and nickel) that is covered with Teflon.

Figure 29-6: Valve biologique, porcine, de Hancock.

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Slide 24

## VALVE SURGERY PROCEDURES

	REPLACEMENT			REPAIR		
	CI	SENEGAL	GHANA	CI	SENEGAL	GHANA
Mitral Valve	658	55	-	166	43	-
Aortic Valve	230	23	-	14	-	4
Tricuspid Valve	48	-	5	100	9	32
<b>Total</b>	<b>936</b>	<b>78</b>	<b>201</b>	<b>280</b>	<b>52</b>	<b>36</b>

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Slide 25

<b>VALVE REPLACEMENT DEVICES</b>			
	<b>CI</b>	<b>SENEGAL</b>	<b>GHANA</b>
<b>BIOPROSTHESIS</b>	<b>470</b>	<b>-</b>	<b>2</b>
<b>MECHANICAL PROSTHESIS</b>	<b>466</b>	<b>78</b>	<b>199</b>
<b>TOTAL</b>	<b>936</b>	<b>78</b>	<b>201</b>

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Slide 26

**MORBIDITY : CI**  
**N = 994**

**Bioprosthesis Degeneration**      **4.24 years - 6.5 years**

**Low Cardiac Output**

**Prosthetic Valve Endocarditis**

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Slide 27



Slide 28

## ACQUIRED VALVULAR HEART DISEASES

	<b>COTE D'IVOIRE (CI) N = 994</b>	<b>SENEGAL N = 122</b>	<b>GHANA N = 172</b>
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Slide 29

## DEFINITION

**Restrictive cardiomyopathy  
characterized by dense fibrous  
plaques of the mural endocardium  
in either one or both of the  
ventricles of the heart**

**(RAMAN KUTTY V.)**

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Slide 30




**Left ventricle endomyocardial fibrosis**

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Slide 31

# ENDOMYOCARDIAL FIBROSIS

(1978 – 2013)  
 Mean Age 12+- 0.6 (2 - 15 years)


<b>126 cases</b>		<b>Boys</b>	<b>82</b>	<b>(65%)</b>
		<b>Girls</b>	<b>44</b>	<b>(35%)</b>


<b>Right - Sided form</b>	<b>39</b>
<b>Left – Sided form</b>	<b>40</b>
<b>Bilateral form</b>	<b>47</b>

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Slide 32




**11 EPC bilatérale prédominant à droite.** Radiographie sans préparation: large rebord de l'oreillette droite, infundibulum dilaté (sur le bord gauche), poumons clairs.



**12 EPC droite.** Echographie 2D: échos intracavitaires (signe direct).




**6 EPC droite.** Angiocardiographie: amputation du ventricule, dilatation de l'infundibulum, irrégularités des contours, fosse oreillette droite.



**23 EPC gauche.** Angiocardiographie: aspect en champignon, insuffisance mitrale.

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Slide 33



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Slide 34

## ENDOMYOCARDIAL FIBROSIS

**SURGICAL PROCEDURES**  
**106 cases : 1978 - 2013**

<b>ENDOCARDECTOMY</b>		<b>126</b>
	<b>MITRAL</b>	<b>17</b>
<b>VALVULAR RECONSTRUCTION</b>	<b>TRICUSPID</b>	<b>19</b>
	<b>MITRAL</b>	<b>50</b>
<b>VALVULAR REPLACEMENT</b>	<b>TRICUSPID</b>	<b>40</b>

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Slide 35

## ENDOMYOCARDIAL FIBROSIS

### SURGICAL RESULTS

126 cases : 1978 - 2013

Operative Death	Left sided form	6 (5%)
	Right sided form	3 (2%)
	Bilateral form	11 (9%)
<b>Total</b>		<b>20 (16%)</b>

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Slide 36

# CONGENITAL HEART DISEASES

## OPEN-HEART SURGERY IN COTE D'IVOIRE A THIRTY FIVE YEAR SURGICAL EXPERIENCE (1978-2014)

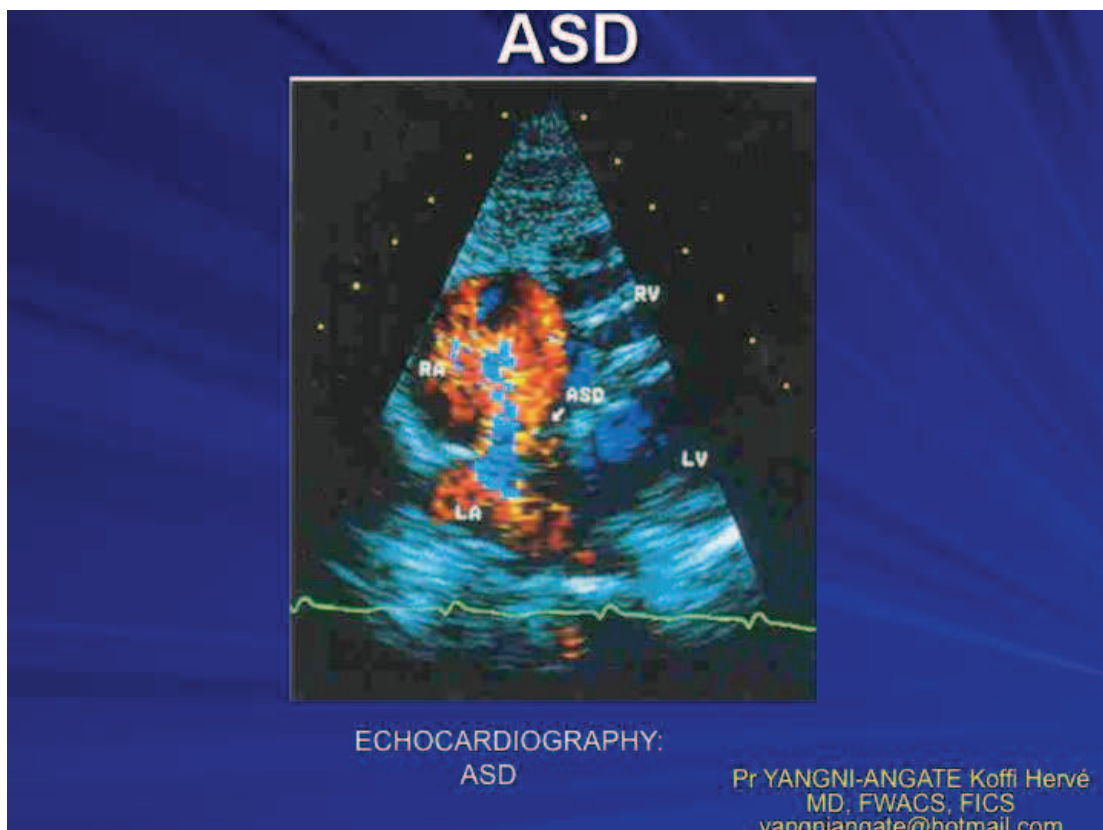
Personal Communication

YANGNI-ANGATE H<sup>1</sup>, and al.


### CONGENITAL HEART DISEASES (CHD) IN COTE D'IVOIRE

ASD	200
VSD	240
T4 FALLOT	220
PARTIAL A-V CANAL	30
PULMONARY VALVULAR STENOSIS	24
COMPLETE A-V CANAL	12
COMPLEX CHD	15
<b>TOTAL</b>	<b>741</b>

Slide 37



Slide 38



The slide displays three diagnostic modalities for a Ventricular Septal Defect (VSD):


- XRAY: VSD**: Two chest X-rays (a and b) showing a prominent cardiac silhouette and pulmonary vascular congestion.
- ANGIOGRAPHY: VSD**: Two angiographic images (c and d) showing contrast flow from the left ventricle into the right ventricle through a septal defect.
- ECHOCARDIOGRAPHY: VSD**: A color Doppler echocardiogram (e) showing a turbulent flow jet across the ventricular septum, labeled as VSD. Other chambers like LV, LA, and AO are also visible.

Figure 31-107

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Slide 39

## PARTIAL AV CANAL



The slide illustrates a partial AV canal with two angiographic views:

- View (a)**: Shows a partial AV canal (B) connecting the right and left ventricles.
- View (b)**: Shows the relationship between the partial AV canal (B) and the adjacent left atrium (LA) and left ventricle (LV).

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Slide 40

# TETRALOGY OF FALLOT

**N = 100**

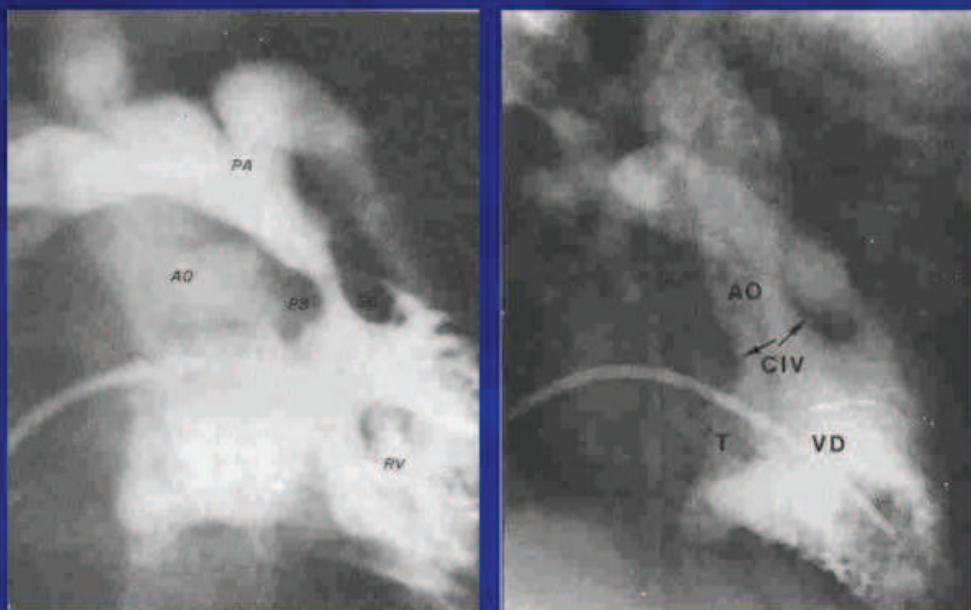
**Mean Age : 5.7 years (6 months - 32 years)**

**Mean Weight : 16.4 kg (6.3 – 55 kg)**

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Slide 41

# TETRALOGY OF FALLOT




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Slide 42

# TETRALOGY OF FALLOT

<b>Regular Form</b>	<b>24%</b>
<b>Irregular Form</b>	<b>76%</b>



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Slide 43

## OPEN-HEART SURGERY IN COTE D'IVOIRE A TWENTY YEAR SURGICAL EXPERIENCE

**by**

YANGNI-ANGATE H., and al.

Journal of Medical Sciences And Hopital Management  
Vol 1 n°1, March 2007 : 18-23

Slide 44

## Summary

Concerning congenital heart diseases (n = 408), the most frequent lesions were: Ventricular septal defect (VSD) 100, Atrial septal defect (ASD) 140, Tetralogy of Fallot 100, Partial atrio-ventricular Canal 16.

Corrective repair has been done in all cases.

Overall mortality was 10 % (n = 43)

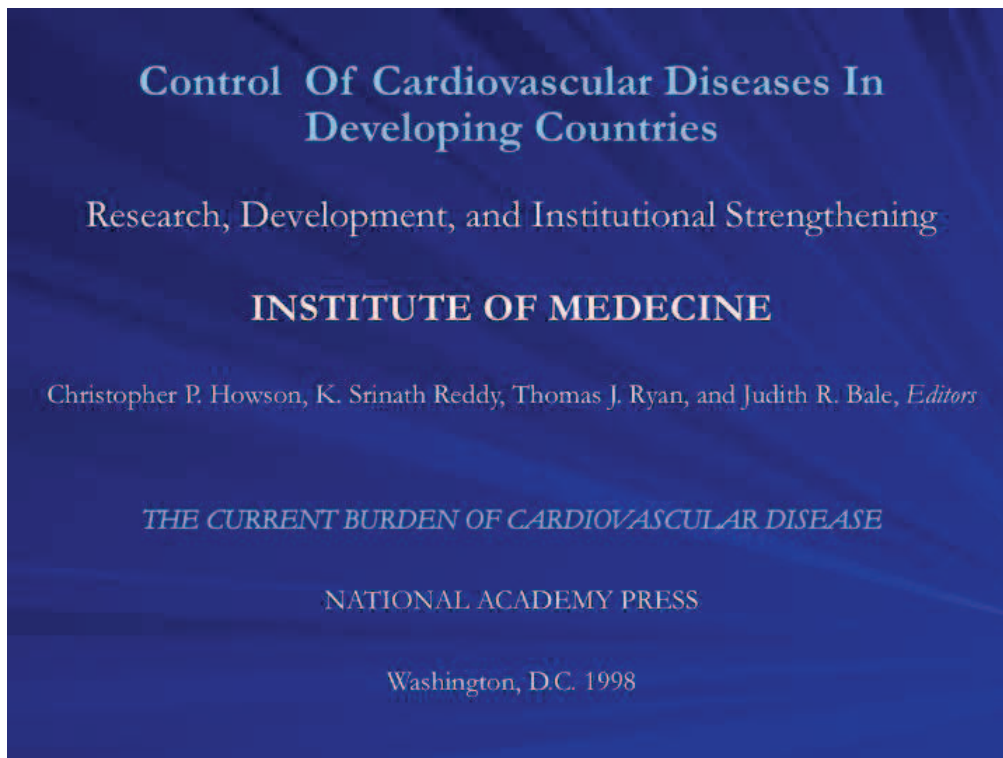
**YANGNI-ANGATE H., and al.**

Journal of Medical Sciences and Hospital Management  
Vol 1 n°1, March 2007 : 18-23

Slide 45

# CHALLENGES

Slide 46



Slide 47

**Rheumatic Heart Disease: The Unfinished Agenda**

For countries in the early stages of development, rheumatic heart disease is the most common form of CVD. Indeed, it is thought to affect more than 4 million people worldwide, resulting in approximately 90,000 deaths each year (Michaud et al., 1993). A range of 20–35 percent of cardiac patients admitted to hospitals in Africa and Asia have rheumatic heart disease, often with heart failure or needing replacement of the heart valve. For the next 20–40 years, it is likely that developing countries will experience a double burden of CVD: rheumatic heart disease will continue, while atherosclerotic CVD becomes more common.

Slide 48



Slide 49

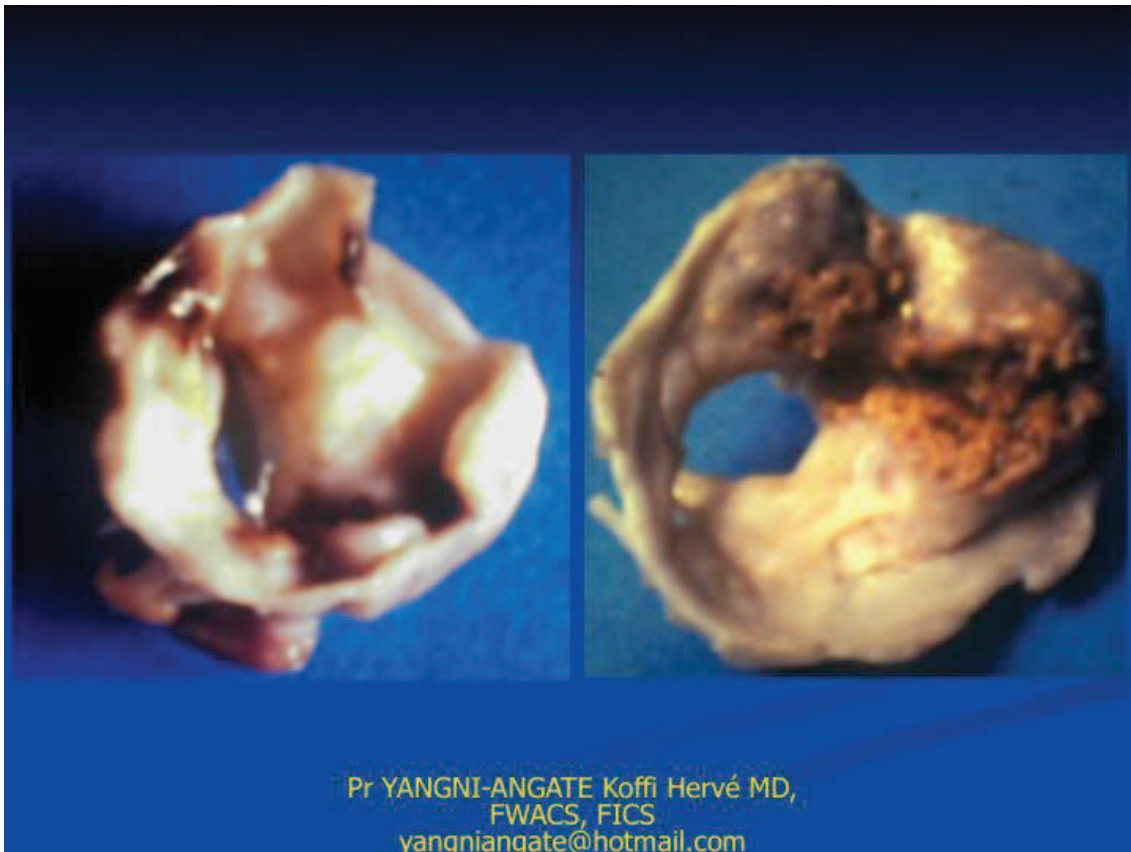
## Epidemiology of Rheumatic Heart Disease-Data scarce in Africa

- Acute rheumatic fever/RHD
  - commonest form of heart disease in Africa
- 20 million affected in developing world
  - highest prevalence sub-Saharan Africa
- 2 million children worldwide/ 1million sub-Saharan Africa
  - leading cause of death during 1<sup>st</sup> 5 decades of life
  - mortality 20% at 6 yr follow up Nigeria; 12.5%/yr Ethiopia

Heart 2009;95:1559-1560      Lancet 2012;379:953-964  
Circulation 2009; 119: 1541-1551

60

Slide 50



Slide 51

**Valve repair should always be the first choice.....**  
**SURVIVAL**

	5 Yrs	10 Yrs
REP	96.5 ± 1.8 %	88.2 ± 4.5%
BIO	83.5 ± 3.0 %	70.2 ± 4.1%
MECH	87.8 ± 2.2 %	73.4 ± 6.0 %

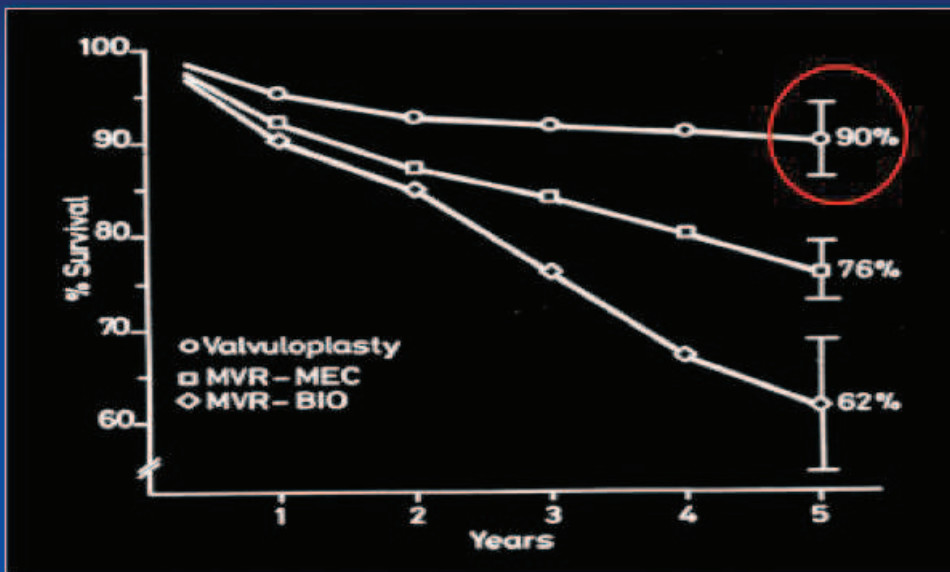
**Mechanical valves minimize reoperation but limit survival and increase thromboembolic complications. Patients undergoing valve repair had improved late cardiac survival independent of their preoperative characteristics. Rheumatic mitral valves should be repaired when technically feasible, accepting a risk of reoperation, to maximize survival and reduce morbidity. (J Thorac Cardiovasc Surg 2000;119:53-61)**

Terence M. Yau et al .  
Mitral Valve Repair and Replacement in Rheumatic Disease  
Journal of Thoracic and Cardiovascular Surgery 2000;119:53-61

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# Rheumatic Mitral Valve Repair



Antunes M. Mitral Valvuloplasty, 6085

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## Endomyocardial Fibrosis: Still a Mystery after 60 Years

- [Gene Bukhman, John Ziegler, and Eldryd Parry](#)
- [\\_PLoS Negl Trop Dis. 2008 Feb; 2\(2\): e97.](#)

Cause	Reference
<b>Infection</b>	
Toxoplasmosis	[85]
Rheumatic fever	[39,86]
Malaria	[87,88]
Myocarditis	[89]
Helminthic parasites	[46,62]
<b>Allergy</b>	
Eosinophilia	[90]
Auto-immunity	[76,88]
<b>Malnutrition</b>	
Protein deficiency	[79]
Magnesium deficiency	[23]
<b>Toxic agents</b>	
Cerium	[23]
Cassava	[79,91]
Thorium	[23]
Serotonin	[50]
Plant toxin	[92]

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## CHALLENGES

# Congenital Heart Diseases Screening remains insufficient

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## PEDIATRIC AND CONGENITAL HEART DISEASES : HEACTH PRIORITY OF THE 21<sup>ST</sup> CENTURY

### PERSPECTIVES

In Sub-Saharan Africa and in developing countries rheumatic cardiopathies represent 5 to 10 % of deaths due to a cardiovascular sickness; they affect 12 to 40 % of the African population and will remain frequent within the next 20 to 40 years<sup>13</sup>.

Furthermore, in Africa congenital cardiopathies screening remains insufficient. For example in Cote d'Ivoire, on looking at the incidence of congenital cardiopathies between 5 and 8 for 1000 births and the number of 360.000 births per year, between 1800 and 2800 congenital anomalies per year should be discovered<sup>14</sup>. We are still far from this incidence here as well as in other African regions. For these reasons, it is necessary to increase in Africa the human resources in cardiology and to establish many centers for screening cardiovascular diseases. So, in Cote d'Ivoire, as a supplement to the Institut de Cardiologie of Abidjan in the south of the country, the construction of a second center of cardiology started in Bouake, a town located in the center of our country (figure 3).

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# CHALLENGES

## Cardiac Centre in Côte d'Ivoire:

### Insufficient Number

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# BACKGROUND

## COTE D'IVOIRE

Population = 25,5 Millions

1 full Cardiac Centre



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# BACKGROUND

## Global Expansion of Cardiothoracic Surgery.

### The African Challenge

A. Thomas PEZZELLA, M.D.

African Annals of Thoracic and Cardio-Vascular Surgery. 2005 ; 1 : 9 - 11

Briefly, there are over 1.5 million open-heart operations done each year worldwide by over 6,000 surgeons, in over 3,000 centers or units. Unfortunately only 2 billion of the world 6.5 billion population has access to these operations. There are **1222 open-heart operations per million population in North America**, compared to **18 per million in Africa**. This translates into 1 center or unit per 120,000 people in the USA to **1 center/unit per 33 million people in Africa**.

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**Population = 25,5 Millions**

**Population Growth = 2,03 %**

**Mean Age (year) = 19,2 ♂**

**18,9 ♀**

**Infant Mortality (‰)=116,9**

**Life Expectancy (year) = 48,3**

**GDP/Inhabitant ( \$ ) = 1 699**

**Medical Doctors (‰ Inhab.) = 0,12 %**



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# Epidemiology of Infant Heart Disease in Sub-Saharan Africa

Dr WAWO YONTA Edvine  
University Teaching Hospital, Yaounde - Cameroon  
Faculty of Medicine and Biomedical Sciences, Yaounde - Cameroon

## A: The Burden :

3/ Difficulties with medical management in Sub-Saharan Africa

- Insufficient specialized medical personnel



*The Worldwide Environment of Cardiovascular Disease  
Journal of the American College of Cardiology December 2012*

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# CARDIAC SURGEONS IN COTE D'IVOIRE

- 5 Cardiac Surgeons for a population of more than 22.000.000 people

74

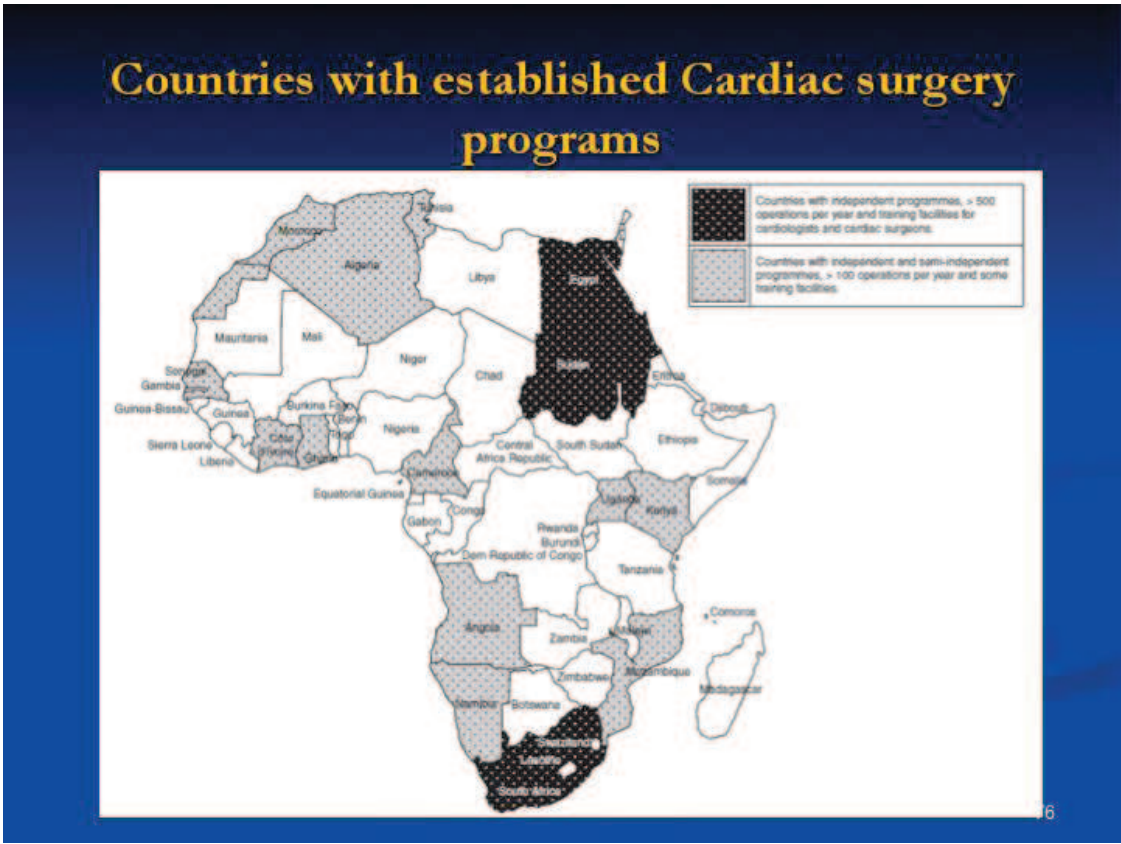
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### CARDIOTHORACIC SURGEONS AT POST AND PROJECTED IMMEDIATE NEEDS IN 7 COUNTRIES

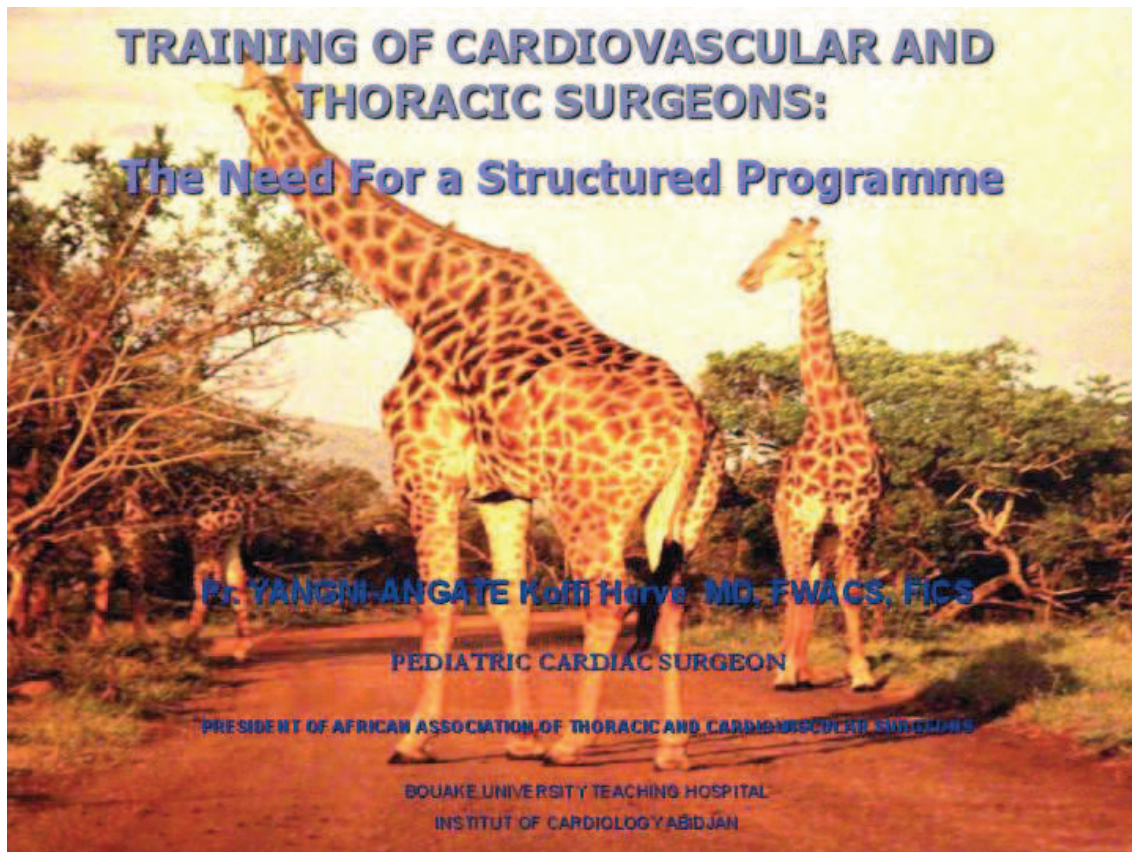
COUNTRY	CARDIOTHORACIC SURGEONS AT POST	PROJECTED IMMEDIATE NEEDS
GHANA population: 20 million	4	20
NIGERIA Population: 126.6 million	10	40
BENIN Population: 6.6 million	0	7
MALI Population: 11,5 million	0	12
THE GAMBIA Population: 1,4 million	2	2
SIERRA LEONE Population: 1,4 million	0	6
LIBERIA Population: 3,2 million	0	4

The immediate National needs of Specialists based on a ratio of 1: 22.000 population.

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# **AATCVS INITIATIVES FOR AN HARMONIZED AND STRUCTURED TRAINING PROGRAMME**

□ CALABAR 2010

## **FINAL ADOPTION:**

**HARMONIZED CORE CURRICULUM AND  
ESTABLISHMENT OF A COMMON LIST  
OF SURGICAL PROCEDURES**

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## **CVT TRAINING PROGRAMME: IMPLEMENTATION- REQUIREMENTS- SUSTAINABILITY**

- Centres: - Modern Equipements  
- Good Management  
- Political and Financial support
- Harmonized Training Centre Policy in our Region
- Collaboration:
  - AATCVS
  - Governement
  - Industries
  - NGO
  - Donors
  - International organizations
  - Fondations

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## Constraints

**GDP/capita < cost of one OHS**



funXite.com

12/09/2014

AATCVS Luanda Angola Scot  
2014

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## CHALLENGES

- Many of our Patients Cannot afford the Bill
- (GDP per capita = very low) :
  - Cost of Cardiac Surgery :
    - Without Prosthesis = **4,800 USD**
    - With Prosthesis = **5,600 USD**

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# Epidemiology of Infant Heart Disease in Sub-Saharan Africa

**Dr WAWO YONTA Edvine**  
 University Teaching Hospital, Yaounde - Cameroon  
 Faculty of Medicine and Biomedical Sciences, Yaounde - Cameroon

## A: The Burden :

3/ Difficulties with medical management in Sub-Saharan Africa

- Insufficient financial resources of the population

**FAO Hunger Map 2010**  
Prevalence of undernourishment in developing countries

**Population vivant dans les bidonvilles, 2001**

Países (en español)	Países (en francés)	Porcentaje de la población urbana total (en %)
Albania	Albanie	13,2
Arabia Saudita	Arabie Saoudite	100,0
Austria	Autriche	85,0
Belgium	Belgique	97,9
Brazil	Brazile	29,7
Canada	Canada	22,8
China	Chine	21,2
Denmark	Danemark	20,8

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# CHALLENGES

## No Health Insurance Scheme

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## Outcome of patients undergoing open heart surgery at the Uganda heart institute, Mulago hospital complex

- Lack of direct funding for open heart surgery programs is a major obstacle limiting the number of children that can be operated by local teams as only very few families can pay for the costs of the surgeries.
- Governments and local charities should direct funding to support treatment of more children with heart disease locally as opposed to referral abroad to increase access to the service.

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## CHALLENGES

- **In Africa, according to WHO Recommendations and to the International Standards, we should perform 400 operations per million of population per year, and should achieve the proportion of one surgeon for 150 cases per year.**

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## Open heart surgery in Nigeria: a work in progress

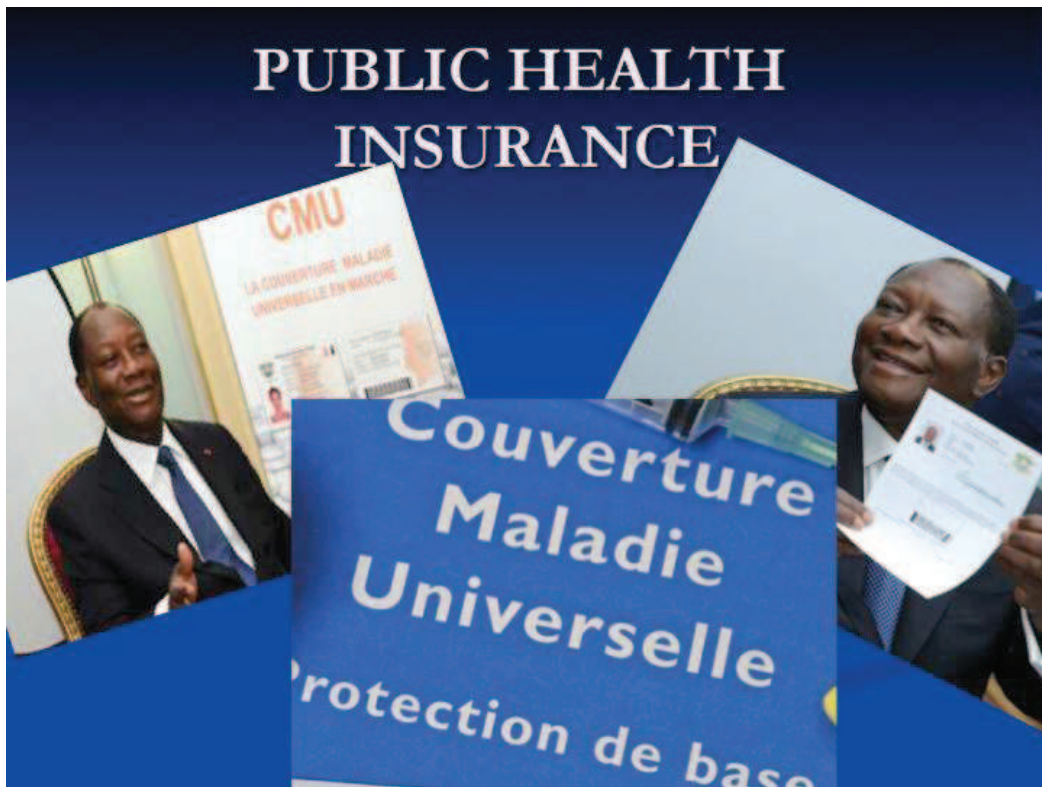
- Bode Falase, et al.
- <http://www.cardiothoracicsurgery.org/content/8/1/6>
- 

Challenges encountered included the low volume of cases done, an unstable working environment, limited number of trained staff, difficulty in obtaining laboratory support, limited financial support and difficulty in moving away from the Cardiac Mission Model.

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## RECOMMENDATIONS

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## RECOMMANDATIONS

- Regional Centres of Excellence to provide cost effective care of Patients needing Surgery
- More Centres for Cardiac Surgery In the Region.

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**OPEN HEART SURGERY  
GLOBAL EXPANSION**

■ Government

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## Commencing open heart surgery in resource limited countries: lessons from the LASUTH experience

- [Mobolaji Adewale Oludara](#) et al.
- The Pan African Medical Journal
- We propose that owing to the huge financial investment needed, government sponsorship as well as collaboration with overseas based and local non-governmental agencies may be required to jump start the process of open cardiac surgery. Local staff training opportunities are also provided by such missions and this can further be complemented by overseas exposure in areas of need for capacity building.

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## PEDIATRIC AND CONGENITAL HEART DISEASES : HEALTH PRIORITY OF THE 21<sup>ST</sup> CENTURY

**I.C.H.F.**  
International Children's  
Heart Fund

*"You can make  
a difference"*

*save a  
child's  
heart*

*bambini  
cardiopatici  
nel mondo*

*To save a child  
is to save a world*

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### CARDIOSTART INTERNATIONAL

Global Volunteer Heart Care

**Children's Hospital Boston  
in Ghana**

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## Outcome of patients undergoing open heart surgery at the Uganda heart institute, Mulago hospital complex

- Lack of direct funding for open heart surgery programs is a major obstacle limiting the number of children that can be operated by local teams as only very few families can pay for the costs of the surgeries.
- Governments and local charities should direct funding to support treatment of more children with heart disease locally as opposed to referral abroad to increase access to the service.

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## OPEN HEART SURGERY GLOBAL EXPANSION

- Fondations
- Donors
- Industries

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## IVORIAN HEART FOUNDATION

The Ivorian Heart Foundation is the charity that leads the fight for heart health for all the populations living in Côte d'Ivoire. We aim to prevent people from heart and circulatory diseases; and we also aim to help those suffering from it by providing comfort and assistances; and through the research...

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## ENUGU TEACHING HOSPITAL : TEAM OF CARDIAC SURGERY

### Regional Cooperation



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# OPEN HEART SURGERY GLOBAL EXPANSION



Scientific Exchanges

African Association of Thoracic and Cardio-Vascular Surgeons  
Association Africaine des Chirugiens Thoraciques et Cardio-Vasculaires

WEB - SITE: <http://www.aatcvs.org>

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# OPEN HEART SURGERY GLOBAL EXPANSION

## PROMOTION OF CLINICAL RESEARCH



WEB - SITE: <http://www.aatcvs.org>

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## TRIBUTE TO PAST DISTINGUISHED LECTURERS (1990-2014)

**American College of Surgeons**

**THE DISTINGUISHED LECTURE OF THE INTERNATIONAL SOCIETY OF  
SURGERY**

The Distinguished Lecture of the International Society of Surgery was established by the Board of Regents in June 1990, and the first lecture was delivered at the 1992 Clinical Congress in New Orleans, LA.

This Lecture was proposed and endowed by the U. S. Chapter of the International Society of Surgery to recognize the Society's worthwhile activities by honoring distinguished international surgeons at the annual Clinical Congress of the American College of Surgeons.

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## **DISTINGUISHED LECTURERS OF THE INTERNATIONAL SOCIETY OF SURGERY AT THE AMERICAN COLLEGE OF SURGEONS CLINICAL CONGRESS SINCE 1992**

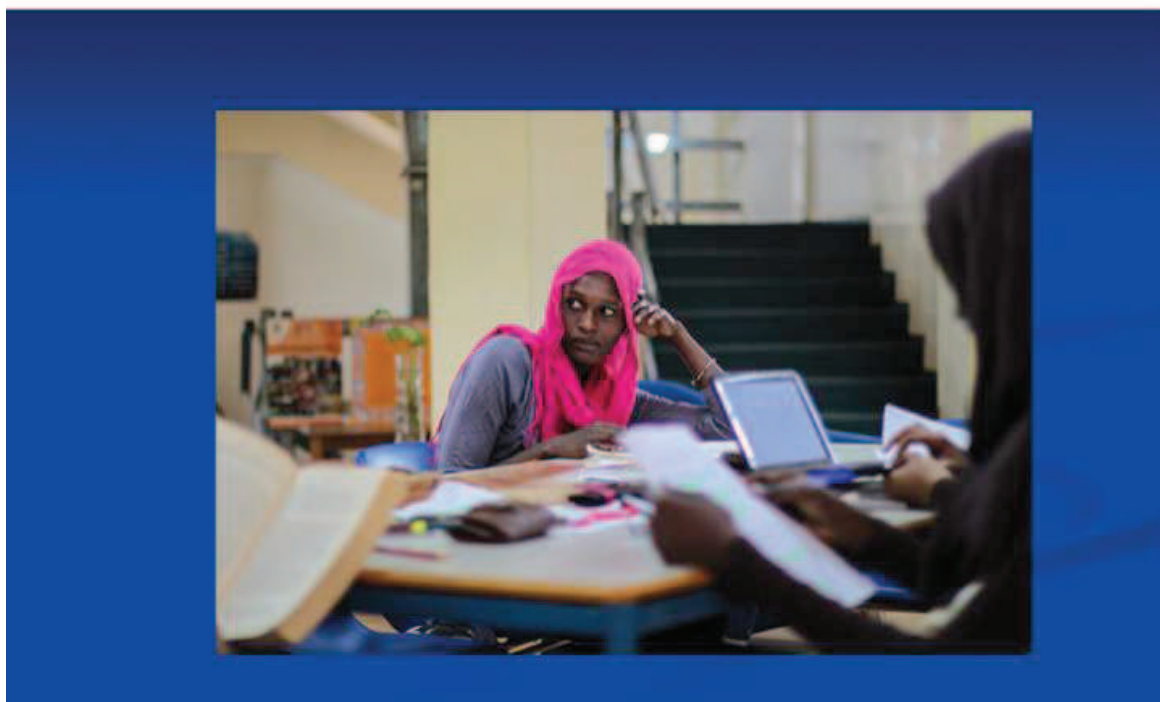
- 2015 : Koffi Herve Yangni-Angate, Lagos, Nigeria  
Challenges in Open Heart Surgery in Africa: Côte – d'Ivoire Experience
- 2014: Meena Nathan Cherian, MD Surgical Care in Global Health Agenda
- 2013: Professor Norman S. Williams ,  
Attempts to Innovate in Coloproctology and Beyond
- 2012: Ari Leppaniemi, MD, PhD, Helsinki, Finland  
Humanitarian Missions: Can One Surgeon Make a Difference?
- 2011: Eilis McGovern, Dublin, Ireland  
Surgical Training and Surgical Practice: Are We Getting the Formula Right?
- 2010: Alberto Raul Ferreres, Buenos Aires, Argentina  
Ethics and Errors in Surgery
- 2009: Lord Ara W. Darzi, London, England  
Healthcare Reform in the United Kingdom
- 2008: Kenneth D. Boffard, Houghton, Rep. of South Africa  
Defining Competence: Remuneration, Results, Rewards, and Reinvestment
- 2007: Michael G. Sarr, Rochester, MN  
What Can the Academic Community Offer the Third-World Surgeon?
- 2006: Henrik Kehlet, Copenhagen, Denmark  
Fast Track Surgery – From Here to Where?
- 2005: Jonathan L. Meakins, Oxford, England  
Evidence-based Surgery: The Future?!
- 2004: John Wong, Hong Kong, Peoples Rep. of China  
Esophageal Cancer Worldwide: Same Name, Different Disease, One Mission
- 2003: Jose F. Patino, Bogota, Colombia  
Chaos Theory, Uncertainty, and Surgery
- 2002: Ainslie G. R. Sheil, Sydney, NSW, Australia  
Xenotransplantation and Cloning: Facts and Future
- 2001: Jorge Cervantes, Mexico, DF, Mexico  
Virchow's Legacy: Venous Thrombosis and Pulmonary Embolism
- 2000: Hans G. Beger, Ulm, Germany  
Pancreatic Head Resection in the New Millennium – Changing Face of Surgical Morbidity
- 1999: Sir Alfred Cuschieri, Dundee, Scotland  
Minimal Access Therapy in the Next Millennium
- 1998: Sir Peter J. Morris, Oxford, England  
Kidney Transplantation: A Remarkable Story in Modern Medicine
- 1997: Sir David Carter , Edinburgh, Scotland  
Cancer of the Digestive System – Has Surgery Nothing Further to Offer?
- 1996: Umberto Veronesi, Milan, Italy  
The Present and Future of Breast Cancer Management
- 1995: Hans Borst, Hannover, Germany  
Aortic Dissection – A Multi-disciplinary Challenge
- 1994: Michael Trede, Mannheim, Germany  
Progress in the Surgical Treatment of Pancreatic Carcinoma
- 1993: John Terblanche, Cape Town, South Africa  
The Changing Face of Biliary Tract Surgery in 1993
- 1992: Sir Roy Yorke Calne, Cambridge, England  
Future Prospects in Organ Transplantation

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## How Empowering Women Can Help End Poverty in Africa



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Gregorio Calvi di Bergolo (1904-1994)  
*Life, Labor, Study, Charity, Death*  
Oil on canvas, 104 x 84 in., 1953

International Museum of Surgical Science Collections, xx1995.436

*One of a series of murals illustrating historical achievements in surgery and medicine, this allegorical painting symbolizes the five phases of life, with their titles inscribed in Latin below.*

Publication sponsored by Sir Joseph Charles Serrato, KHS, MD, FICS.  
Photography sponsored by Mrs. Florida Adelstein.

Photograph by Greg Williams. ©International Museum of Surgical Science, 2002.

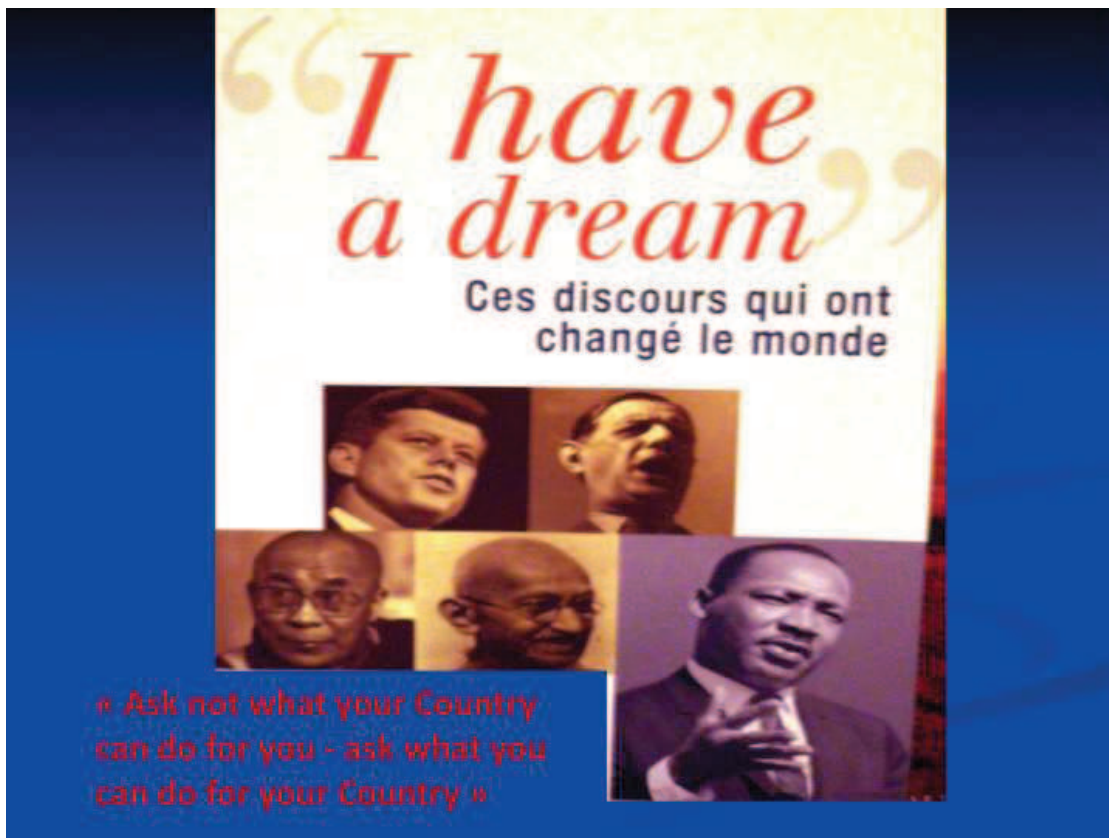


International **Museum of Surgical Science**  
1524 N. Lake Shore Drive  
Chicago, IL 60610  
312.642.6502  
www.imss.org

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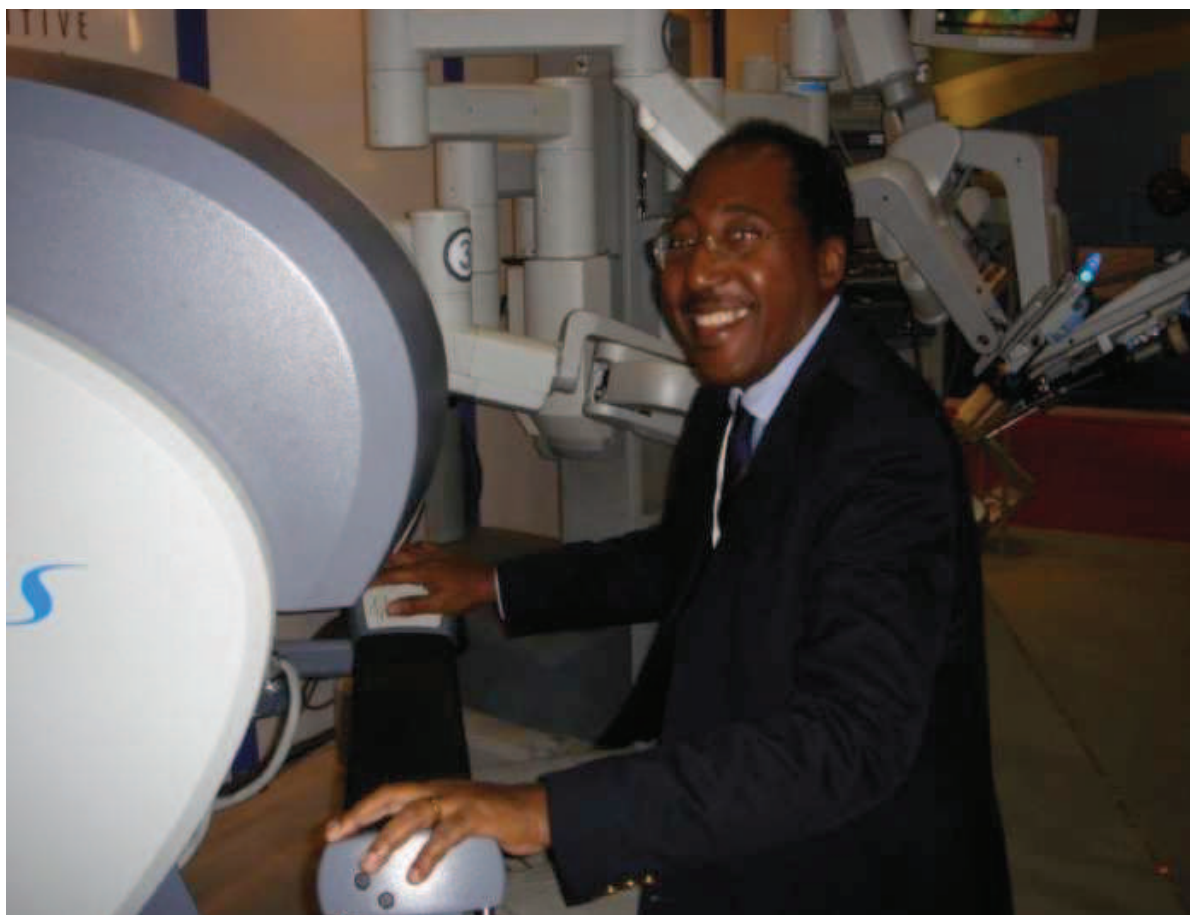
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